

Visual Hallucinations in Psychosis:  
Developing a theoretical model for  
future treatments.

Charlotte Aynsworth

Doctor of Philosophy

University of York

Psychology

January 2026

# Abstract

**Background:** Visual hallucinations (VH) are reported by one in three people with psychosis. They are associated with poorer functioning. Despite such detrimental impact, there are no current proven effective treatments for these. This thesis reports a program of work that develops the psychological understanding and treatments of VH in psychosis.

**Aims:** Specific aims were to i) gain a rich understanding of the phenomenology and appraisals of VH, ii) develop an outcome measure of visions, and iii) develop a theoretical model of contributory factors and test their associations to identify future treatment targets.

**Methods:** People with lived experience were consulted throughout the research. First, reflexive thematic analysis was used to explore the first-person phenomenology and appraisals of VH in twelve people with psychosis (Chapters 2 and 3). Next, a cross-sectional study was conducted with both clinical (404 people with psychosis) and non-clinical participants (N=696) who experienced VH within the last month. This was used to undertake a psychometric evaluation and factor analysis of a new measure of VH (Chapter 4). Finally, a theoretical model of maintenance factors of VH is presented (Chapter 5). Structural equation modelling was employed to statistically test the associations of the proposed model.

**Results:** People with psychosis often see VH of people, who behaved like and looked like people (Chapter 2). People lacked convincing and acceptable explanations for such complex experiences (Chapter 3). The outcome measure was psychometrically robust and is suitable for use as a brief self-report outcome measure of VH (Chapter 4). Finally in the SEM, nightmares, other hallucinations, low self-esteem, and worry significantly predicted visions (Chapter 5).

**Conclusions:** VH are overlooked and under explored, despite being some of the most complex, vivid, and distressing experiences reported by people with psychosis. Four maintenance factors of VH were identified, which can be targeted in future treatments.

# Contents

|                                                                          |    |
|--------------------------------------------------------------------------|----|
| Abstract.....                                                            | 2  |
| Contents.....                                                            | 3  |
| List of tables.....                                                      | 8  |
| List of figures.....                                                     | 10 |
| Glossary.....                                                            | 11 |
| Authors Declaration.....                                                 | 16 |
| 1 Introduction.....                                                      | 18 |
| 1.1 What are visual hallucinations? .....                                | 18 |
| 1.2 People with lived experience's views on terminology .....            | 18 |
| 1.3 Visions and psychiatric disorders .....                              | 19 |
| 1.4 Why is it important to explore visions in psychosis? .....           | 19 |
| 1.5 How common are visions in psychosis?.....                            | 20 |
| 1.6 Experience of visions .....                                          | 22 |
| 1.6.1 Phenomenology.....                                                 | 22 |
| 1.6.2 Multimodality .....                                                | 22 |
| 1.6.3 Appraisals of visions .....                                        | 25 |
| 1.7 Context of visions.....                                              | 26 |
| 1.8 Causes of visions in psychosis .....                                 | 26 |
| 1.8.1 Trauma .....                                                       | 27 |
| 1.8.2 Sleep .....                                                        | 30 |
| 1.8.3 Reality monitoring.....                                            | 32 |
| 1.9 Treatments of visions .....                                          | 35 |
| 1.10 Key issues in the literature .....                                  | 38 |
| 1.11 A new approach to treatment development.....                        | 42 |
| 1.12 Thesis aims.....                                                    | 43 |
| 1.12.1 The objectives are: .....                                         | 43 |
| 2 Visual hallucinations in psychosis: What do people actually see? ..... | 45 |
| 2.1 Chapter Abstract.....                                                | 45 |
| 2.2 Introduction .....                                                   | 47 |
| 2.3 Method.....                                                          | 48 |
| 2.3.1 Design.....                                                        | 48 |
| 2.3.2 Epistemological position .....                                     | 49 |
| 2.3.3 Participants .....                                                 | 49 |
| 2.3.4 Procedure .....                                                    | 50 |
| 2.3.5 Reflexive thematic analysis.....                                   | 51 |
| 2.3.6 Reflexivity and considerations of data quality .....               | 52 |

|        |                                                                                                                                 |     |
|--------|---------------------------------------------------------------------------------------------------------------------------------|-----|
| 2.3.7  | Sample size.....                                                                                                                | 53  |
| 2.4    | Analysis.....                                                                                                                   | 53  |
| 2.4.1  | Contextualising the data .....                                                                                                  | 53  |
| 2.4.2  | Overview of analysis .....                                                                                                      | 59  |
| 2.4.3  | Theme 1 – ‘Content: People see people’ .....                                                                                    | 59  |
| 2.4.4  | Theme 2 – ‘Coherence: Visions of people who behave like people’ .....                                                           | 63  |
| 2.4.5  | Theme 3 – ‘Quality: They look too real’ .....                                                                                   | 64  |
| 2.5    | Discussion .....                                                                                                                | 66  |
| 2.5.1  | Limitations .....                                                                                                               | 68  |
| 2.5.2  | Research and clinical implications .....                                                                                        | 69  |
| 2.5.3  | Conclusion.....                                                                                                                 | 70  |
| 3      | “I just want an explanation”: A qualitative investigation of how people with psychosis make sense of visual hallucinations..... | 71  |
| 3.1    | Chapter Abstract.....                                                                                                           | 71  |
| 3.2    | Introduction .....                                                                                                              | 73  |
| 3.3    | Method.....                                                                                                                     | 75  |
| 3.3.1  | Design.....                                                                                                                     | 75  |
| 3.3.2  | Reflexivity and considerations of data quality .....                                                                            | 76  |
| 3.3.3  | Reflexive statement.....                                                                                                        | 76  |
| 3.4    | Results.....                                                                                                                    | 76  |
| 3.4.1  | Contextualising the data .....                                                                                                  | 76  |
| 3.4.2  | Overview of analysis .....                                                                                                      | 77  |
| 3.4.3  | Overarching Theme – ‘Absence of an explanation’ .....                                                                           | 78  |
| 3.4.4  | Theme 1 – ‘Unconvincing but acceptable’ explanations .....                                                                      | 80  |
| 3.4.5  | Theme 2 – ‘Convincing but unacceptable’ explanations .....                                                                      | 86  |
| 3.4.6  | Subtheme 2.2 ‘It’s here to harm’ .....                                                                                          | 87  |
| 3.4.7  | Subtheme 2.3 – ‘It’s unstoppable’ .....                                                                                         | 90  |
| 3.4.8  | Subtheme 2.4 – ‘I’m mad’ .....                                                                                                  | 91  |
| 3.4.9  | Subtheme 2.5 – ‘I’m worthless’ .....                                                                                            | 93  |
| 3.4.10 | Subtheme 2.6 ‘I’m being punished’ .....                                                                                         | 94  |
| 3.4.11 | Summary - The search for an explanation.....                                                                                    | 95  |
| 3.5    | Discussion .....                                                                                                                | 97  |
| 3.5.1  | Limitations .....                                                                                                               | 99  |
| 3.5.2  | Future directions.....                                                                                                          | 100 |
| 3.5.3  | Conclusion.....                                                                                                                 | 100 |

|        |                                                                                                |     |
|--------|------------------------------------------------------------------------------------------------|-----|
| 4      | Developing a new self-report outcome measure for visions: Hamilton Visions Questionnaire ..... | 101 |
| 4.1    | Chapter Abstract.....                                                                          | 101 |
| 4.2    | Introduction .....                                                                             | 103 |
| 4.2.1  | Frequency .....                                                                                | 103 |
| 4.2.2  | Duration.....                                                                                  | 104 |
| 4.2.3  | Distressing content.....                                                                       | 104 |
| 4.2.4  | Negative Appraisals .....                                                                      | 105 |
| 4.2.5  | Perceptual quality .....                                                                       | 105 |
| 4.2.6  | Absorption .....                                                                               | 105 |
| 4.2.7  | Impact .....                                                                                   | 106 |
| 4.2.8  | Outcome rater .....                                                                            | 106 |
| 4.2.9  | Scale evaluation .....                                                                         | 107 |
| 4.2.10 | Current visions measures .....                                                                 | 107 |
| 4.2.11 | A novel measure of distressing visions .....                                                   | 109 |
| 4.3    | Method.....                                                                                    | 110 |
| 4.3.1  | Study design and participants .....                                                            | 110 |
| 4.3.2  | Measures .....                                                                                 | 112 |
| 4.3.3  | Statistical analysis .....                                                                     | 116 |
| 4.4    | Results.....                                                                                   | 120 |
| 4.4.1  | Participants .....                                                                             | 120 |
| 4.4.2  | Factor analysis .....                                                                          | 123 |
| 4.4.3  | Scale evaluation .....                                                                         | 126 |
| 4.5    | Discussion .....                                                                               | 130 |
| 4.5.1  | Limitations .....                                                                              | 131 |
| 4.5.2  | Conclusion.....                                                                                | 133 |
| 5      | Visual hallucinations: Developing a theoretical model of psychological factors .....           | 134 |
| 5.1    | Chapter Abstract.....                                                                          | 134 |
| 5.2    | Introduction .....                                                                             | 136 |
| 5.2.1  | Low self-esteem.....                                                                           | 136 |
| 5.2.2  | Worry .....                                                                                    | 138 |
| 5.2.3  | Poor sleep .....                                                                               | 139 |
| 5.2.4  | Dissociation .....                                                                             | 139 |
| 5.2.5  | Mental imagery.....                                                                            | 140 |
| 5.3    | A new model of visions .....                                                                   | 143 |
| 5.4    | Method.....                                                                                    | 147 |

|       |                                                                                              |     |
|-------|----------------------------------------------------------------------------------------------|-----|
| 5.4.1 | Study design and participants .....                                                          | 147 |
| 5.4.2 | Assessments .....                                                                            | 149 |
| 5.4.3 | Analysis.....                                                                                | 154 |
| 5.5   | Results.....                                                                                 | 156 |
| 5.5.1 | Participants .....                                                                           | 156 |
| 5.5.2 | Phenomenology of visions.....                                                                | 156 |
| 5.5.3 | Potential contributory factors - CFA.....                                                    | 160 |
| 5.5.4 | Individual SEMs.....                                                                         | 172 |
| 5.5.5 | Combined SEM .....                                                                           | 173 |
| 5.5.6 | Treatment preferences .....                                                                  | 181 |
| 5.6   | Discussion .....                                                                             | 183 |
| 5.6.1 | Phenomenology of visions.....                                                                | 183 |
| 5.6.2 | Contributory factors of visions .....                                                        | 184 |
| 5.6.3 | Treatment preference .....                                                                   | 188 |
| 5.7   | Limitations .....                                                                            | 189 |
| 5.8   | Future directions.....                                                                       | 193 |
| 5.9   | Conclusion .....                                                                             | 194 |
| 6     | General Discussion .....                                                                     | 196 |
| 6.1   | Overview of thesis aims and findings.....                                                    | 196 |
| 6.2   | Clinical implications.....                                                                   | 200 |
| 6.3   | Strengths and limitations .....                                                              | 202 |
| 6.4   | Future directions.....                                                                       | 206 |
| 6.5   | Conclusions .....                                                                            | 207 |
| 7     | References .....                                                                             | 209 |
| 8     | Appendices .....                                                                             | 242 |
|       | Appendix 1: Published phenomenology of visions paper .....                                   | 242 |
|       | Appendix 2: Topic Guide – Qualitative Interviews .....                                       | 258 |
|       | Appendix 3: COREQ checklist – Chapter 2 .....                                                | 265 |
|       | Appendix 4: Submitted paper on appraisals of visions (Chapter 3) .....                       | 268 |
|       | Appendix 5: COREQ checklist – Chapter 3 .....                                                | 312 |
|       | Appendix 6: Thematic maps – developing appraisals themes (Chapter 3) .....                   | 315 |
|       | Appendix 7: VISION-QUEST Baseline Assessment Pack .....                                      | 317 |
|       | Appendix 8: VISION-QUEST Follow up Assessment Pack .....                                     | 349 |
|       | Appendix 9: Final version of Hamilton Visions Questionnaire (HViQ).....                      | 360 |
|       | Appendix 10: Examples of different leaflets as advised by people with lived experience ..... | 363 |

|                                                                                                                  |     |
|------------------------------------------------------------------------------------------------------------------|-----|
| Appendix 11: Comparison of clinical and non-clinical groups in free text responses to what visions they see..... | 365 |
|------------------------------------------------------------------------------------------------------------------|-----|

## List of tables

|                   |                                                                                                                                       |     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Table 1:1</b>  | Summary table of visions measures .....                                                                                               | 40  |
| <b>Table 2:1</b>  | Content of participant's visions .....                                                                                                | 54  |
| <b>Table 3:1</b>  | Summary of participants' visions.....                                                                                                 | 77  |
| <b>Table 3:2</b>  | Summary of themes with illustrative quotes .....                                                                                      | 81  |
| <b>Table 3:3</b>  | Dynamic factors which influenced the presence and conviction of 'Convincing but unacceptable' appraisals. ....                        | 96  |
| <b>Table 4:1</b>  | Model of fit indices .....                                                                                                            | 118 |
| <b>Table 4:2</b>  | Participant demographics .....                                                                                                        | 121 |
| <b>Table 4:3</b>  | Three factor model factor loadings .....                                                                                              | 124 |
| <b>Table 4:4</b>  | Two factor model factor loadings.....                                                                                                 | 124 |
| <b>Table 4:5</b>  | Model comparisons to assess measurement invariance of HViQ .....                                                                      | 125 |
| <b>Table 4:6</b>  | Model comparison to determine measurement invariance across age for HViQ.....                                                         | 126 |
| <b>Table 4:7</b>  | Mean scores for each factor and t-tests comparing the clinical and non-clinical groups .....                                          | 127 |
| <b>Table 4:8</b>  | Mean and standard deviation scores for each item on the HViQ .....                                                                    | 127 |
| <b>Table 4:9</b>  | Convergent validity of the HViQ with the SPEQ and MUSEQ total scores and frequency items. ....                                        | 129 |
| <b>Table 5:1</b>  | Frequencies for the reported content of visions in total, and across clinical and non-clinical groups.....                            | 156 |
| <b>Table 5:2</b>  | The number of different categories of visions endorsed across clinical and non-clinical groups. ....                                  | 157 |
| <b>Table 5:3</b>  | Frequencies of different number of hallucinatory modalities associated with visions across the clinical and non-clinical groups. .... | 158 |
| <b>Table 5:4</b>  | The presence, frequency and emotional content of multimodal hallucinations accompanying the vision .....                              | 159 |
| <b>Table 5:5</b>  | Mann Whitney U Tests results across the frequency and emotional content of multimodal visions.....                                    | 160 |
| <b>Table 5:6</b>  | Item loadings for the two-factor model of BCSS .....                                                                                  | 161 |
| <b>Table 5:7</b>  | Composite reliability for the two factors of BCSS.....                                                                                | 161 |
| <b>Table 5:8</b>  | Item loadings for one-factor model for DWQ .....                                                                                      | 162 |
| <b>Table 5:9</b>  | Item loadings for the one-factor model of PTQ.....                                                                                    | 162 |
| <b>Table 5:10</b> | Item loadings the one-factor model for ISI.....                                                                                       | 163 |
| <b>Table 5:11</b> | Item loadings for five factor model for DEMO .....                                                                                    | 164 |
| <b>Table 5:12</b> | Composite reliability of the DEMO factors.....                                                                                        | 166 |
| <b>Table 5:13</b> | Item loadings for the seven-factor model of Psi-Q.....                                                                                | 167 |
| <b>Table 5:14</b> | Composite reliability for the seven factors of PSIQ.....                                                                              | 167 |
| <b>Table 5:15</b> | Item loadings for one factor model for DDNSI .....                                                                                    | 168 |
| <b>Table 5:16</b> | Item loadings for one factor model for SPEQ.....                                                                                      | 169 |
| <b>Table 5:17</b> | Item loadings for one-factor model for R-GPTS .....                                                                                   | 170 |
| <b>Table 5:18</b> | Item loadings for three-factor model for ERS.....                                                                                     | 170 |

|                   |                                                          |     |
|-------------------|----------------------------------------------------------|-----|
| <b>Table 5:19</b> | Composite reliability for the three factors in ERS ..... | 171 |
| <b>Table 5:20</b> | Individual SEMs for each factor .....                    | 172 |
| <b>Table 5:21</b> | Factor correlations in combined SEM.....                 | 173 |
| <b>Table 5:22</b> | Factor loadings for all items in the combined SEM .....  | 174 |
| <b>Table 5:23</b> | Parameter estimates for final SEM model.....             | 181 |

## List of figures

|                                                                          |     |
|--------------------------------------------------------------------------|-----|
| <b>Figure 3-1</b> The dynamic process of understanding visions.....      | 96  |
| <b>Figure 4-1</b> Path diagram with standardised estimates for HViQ..... | 126 |
| <b>Figure 5-1</b> Path diagram of final combined SEM for visions.....    | 181 |

# Glossary

BCSS – Brief Core Schema Scale

CAPS – Cardiff Anomalous Perception Scale

ČEFSA - Černis Felt Sense of Anomaly

CFA - Confirmatory Factor Analysis

CFI - Comparative Fit Index

DDNSI - Disturbing Dreams and Nightmares Severity Index

DEMO - Dissociative Experiences Measure, Oxford

DWQ- Dunn Worry Questionnaire

EFA - Exploratory Factor Analysis

ERS - Emotion Reactivity Scale

HPSVQ - Hamilton Schizophrenia Voice Hearing Program

HViQ - Hamilton Visions Questionnaire

ICC - Intraclass co-efficient

ICD-10 – International Classification of Diseases, Tenth Revision, Clinical Modification

ISI - Insomnia Sleep Index

KMO - Kaiser-Meyer Olkin Measure of Sample Adequacy

LEAP - Lived Experienced Advisory Panel

LSHS - Launay-Slade Hallucination Scale

MRC - Medical Research Council

MUSEQ - Multimodal Unusual Sensory Experiences Questionnaire

O-LIFE - Oxford-Liverpool Inventory of Feelings and Experiences

ONS - Office for National Statistics

PANSS – Positive and Negative Syndrome Scale

PSYRATS – Psychotic Symptom Rating Scale

Psi-Q - Plymouth Sensory Imagery Questionnaire

PTQ - Perseverative Thinking Questionnaire

RDN - National Institute for Health Research Delivery Networks

R-GPTS - Revised-Green Paranoid Thoughts Scale

RMSEA - Root mean square error of approximation

SMRM- Standardised root mean square

SPEQ - Specific Psychotic Experiences Questionnaire

TLI - Tucker-Lewis index

# Acknowledgements

Firstly, I would like to thank the people with lived experience who shared their stories with me, those who helped me to shape the studies, and those who took part in this research. Your bravery to share your experiences in order to help improve the lives of others is truly inspirational and the reason for why I do what I do. I would like to also thank all of the NHS trusts that supported the research in this thesis, for going above and beyond to make sure that the voices of people with psychosis and visions were heard.

Next, I must thank the incredible research team who made this thesis possible, especially my supervisors, Prof. Rob Dudley, Dr Felicity Waite, and Dr Clara Humpston. Rob, my two-tone pal – who would've thought we would be here again 10 years later submitting another thesis on the same topic?! Words can't really express how grateful I am for having the opportunity to work with you over the years and to learn from your incredible knowledge and expertise. Thank you for letting me be unapologetically myself and supporting me throughout everything. Felicity – not many good things came out of the lockdown of 2020, but having the opportunity to be mentored by you was one of them. You encouraged me to consider a whole new approach to understanding visions, which inspired this PhD. Thank you for being so generous with your time, your expert knowledge, and for the belief that it was worth pursuing my passion for research into visions. Clara – thank you so much for you always being there to guide me through the ups and downs of my PhD and to keep me on track. Your efficiency will forever be something I aspire to! Samuel, what a privilege it has been to have you by my side as we walk through 'The Wild West of Visions'. Thank you for the endless discussions – from visions, to the paranormal, to D&D. Thank you for honesty, support and bravery – and for always reminding me of the importance of this work. Aiden – thank you for guiding me through all of my stats chaos and for teaching me what I thought was the unteachable! And the everyone in HARP (past and present), thank you for making work so enjoyable. It's a privilege and pleasure to work with such an amazing team of people who are so focused on improving the lives of those with psychosis.

This PhD wouldn't have been possible without the love, support and joy from my friends and family. To my parents, Mum and John – thank you for always 'filling my cup' through bringing laughter, love, M&S chocolate biscuits, and John's infamous cocktails to the table. To my sister, Suz – the funniest person I know (apart from me). Thank you for always reminding me that laughter is the best medicine for everything in life. Josh – the best DM I could ask for. Thanks for providing me with the most mindful evenings of D&D as some light relief from a PhD.

Next, I must thank the fabulous women in my life: Jennie, Kez, Fran, and Truey. Jennie – for always reminding me that no matter what my star sign or horoscopes says, that will not write this PhD for me. Thank you for the belief that it was me, and only me, who could do that. Kez – thank you for your uncanny ability to always know the perfect time to send me a stern text to drag me to the pub (or drag show) to get some much-needed headspace. Fran – thank you for being superwoman – for always being there, come rain or shine – to tell me everything will be ok, to remind me to never save the nice wine for best, and for showing me that musicals can actually be fun. And Truey – my partner-in-crime. Thank you for travelling the world with me and reminding me that there's always more in life to explore.

And finally, to thank my wonderful boys. Fonzie – my little office buddy – thank you for being the best distraction from a PhD and for militantly knowing your walking routine, meaning I could never stay at my desk for too long before you forced me outside for some fresh air. And Simon – for taking everything in your stride over the last few years – from getting the cheekiest pup, a house move, a house renovation, and a PhD – all to support me to achieve my goals. Thank you for always greeting me with a smile and making me laugh every day. I couldn't have done this without you (and our kitchen dancing).

*This thesis is dedicated to my Mum, for showing me the importance of ensuring everyone's voice is always heard, no matter what 'the system' says.*

*And to P, F, and Little C, for showing me the importance of always being curious.*

*I hope you always remember to ask "Why?" and continue to never settle for the first answer.*

# Authors Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for a degree or other qualification at this University or elsewhere. All sources are acknowledged as references. The work was completed by the author, Charlotte Aynsworth, under the supervision of Prof. Rob Dudley (University of York), Dr Felicity Waite (Oxford University), and Dr Clara Humpston (University of York). The thesis was also conducted in collaboration with peer researcher, Dr Samuel Saregant (Open University). The statistical analysis of Chapter 4 and 5 was conducted under the supervision of Dr Aiden Loe.

The empirical work presented in this thesis has been published in the following peer-reviewed journal:

## Chapter 2

*Aynsworth, C., Waite, F., Sargeant, S., Humpston, C. & Dudley, R. (2025) Visual hallucinations in psychosis: What do people actually see? Psychology and Psychotherapy: Theory, Research and Practice, 98(1), 58-73. <https://doi.org/10.1111/papt.12553>*

The work has been presented at the following conferences:

Aynsworth, C., Dudley, R., Waite, F. Visual hallucinations: A qualitative investigation. Talk presented at the *2023 Beckfest, a Conference of Cognitive Behavioural Therapy of Psychosis in Amsterdam, The Netherlands*.

Aynsworth, C., Dudley, R., Sargeant, S., Humpston, C., Waite, F. Visual hallucinations: Appraisals. Talk presented at the *2023 International Conference for Hallucinations Research, in York, UK*.

Aynsworth ,C., Watson, F., Waite, F., Sargeant, S., Humpston, C., & Dudley, R. A questionnaire study about visual hallucinations. Talk presented at the *2024 Early Career Hallucinations Research Group in Lisbon, Portugal*.

*Aynsworth, C., Sargeant S., Humpston, C., Waite, F., & Dudley, R. A new 'vision' for research. Talk presented at the 2025 Cumbria, Northumberland, Tyne and Wear NHS Foundation trust Research & Development Conference in Sunderland, UK.*

*Aynsworth, C., Sargeant S., Humpston, C., Waite, F., & Dudley, R. The value of being curious about visions in psychosis. Talk presented at the 2025 Herefordshire and Worcestershire Health and Care NHS Trust Research & Development Conference.*

This PhD was funded by the National Institute for Health and Care Research Doctoral Clinical and Practitioner Fellowship (Grant number: NIHR302871)

# 1 Introduction

## 1.1 What are visual hallucinations?

Hallucinations were initially defined by Esquirol almost 200 years ago as “the intimate conviction of actually perceiving a sensation for which there is no external object.” (Esquirol & Hunt, 1845). They can occur across all sensory modalities: sound (auditory), vision (visual), touch (tactile), taste (gustatory), and smell (olfactory). This thesis will focus on visual hallucinations, as “a visual percept, experienced when awake, which is not elicited by an external stimulus. It contrasts with a visual illusion which is elicited by an external stimulus but differs from the percept normally associated with the stimulus” (Waters et al., 2014, p.5223).

## 1.2 People with lived experience’s views on terminology

This thesis represents work undertaken collaboratively with people with lived experience of visual hallucinations. This process revealed a tension between definitions where visual hallucinations do not exist in consensual reality and the contrast to how people talk about their experiences. For people affected, visual hallucinations are very real and impactful. Therefore, defining their experiences as unreal or untrue, as if merely a figment of people’s imaginations, can feel dismissive and invalidating. Understandably, therefore, for some the term ‘hallucinations’ does not feel like an accurate portrayal of their experiences. Instead, people with lived experience have stated a preference for the term ‘visions’. A vision is “*the experience of seeing something that other people cannot see, for example in a religious experience or as a result of madness or taking drugs.*” (Collins Advanced Learner Dictionary, 2025). Despite the explicit reference to madness or drug taking, referring to visions reportedly feels more validating and representative of people’s experiences. Therefore, this thesis will use the term ‘visions’ to refer to visual hallucinations.

### 1.3 Visions and psychiatric disorders

Visions are transdiagnostic in that they can occur across different mental health disorders including Emotionally Unstable Personality Disorder, Depression, and Post Traumatic Stress Disorder (Baegthe et al., 2005; Goghari et al., 2016; Minarikova et al., 2022; Wearne et al., 2023). They are also reported by people with physical health disorders such as epilepsy and migraines (Teeple et al., 2009). More commonly, visions are reported in older adult populations (people over the age of 65) with rates of 60-90% in Lewy Body Disease, 15-40% in Parkinson's Disease, 10-66% in eye disease, and 100% of people with Charles Bonnet Syndrome (as visions are a diagnostic criterion) (Teeple et al., 2009; Waters et al., 2014). Owing to such higher frequency rates in organic disorders, most research into visions has been conducted with participants with these conditions. However, the focus of this thesis is visions in the context of psychosis to develop our understanding of this under researched area.

However, it is important to note that visions are not just reported by people with psychiatric, neurodegenerative or other conditions, as Aynsworth et al. (2023) reported that 84% of people in a non-clinical sample reported unusual visual experiences in their lifetime. At least 5-7% reported seeing visions within the last month (Aynsworth et al., 2023; Rogers et al., 2024). Visions are not an uncommon experience. In fact, visions are actually more common than auditory hallucinations or voice experiences reported by non-clinical participants (Kessler et al. 2005; Tien, 1991; Sidgewick, 1894; Johns & Van Os, 2001; Teeple et al., 2009; Temmingh et al., 2010). So whilst visions are reported by a wide range of people, they seem to be particularly important to research in relation to psychosis.

### 1.4 Why is it important to explore visions in psychosis?

Psychosis is defined as *“an abnormal mental state involving significant problems with reality testing. It is characterized by serious impairments or disruptions in the most fundamental higher brain functions—perception, cognition and cognitive processing, and emotions or affect—as manifested in behavioral phenomena, such as delusions, hallucinations, and*

*significantly disorganized speech.*” (American Psychiatric Association, 2018, para. 1). The term includes a range of diagnoses such as schizophrenia, delusional disorder, schizoaffective disorder, and psychosis not otherwise specified (World Health Organisation, 1993).

Whilst people experience a range of ‘psychotic’ symptoms, at least one in three people with a first episode of psychosis report visions (Allen et al., 2023). When present, visions are associated with poorer treatment outcomes, such as more frequent and prolonged hospital admissions, and a greater likelihood of suicide (Baegthe et al., 2015; Chouinard et al., 2019; Kreis et al., 2023; Mueser et al, 1990; Oorschot et al., 2012). Despite such evident detrimental impact on people’s lives, there are currently no proven effective psychological (or medical) treatments for visions. In fact, relatively little is known about visions in the context of psychosis. Given the relative neglect of research into this area, this chapter will introduce the background literature of visions, including the phenomenology, context, and potential underlying causes. It will then consider the limitations of current approaches and explain how this thesis will begin a programme of work to amend these limitations and develop better targeted treatments for visions in the future.

## 1.5 How common are visions in psychosis?

Auditory hallucinations are a common symptom of psychosis, with 80% of people diagnosed reporting these (McCarthy-Jones et al., 2017). In comparison, visions were thought to be relatively uncommon. As a result, most research into hallucinations in psychosis has focused on auditory hallucinations, with relative neglect of other hallucinatory modalities (Badcock et al., 2021; Hayward et al., 2024; Toh et al., 2019; 2020) meaning that it is harder to establish an accurate estimate of how common visions are in people with psychosis.

Most studies exploring visions in psychosis have focused on their occurrence. To better estimate an overall occurrence rate, Waters et al. (2014) conducted a systematic review

that provided a pooled estimate of 29 studies of people with psychosis and currently experiencing visions. They found a weighted mean of 27%, although rates varied between 4-65%, owing to “reflecting variations in population and ascertainment methods” (Waters et al., 2014, p.S234). The authors acknowledged that clinician bias and lack of familiarity with visions could have influenced the disclosure rates of visions, as well as small samples, and the use of both standardised and non-standardised measures to assess visions. However, a more recent meta-analysis of 12 studies of those with first episode psychosis found a higher rate of 33% (Allen et al., 2023), despite variations in assessment methods. Thus, suggesting that the occurrence of visions had previously been underestimated and consequently overlooked in clinical practice (Allen et al., 2023).

A growing body of research addresses this neglect of hallucinations in other sensory domains and asks participants about hallucinatory experiences across all sensory modalities. Doing so has demonstrated that visions (alongside other hallucinatory modalities) are much more common than previously thought. Lim et al. (2016) surveyed 750 people with schizophrenia spectrum disorders and found that 47.7% reported lifetime prevalence of visions. This was comparable to 39 out of 67 people (58.2%) with post-traumatic stress disorder and psychosis who also reported visions within the last month (Dudley et al., 2024).

Similarly high rates of reporting of visions have been found in those accessing clinical services, not just those actively engaged in research. Toh et al. (2019) found 53% of predominantly people with schizophrenia and voices (N=199) also reported visions, whilst (Isaacson et al., 2022) found that 34 out of 50 people (68%) with first episode psychosis had visions mentioned in their medical notes. Badcock et al. (2021) also found that out of 111 people attending a voice-hearing clinic (predominantly with a psychosis diagnosis), 58.5% of those also reported visions. Such findings challenge the accepted narrative that visions are rare in psychosis. In fact, it seems that it is more common to experience visions if you experience psychosis with voice-hearing, than not at all (Dudley et al., 2023c; 2024) highlighting the timeliness and need to explore visions in more detail.

## 1.6 Experience of visions

### 1.6.1 Phenomenology

Our understanding of what people report seeing is limited. Surveys and interviews with a small number of people with psychosis and visions have shown that people report seeing a wide range of content such as animals, objects or scenery (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2003; Kreis et al., 2023). But the most commonly reported types of visions are of people or shadow figures (Dudley et al. 2012; Gauntlett-Gilbert & Kuipers, 2003). However, there is great variation in the people in the visions. For some, the person with visions recognises the person they see as a vision, either knowing them personally or because they are famous; for others, they are unknown strangers (Gauntlett-Gilbert & Kuipers, 2003). Other common experiences include seeing supernatural or mythical figures, as well as religious beings such as God or the Devil (Dudley et al., 2012; Solesvik et al., 2016). These are referred to as complex visions (Mandford & Andermann, 1998), as they are fully formed visual experiences. In psychosis, complex visions are most common (Waters et al., 2014). This seems to be the opposite to that found in visions in organic disorders, such as dementia or eye disease, where simple visions (e.g. geometric shapes, lines, and patterns) are more commonly experienced than complex visions (Waters et al., 2014).

Whilst it can vary between individuals, complex visions reported by people with psychosis typically share the same physical properties as real perceptions (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2003). Visions are typically dynamic in nature, situated in the external space, and subsequently are often perceived as real external perceptions (Gauntlett-Gilbert & Kuipers, 2003).

### 1.6.2 Multimodality

Visions have usually been studied as if they are isolated, standalone experiences like seeing a static image of a person. However, in recent years, there has been increasing recognition that visions rarely occur in sensory isolation. Lim et al. (2016) found that of 750 people with psychosis, 80% reported hallucinations in other modalities across their lifetime. They also

found that reports of two or more hallucinations in different sensory modalities were twice as high (53%) as unimodal experiences (27%) across people's lifetimes. In terms of the number of different modalities, 29% reported hallucinations in two sensory modalities, 17% in 3 sensory modalities, and 8% in four sensory modalities. Of the 285 who reported hallucinations within the last month, 123 participants (43%) reported hallucinations in two or more modalities. McCarthy-Jones et al. (2017) found that when asked out of 911 people with psychosis, 23-31% reported visions, 9.3-19.3% reported tactile, and 5.8-9.6% reported olfactory hallucinations. Of those with visions, 83-97% of people also reported auditory hallucinations. Toh et al. (2019) recruited 199 people with auditory hallucinations and psychosis, of whom 53% also reported visions, 46% tactile hallucinations, 36% olfactory hallucinations, and 18% gustatory hallucinations. Whilst such research indicates that two or more different sensory hallucinatory modalities seems to be the norm for people with psychosis, the nature of the relationship between hallucinatory modalities (if they were related or not) was unclear. Hence, it was unknown whether these were multimodal or multisensory experiences.

Multimodal hallucinations are defined as hallucinations that occur in more than one sensory modality e.g. seeing a vision of a woman and hearing her talk to you (Montagnese et al., 2021). Most often, the different hallucinatory modalities are 'related', meaning they are from the same origin (from the same source), at the same time, and are congruent with commonly accepted notions of reality (in that they are feasible perceptions e.g. a man talking or a baby crying) rather than incongruent (e.g. a dog talking or a cat barking) (Montagnese et al., 2021; Toh et al., 2022). Visions in people with psychosis seem to not often be single sensory visual experiences but instead are mostly multimodal experiences. More recent work by Dudley et al. (2018) found that out of 22 people with psychosis and visions, 86.3% had multimodal experiences. Similarly, Dudley et al., 2023c found that 52.4% of 82 participants with FEP and auditory hallucinations reported visions in the last month. Of those with first episode psychosis, the most reported combination of visions that talk to the observer, whereas in those experiencing psychosis spectrum disorders more broadly, the most common experience of visions were those that could talk to but also touch the observer (Dudley et al., 2018; 2024). This recognition of multimodal visions seems to have

be initially discussed much earlier by Chesterman & Boast (1994) then again by Hoffman & Varanko (2006), but their work did not seem to shift the focus from auditory to the broader range of hallucinatory experiences.

Visions are not always multimodal and can also be multisensory experiences (Dudley et al., 2018; 2023c; McCarthy-Jones et al., 2017; Mueser et al., 1990; Oorschot et al., 2012), defined as hallucinations that occur in different sensory modalities, but are unrelated in source or time (Montagese et al., 2021; Toh et al., 2022). For example, seeing a vision of a woman, but later hearing the voice of a man. Often in psychosis, when people experience visions, they also hear unrelated hallucinations at different times. For example, 21 out of 22 people with psychosis also experienced unrelated voices (Dudley et al., 2018). For those with visions with multisensory experiences, unrelated voices seem to be the most commonly experienced combination (Dudley et al., 2023c). Such research evidences that it is seemingly rare that people with psychosis only see visions with no other hallucinatory experiences. This is a possible difference to organic conditions, where people mostly report unimodal visions e.g. seeing a dog, with less reporting of hallucinations in other sensory modalities (Dudley et al., 2019).

Such multimodal and multisensory experiences have both important clinical and theoretical implications. Clinically, people with multimodal experiences report higher levels of conviction that their experiences are real, in combination to higher levels of distress and delusional interpretation (Dudley et al., 2023c; Oorschot et al., 2012). Given visions are often multimodal experiences, this could offer understanding into why they are often associated with poorer treatment outcomes (Baegthe et al., 2015; Chouinard et al., 2019; Kreis et al., 2023; Mueser et al., 1990; Oorschot et al., 2012). It is plausible that such experiences are harder to dismiss and manage, and hence have a more detrimental impact on people's functioning. Poorer treatment outcomes could in part also be owing to the bias to focus on auditory hallucinations experiences, rather than other hallucinatory experiences (Waters et al., 2014). As a result, such experiences are going under reported and therefore

services offered are not matching the clinical needs of the people with psychosis (Dudley et al., 2023c).

Theoretically, the co-occurrence of visions and other hallucinations challenges the notion that unusual sensory experiences in psychosis should be viewed and treated in isolation. Instead, if we want to better match people's experiences, we need models and treatments that account for the full range of people's experiences.

### 1.6.3 Appraisals of visions

Key to understanding the impact of such experiences is the way in which people make sense of their visions. People with psychosis often view their visions as a threat to their physical or emotional wellbeing (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005). For some people, this is because of the negative and threatening content of the visions (Waters et al., 2014); for others, it's the presence of visions themselves that causes distress, rather than the content directly (Birchwood & Chadwick, 1997). Understandably because of this, visions in psychosis are predominantly negative, distressing experiences, although in rarer cases, visions can be positive and comforting experiences (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2003; 2005). This tends to differ from organic disorders whereby typically (but not always) visions are more mundane, and hence appraised in a less threatening manner (Waters et al., 2014). This often makes them more accepted as part of their neurological condition, which can provide reassurance for people (Waters et al., 2014). In comparison, in psychosis, there is less understanding about the cause of visions and therefore pathologizing these as part of a mental illness can reinforce feelings of vulnerability, threat, and "madness" (Waters et al., 2014). A helpful illustration of such appraisals of threat to physical or psychological wellbeing is evident in the work reported by Dudley et al. (2012). One participant saw a shadow man in the corner and consequently they believed it meant they would die. Whilst another participant reported seeing an abusive ex-partner's head meant that they would end up being admitted to a mental health hospital. In comparison, another participant saw 'Puppet Punch' who told them to kill themselves, and they subsequently believed that they would end up doing so. Therefore, understanding visions in

a broader context, other than just the content of what is seen, is important to understand their impact on people's lives.

## 1.7 Context of visions

Visions typically last from seconds to minutes (Solesvik et al., 2016; Waters et al., 2024), although some people report seeing visions for hours at a time (Gauntlett-Gilbert & Kuipers, 2003). The occurrence of visions can also vary from appearing only on rare occasions to much more frequent daily experiences (Solesvik et al., 2016). Given such variation, visions can often feel unpredictable (Dudley et al., 2013). However, there are certain situational circumstances that increase the likelihood of seeing visions. Dudley et al. (2013) found that visions most commonly occurred at night, in dark environments, and when people were on their own. Emotional triggers also played a part, as visions were more likely to occur when people were feeling stressed or anxious (Gauntlett-Gilbert & Kuipers, 2003; Solesvik et al., 2016; Waters et al., 2014). However, most of this research used retrospective self-reports of triggers and visions so it is difficult to establish causality confidently. In comparison, Panayi et al. (2024) and Oorschot et al. (2012) used experience sampling method to explore the causal relationship between real lifetime triggers and the subsequent experience of visions. Panayi et al. (2024) found that disturbances of self-organisation (which included emotional dysregulation, interpersonal difficulties, and negative self-concept) also triggered the occurrence of visions. Yet, Oorschot et al. (2012) did not find that negative affect triggered visions. Instead, they found that delusional intensity predicted visions. Thus, there seems to be triggers or patterns to visions, indicating that there may be key dynamic variables that could make visions more or less likely to occur.

## 1.8 Causes of visions in psychosis

As with auditory hallucinations and other experiences reported by people with psychosis, it is plausible to assume that causes for visions are multifactorial, with various mechanisms at play, including a range of genetic, neurobiological, environmental and psychological factors (Freeman, 2024; Teeple et al., 2009). A helpful framework is to assume that various factors

may be related to visions, but it is unlikely that one will be the sole cause. Each factor is an a 'INUS condition' "insufficient but necessary part of an unnecessary but sufficient condition" (Mackie, 1965). This approach emphasises that there is likely an interplay of a range of factors. The influence and combination of such factors will also differ between individuals – with not all factors necessary for any particular person (Freeman, 2024).

However, research into potential causal factors in visions is very limited so such factors are still relatively unknown. Although, the three potential causal factors that have been explored, albeit in only a limited number of studies, are trauma, poor sleep, and reality monitoring.

### 1.8.1 Trauma

It is well established that trauma is strongly associated with psychosis (Giannopoulou et al., 2023; Morrison et al., 2003; Pastore et al., 2022; Varese et al., 2012). There is a recognition that there is a large overlap with the symptoms of psychotic disorders and those of post-traumatic stress disorder e.g. the characterisation of avoidance of triggers, hyperarousal, negative cognition and mood (Quidé, 2023). There appears to be a dose dependent effect – the more traumas someone has experienced, the greater the likelihood of developing psychosis (Badcock et al., 2021; Shevlin et al., 2008). For example, people who had experienced three types of trauma were 18 times more likely to develop psychosis than those without trauma. In comparison, those with five types of traumas in their life were 192 times more likely to develop psychosis (Shevlin et al., 2008). Research strengthening this link demonstrates that post-traumatic stress symptoms have been found to mediate the relationship between trauma and hallucinations (Bloomfield et al., 2021; Varese et al., 2012). More specifically to visions, various studies have found that the experience of childhood trauma (physical, neglect, and sexual) increases the likelihood of experiencing these (Shevlin et al., 2011; Solesvik et al., 2016; ÜCok & Bıkmaz, 2007) indicating that these could be related. Furthermore, as noted, Panayi et al. (2024) found that trauma symptoms precede the experience of hallucinations (both auditory hallucinations and visions), thus suggesting that visions can be related to past trauma.

Traumagenic models (Hardy et al., 2017; Read et al., 2001) have further explained this relationship. Hardy et al. (2017) suggest that trauma can cause vulnerabilities in a range of ways including emotional regulation, event memory encoding, and personal semantic memory that can give rise to a range of perceptual intrusions, which can be perceived as external hallucinatory experiences in those with psychosis. The experience of childhood trauma can lead people to have either increased or decreased stress sensitivity (hyperarousal or dissociative 'shutting down'), or fluctuations between the two strategies as a way of coping with exposure to such threat (Main & Hessel, 1990). Such heightened or dulled emotional reactions can cause sensory-perceptual memory to be encoded to a greater degree or with more clarity (Ehlers & Clark, 2000). This can affect the encoding of event memories as encoding of contextual information is inhibited, whilst perceptual memory is encoded in greater details (Ehlers & Clark, 2000). Hardy et al. (2017) explains how when this trauma memory is then retrieved, the sensory-perceptual information associated with the memory will be experienced more vividly, whilst the recall may be impaired or have an incoherent narrative. Therefore, it may be difficult to recognise this as a trauma memory. The heightened emotion at the time of the trauma memory prevents the development of sensory-perceptual memories into episodic memories, and therefore such memories are then often experienced as involuntary intrusions. This is especially the case when the trauma memory is triggered with little context to normalise this as a past traumatic memory, and therefore experienced as an intrusive perceptual experience. This process is further affected by personal semantic memory, which are the beliefs and schemas about yourself and others. Encoding and retrieval of episodic and perceptual memory can be adapted to be in line with personal semantic memory, which can distort memories further. The example Hardy et al. (2017) gives is the example of someone with the appraisal of 'I'm bad' represented in their personal semantic memory, which was based on an abusive experience during their childhood, will then more readily access episodic and perceptual memories which align with this belief of themselves.

Traumagenic models (Hardy et al., 2017) then explains how vulnerability factors of childhood trauma therefore can give rise to hallucinatory experiences in two ways:

Anomalous experience intrusions and trauma memory intrusions. Anomalous experience intrusions are a result of emotional regulation and autobiographical memory. As mentioned, people exposed to trauma can develop different stress reactions such as hyperarousal and dissociation. Hyperarousal reduces people's thresholds for threat in order to be on guard for any danger. This leads to anomalous hallucinatory experiences as it means people can misinterpret otherwise mundane or ambiguous background noises of people talking as a sign of danger (Dodgson & Gordan, 2009; Smailes et al., 2014). On the other hand, dissociation can lead to anomalous sensory experiences as the continued disconnection from the world around you can lead to difficulties encoding sensory-perceptual memory appropriately (Pilton et al., 2015). This can lead to such memories intruding into people's consciousness and hence the perception of hallucinatory experiences. Autobiographical memory can further impact such anomalous intrusions as it has the capacity to generate novel images congruent with past experiences, but not necessarily directly linked, which can explain the indirect or thematic links with trauma whereby people do not always recognise the content of the intrusion (Dudley et al., 2024 Hardy et al., 2017; Peach et al., 2021; van den Berg et al., 2014)

The second type of intrusions proposed are trauma memory intrusions (Hardy et al., 2017). Trauma memories exist on a continuum or contextualised (whereby the memory is fully encoded with appropriate contextual information to situate this as a part trauma event) to a fragmented memory intrusion (whereby there is no episodic contextual information and instead the person experiences the memory as happening in the 'here and now') and hence gives rise to a hallucinatory experience. The way in which people then appraise such an experience will be key in its impact and consequence (Garety et al., 2005; Garety & Hardy, 2017; Morrison, 2001). Appraisals are typically in line with people's personal semantic memory e.g. someone who believes they are in danger from others will be more likely to interpret hallucinatory experiences as confirmation of such threat and engage in coping strategies to reduce this, such as greater levels of hypervigilance, which further increases the likelihood of experiencing anomalous intrusive memories.

Such models seem particularly pertinent for visions given that flashbacks are one of the core diagnostic criteria of post-traumatic stress disorder (American Psychiatric Association, 2013). Flashbacks are defined as involuntary, distressing visual imagery, which can vary from images to visions (Wearne et al., 2022). Whilst flashbacks can take on any sensory modalities, visual flashbacks are a common form (Brewin, 2025). Hence the traumagenic model would suggest that visions could be anomalous intrusions related to trauma memories that have not been encoded into contextualised episodic memories. Flashbacks and visions can be clinically difficult to distinguish between people with psychosis and those with post-traumatic stress disorder, with people across both groups reporting similar rates, phenomenology, and severity of visions (Wearne et al., 2022). This could be further complicated by findings that visions can be directly related to past trauma (e.g. seeing a past abuser) or thematically linked but viewed as novel visions (e.g. having been attacked by a gang of people, then seeing visions of unknown figures carrying weapons) (Dudley et al., 2024; Hardy et al., 2017). Therefore, it is often then the appraisal of such experiences that could determine whether someone's experiences are perceived as trauma or psychosis (Garety et al., 2001; Hardy et al., 2017; Morrison, 2001).

Whilst trauma is complex and causality is difficult to determine, novel treatments focusing on post-traumatic stress disorder in psychosis have shown promising benefits in the reduction of both trauma and psychotic symptoms (Badcock et al., 2021; Brand et al., 2021; Paulik et al., 2019; van den Berg et al., 2015; Varese et al., 2024). However, these have not yet been explored in relation to visions. Although, it is also important to note that many people experience trauma and do not see visions, whilst others experience hallucinations but have not experienced trauma (Luhrmann et al., 2019). Therefore, trauma cannot be viewed as the sole causal mechanism of visions (Solevik et al., 2016) and other factors must also be explored.

### 1.8.2 Sleep

An additional contributory factor is sleep difficulties, which have been found to contribute to hallucinations (Reeve et al., 2015; 2018; 2019; Sheaves et al., 2016). More specifically,

Brederoo et al. (2021) conducted a large scale non-clinical study of 10,299 people and found that 50% of those had experienced a hallucination in some modality in the last month. By categorising participants into four sleep groups; good sleeper, fragmented sleepers, delayed onset sleepers, and perceived poor sleepers, Brederoo et al. (2021) found that those with fragmented sleep (typically the worst sleepers with poor sleep quality, with more night awakenings) were more likely to experience hallucinations. More specifically, they were the most likely to see visions, for longer durations, with greater distress and impact, than those with other types of sleep difficulties. Although when the different groups did tend to see visions, the content did not seem to differ; instead, it seemed to be the frequency and associated stress that was the key difference. Similarly, Waters et al. (2018) found that longer durations of sleep deprivation increased hallucinatory experiences, with visions being the most commonly reported symptom. Thus, demonstrating that visions can happen to many people under certain conditions, such as poor sleep. They are not simply a sign of a psychiatric disorder.

However, the exact nature of the relationship between sleep and hallucinations is unknown. It has been proposed that visions could be a result of “rapid eye movement (REM) intrusions of visual imagery intruding into wakefulness” (Waters et al., 2016, p.2). Whilst Harrington & Cairney (2021) suggest that sleep deprivation limits the inhibitory control network underlying memory suppression, enabling unwanted traumatic thoughts to dominate into consciousness and remain there for longer periods of time. This is particularly important given the link with trauma, discussed above. Such impairments in memory suppression then underpin emotional dysregulation, as unwanted thoughts trigger emotional reactions, which can provoke a deterioration in mental wellbeing (Harrington & Cairney, 2021). Promisingly, psychological treatments focused on sleep have also been found beneficial in reducing psychotic symptoms, including auditory hallucinations (Freeman et al., 2017; Waite et al., 2023)

Whilst the exact nature is unknown between sleep and visions, there seems to be a plausible pathway given reports of sleep-related visual phenomena. Most commonly, up to

70% of the general population report experiencing hypnagogic (fleeting perceptual experience occurring on the boundaries of falling to sleep) and hypnopompic hallucinations (those occurring on the boundaries of waking up) (Foulkes & Vogel, 1965). However, these distinctly differ from visions which occur in full consciousness by definition (Waters et al., 2014). So, whilst this could give us some direction for future research, such sleep-related experiences do not seem to fully account for those experienced in people with psychosis as they are quantitatively different experiences (Waters et al., 2014).

### 1.8.3 Reality monitoring

Another proposed causal mechanism of visions is a difficulty in reality (or source) monitoring, which is the ability to recognise if a perception or action originates from an external ('real') source or an internal ('imagined') source (Johnson & Raye, 1981). This is based on research which has consistently found that clinical and non-clinical voice hearers are more likely to misattribute internally generated thoughts to external perceptual events (Brookwell et al., 2013). Bentall (1990) explained that people make judgements on whether things are real or not based on a combination of different contextual information. It seems that for those who hear voices, they are more likely to make overconfident judgements about the source of information, biasing them to be associated with external sources (Bentall, 1990). This is likely to happen at a preconscious level and hence could offer insight into how auditory hallucinations can share the same perceptual qualities to real external perceptions (Bentall, 1990).

Brébion et al. (2008) applied this theory to people with psychosis and visions by showing participants a collection of objects presented as either words or pictures. Participants were later asked to decide if they were shown either a picture or the word of the object. People with visions were found to more likely misattribute being shown words as pictures, than those without visions e.g. recalling that they were shown a picture of a bear, when in fact they were only shown the word 'BEAR'. This was understood to arise when showing people with visions the words of an object, it promoted such a vivid internal mental image that they later found it difficult to distinguish if they were shown a picture or a word or whether they

just imagined this image. The proposed mechanism being that people with visions have a heightened sensory of mental imagery that causes such external bias and confusion. When Aynsworth et al. (2017b) replicated this study, they did not find the same between group difference as Brébion et al. (2008). Instead, they found that people with visions had a specific tendency to misattribute words to pictures, but not pictures to words. Such bias was not evident in a control group of people with psychosis who reported auditory hallucinations only. Thus, still supporting the notion that visions could be attributed to difficulties in recognising internally generated images versus external events. However, research into reality monitoring in visions is limited. It is, therefore, difficult to generalise from such findings.

Whilst the different causes of visions are still relatively unknown or under researched, there does appear to be a shared causal mechanism or core issue that could be at play across all of those discussed above. It seems to be a key difficulty causing the confusion about what is real and what is not. Frameworks such as predictive processing (Fletcher & Frith, 2009; Friston, 2009; Lyndon & Corlett, 2020, Teufel et al., 2015) have been used to explain hallucinations in general, which Collerton et al. (2023) extended to visions specifically. These accounts suggest that there are various factors that can make errors about if a perceptual experience is real or not. Such frameworks suggest how our brains come to form perceptions through a process of combining incoming 'bottom-up' sensory stimuli from the external world, with prior 'top-down' expectations based on past life experiences and learning, as well as dynamic factors such as attention or emotional arousal (Collerton et al., 2023). Given that the amount of perceptual information that an individual is exposed to at any one time is extensive and ambiguous, it can lead to multiple hypotheses about what is happening. Therefore, the brain aims to quickly infer from all of these incoming 'bottom up' signals as to which is the correct perception in order to determine what is actually going on (Wilkinson, 2014). To understand the world as purely bottom up, and therefore in its 'true' manner would be burdensome and tiresome, and therefore to be more efficient, the brain instead makes best guess judgements about what the perceptual experience. This means then that system is not foolproof, and therefore can be prone to making mistakes about perceptions, particularly when under strain for example e.g. increased stress, poor sleep,

low quality light conditions. It could be that when facing such conditions, the brain is more likely to misinterpret such signals and therefore could lead people to experiencing hallucinations.

It has been proposed that people with psychosis have an over-weighted top-down bias, whereby they rely more heavily on expectations of the world, making inferences on these, rather than updating this with the incoming bottom-up signals from the external world (Bentall, 1990; Collerton et al., 2023; Fletcher & Frith, 2009; Lyndon & Corlett, 2020; Teufel et al., 2015). More specifically, Collerton et al.'s (2023) framework explicitly acknowledges that different mechanisms could be at play to produce visions in different populations. For example, in eye disease, it could be that the loss of vision means that the quality of incoming data is much more degraded, leading people to rely on internal priors, which could lead to more prediction errors and subsequently more visions. In comparison, for people with psychosis where sleep deprivation or intrusive trauma memories may be commonly experienced, people's capacity to attend to incoming sensory data is reduced and hence this is more ambiguous. Therefore, creating an overreliance on top-down expectations to make perceptual judgements. Given the high rates of trauma in people with psychosis, this can lead people to have more negative, unsafe expectations of the world (Steenkamp et al., 2023). People with psychosis perceptual systems could therefore rely more heavily on a 'better to be safe than sorry' premise in order to feel safer. This means that they are more likely to assume that threat is present (even if they are wrong) and take preparatory action for this, such as avoiding a situation with perceived threat, rather than hold off judgement for more incoming bottom up signals, and risk getting this wrong and placing themselves in danger (Dodgson & Gordan, 2009; Haselton & Buss, 2000; Haselton, 2007; Smailes et al., 2014). The need to stay safe overrides the potential of 'false positives'. Ambiguous sensory experiences then become more easily perceived as external, hallucinatory experiences, rather than understood as a misinterpretation of inner thoughts or memories. This bias could also explain why people's visions in psychosis are often multimodal. It is rare that anyone would see someone standing statically in the environment, with no level of engagement with the world around them. Instead, we expect people to be dynamic, as an interactive being who can talk and touch people, and hence an overreliance on top-down

processing could lead people to see visions in line with such expectations. Furthermore, a person who has the ability to interact with you could be perceived as more threatening (in line with prior beliefs), than a static image that could be more easily dismissed as unreal, thus could be a result of such overreliance of prior expectations.

Such models of perception draw on biopsychosocial factors to explain visions, which whilst are helpful to understand the complexity of visions, are less helpful when developing targeted treatments given the wide range of influential factors at play. Therefore, for effective treatments to be developed, single specific and measurable mechanisms should be identified and targeted (Freeman, 2011; 2024). Therefore, going forwards this thesis will focus on psychological factors contributing to visions to increase our knowledge and treatments in this area, but acknowledge that there will be other biosocial factors that could also impact visions (Collerton et al., 2024; Teeple et al., 2009; Waters et al., 2014).

## 1.9 Treatments of visions

Whilst most people with psychosis are distressed by their visions, this is not the case for everyone who experiences these. As noted earlier, Aynsworth et al. (2023) found that 84% of people in a non-clinical sample reported unusual visual experiences in their lifetime. At least 5-7% reported seeing visions within the last month (Aynsworth et al., 2023; Rogers et al., 2024). Even higher rates were found by Linszen et al. (2022) of 21.5% (also within the last month). It is important to note that these non-clinical participants reported experiences similar in content to those with psychosis, such as people, figures, and animals (Aynsworth et al., 2023; Linszen et al. 2022). Yet, participants in these studies were not seeking or receiving clinical care. Therefore, it does not seem to be the presence of visions alone or even what people see that automatically accounts for distress.

As found in other unusual sensory experiences, such as auditory hallucinations, a key factor in determining distress is the appraisals associated with such experiences (Chadwick & Birchwood, 1994; Garety et al., 2001; Morrison, 1998). People with psychosis often appraise

their visions as a sign that there is a threat to their physical or emotional wellbeing (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005). In comparison, non-clinical individuals are more likely to appraise their visions as non-threatening, with more validating and reassuring explanations, such as their eyes are playing tricks on them or they are tired (Aynsworth et al., 2023). As a result, they are not as distressed by such experiences and do not seek or require clinical care. The emphasis on appraisals is key to Cognitive Theory of emotional disorders (Beck, 1976) which posits that it is not the experience of an event (in this case hallucinations) per se that leads to distress, but instead the appraisal associated with the experience (Chadwick & Birchwood, 1994).

Recognising that distress is driven by unhelpful or unrealistic appraisals led to a number of attempts to offer psychological treatments for visions. O'Brien and Johns (2013) reported a case study where they used Cognitive Behavioural Therapy (CBT) for phobias as a novel way to treat visions. The patient reported seeing visions of snakes and insects, which she was also phobic of; believing they would harm her. To avoid feeling distressed when she reported seeing visions of snakes, she would often escape the visions, leaving the room. Using a graded exposure approach, the clinician developed a hierarchy of increasingly fearful situations to help the person to learn that the visions of the snakes would not harm her. After 20 sessions, the patient's fear of snakes **and** frequency of visions had reduced. Whilst a promising case example, unless people saw visions of things they were phobic of, which is rare, the utility of such an approach would be limited in most clinical situations.

Collerton and Dudley (2004) adapted the CBT model for auditory hallucinations (Chadwick & Birchwood, 1994; Morrison, 1998) to treat visions. This was based on the similarities found between appraisals in auditory hallucinations and those in visions; both of which were predominantly threat-based beliefs (Chadwick & Birchwood, 1994; Morrison, 2001; Gauntlett-Gilbert & Kuipers, 2005; Dudley et al., 2012). Collerton and Dudley (2004) explained how there were reinforcing loops between people's behaviour, physiological responses, attention, and emotions which maintained and strengthened their distressing beliefs. They described how certain safety seeking behaviours (e.g. leaving a situation when

they see a vision or being on hyperalert in case they see a vision) inhibit people's ability to form new alternative dis-confirmatory beliefs. This then reinforces their threat appraisals by confirming that they were only safe by avoiding the vision (or situation). The model accounts for how the individual's perception is influenced by attentional biases and top-down prior beliefs, whereby the more people expect to see visions, the more they will experience these. Such an expectancy can explain the similarities found in the content, place and time of their visions.

To test Collerton & Dudley's (2004) model, Wilson et al. (2016) conducted a single case experimental design. The aim of the intervention was for people to learn that they were safe from their visions by reducing the conviction in their associated threat-based beliefs. The treatment emphasised that whilst the fear may be real, the danger from the visions was not. Treatment consisted of 8-10 sessions and involved three stages: 1) Psychoeducation to reduce perceived stigma and fears of emotional threat, 2) Strategies to challenge the belief that the vision was real and to reduce perceived physical threat, and 3) Imagery transformation to alter the vision, if the content itself was distressing. Four participants completed daily measures (to establish their baseline) and throughout treatment. The results were mixed. Whilst two participants reported reduced frequency of visions on their self-report measures, these were not evidenced on the standardised measures. The two remaining participants did not show any change in scores.

Learning from Wilson et al. (2016), Thomson et al. (2017) then made two key adaptations to the treatment. Firstly, people's appraisals were not always in relation to harm. Key appraisals regarding the content (i.e. gruesome or violent visions) or the sheer persistence of the visions (i.e. 'I have no control') were understood to also drive distress. Therefore, the model was adapted to consider appraisals around the content and persistence of visions. Secondly, people with psychosis often require more time or more sessions in their treatment (Rodriguez-Sanchez et al., 2007; National Institute for Health and Care Excellence, 2014). Therefore, Thomson et al. (2017) also extended the number of treatment sessions offered. Despite such amendments, results remained mixed. Of the five participants, visual

analysis of scores indicated a significant reduction in distressing appraisals and affect for three people, and the frequency of two participants' visions also reduced. However, such benefit was not demonstrated on the standardised measures. The reasons for this were unclear. It could have been that the standardised measures were not appropriate to detect change or the idiosyncratic measures were not appropriately matched to the standardised measures. Alternatively, it could have been a result of the small sample size or that the model itself was not adequate to treat visions, hence it is difficult to truly interpret the outcome of these studies.

More recently, Paulik and Taylor (2024) used an imagery focused treatment for visions. Recognising that distressing mental images often accompany people's visions (Morrison, 2001), Paulik and Taylor (2024) used techniques such as imagery rescripting, safe place imagery, and compassionate imagery, to see if this could modify people's beliefs about the visions that drove distress, or even the visions themselves. They found that doing so led to a reduction in the severity of visions and their associated distress. However, recruitment was based in a transdiagnostic voices clinic. Only 3 out of 10 participants were diagnosed with a psychosis, and therefore may not be representative of people seeking treatment in clinical psychosis services. They also used an unvalidated self-report measure, so similar to Wilson et al. (2016) and Thomson et al. (2017), the measure may not have been sensitive to capture change.

Since then, there have been no other psychological targeted treatments for visions in psychosis. As such, whilst attempts have been made with some signal of benefit, these have not been robustly demonstrated. The need for effective treatments remains.

#### 1.10 Key issues in the literature

Whilst research to date has been a helpful starting point, visions have not yet been systematically explored or phenomenologically understood to provide a solid foundation upon which to build and test specific treatments targeting visions. There is a lot we do not know about visions. One key reason for this is that the visions have largely been explored

using primarily quantitative approaches. As a result, we do not have many detailed qualitative descriptions and understanding of the phenomena of visions. If we are limited in our understanding of the detail of what people see, we are less able to develop targeted and effective treatments for these.

The second reason is that the measures used are often limited in their ability to adequately assess and explore visions to provide such detailed knowledge (Aynsworth et al., 2017a). Firstly, they often only ask a limited number of questions about visions (typically only 2 or 3) which are usually focused on frequency (Aynsworth et al., 2017a), rather than impact or content. Secondly, the questions are often overly sensitive (such as “Do your eyes play tricks on you?” in North East Visual Hallucination Interview (Mosimann et al., 2008)) or “When I look at things they appear strange” as in the Revised Launay Slade Hallucination (Morrison et al., 2000) or overly specific (such as “On occasions, I have seen a person's face in front of me when no one was there” in Launay Slade Hallucination Scale (Launay & Slade, 1981)). Overly sensitive and broad questions could lead to the overestimation of visions by including experiences that do not meet the definition of visions (such as illusions or misperceptions; Blom, 2010). In comparison, very specific questions, whilst they may better capture experiences that meet the definition of visions, may also neglect to capture the wide range of visions that people see and hence lead to an underrepresentation of visions (Aynsworth et al., 2023). Thirdly, the measures used to explore visions rarely have established psychometric properties, which question their validity and reliability to accurately capture visions (Aynsworth et al., 2017a). Fourthly, visions measures predominantly view visions as unimodal experiences, and so do not ask questions about other multimodal experiences. And fifth, without appropriate measures to explore visions, we are limited in our ability to develop treatments to adequately explore visions, test associations with important causal factors or detect change. See Table 1:1 for a summary of the most commonly used measures of visions, including key strengths and weaknesses of each. For a more comprehensive review, see Aynsworth et al. (2017).

**Table 1:1**  
*Summary table of visions measures*

| Measure                                                                     | Strengths                                                                                                                                                                                                                                                                                                                                                  | Weaknesses                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oxford Liverpool Feelings and Experiences (O-LIFE; Mason et al., 1995)      | <ul style="list-style-type: none"> <li>- Demonstrates internal consistency, test-retest reliability, construct validity, and factor analysis</li> </ul>                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>- Assesses frequency only</li> <li>- Three questions on visions</li> <li>- Lack of lived experience input</li> </ul>                                                                                                                                                                         |
| Rating Scale for Psychotic Symptoms (Choinard & Miller, 1999)               | <ul style="list-style-type: none"> <li>- Items on both simple and complex visions</li> </ul>                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>- 3 questions out of 44 on visions</li> <li>- Assesses frequency of different vision content only</li> <li>- Lack of psychometric properties</li> <li>- Lack of lived experience input</li> </ul>                                                                                            |
| Cardiff Anomalous Perceptions Scale (Bell et al., 2006)                     | <ul style="list-style-type: none"> <li>- Demonstrates internal consistency, test-retest reliability, and construct validity.</li> <li>- Translated and tested in different languages</li> <li>- Captures distress, frequency, and intensity, if item endorsed.</li> </ul>                                                                                  | <ul style="list-style-type: none"> <li>- Only tested on 20 clinical individuals, with 336 non-clinical.</li> <li>- Only 5 questions on visions</li> <li>- Lack of lived experience input</li> </ul>                                                                                                                                 |
| Questionnaire of Psychotic Experiences (Rossell et al., 2019)               | <ul style="list-style-type: none"> <li>- Demonstrated test-retest intraclass coefficient, internal consistency, and convergent validity</li> <li>- PCA identified a 4-factor solution</li> <li>- Broad inclusion of questions including content, frequency, location, duration, distress, and impact</li> <li>- 15 items on visions (out of 50)</li> </ul> | <ul style="list-style-type: none"> <li>- Interview (although a shortened version is available)</li> <li>- No lived experience input</li> <li>- 173 participants including range of different disorders including schizophrenia, bipolar disorder and major depressive disorder</li> <li>- Lack of lived experience input</li> </ul> |
| Launay Slade Hallucination Scale – Revised (LSHS-Ra; Morrison et al., 2000) | <ul style="list-style-type: none"> <li>- Demonstrated internal consistency, and PCA</li> </ul>                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>- Only 4 questions on visions</li> <li>- Only measures frequency of items</li> <li>- Lack of lived experience input</li> <li>- Tested on 105 non-clinical participants</li> <li>- No lived experience input</li> </ul>                                                                       |
| Revised Hallucination Scale (Morrison, Wells & Nothard, 2002)               | <ul style="list-style-type: none"> <li>- Updated version of LSHS-Ra to include vividness of imagery and daydreaming</li> <li>- Demonstrated test-retest reliability, internal consistency, and criterion validity</li> </ul>                                                                                                                               | <ul style="list-style-type: none"> <li>- Only scored frequency on items</li> <li>- Tested on 132 non-clinical participants</li> <li>- Lack of lived experience input</li> </ul>                                                                                                                                                     |

|                                                                                       |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Launay Slade Hallucination Scale – Revised (LSHS- Rb; Laroi and Van der Linden, 2005) | <ul style="list-style-type: none"> <li>- Broadened content of visions to LSHS-Ra and RHS to ‘Do you see things or animals that aren’t there?’ to be more inclusive than previous question that asks if people have seen a face in front of them</li> <li>- Demonstrated internal consistency</li> <li>- Performed PCA</li> </ul> | <ul style="list-style-type: none"> <li>- Tested on 236 on-clinical participants</li> <li>- Only explore frequency of content</li> <li>- Lack of lived experience input</li> </ul> |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

*Note.* PCA = Principal Components Analysis.

Finally, there is a notable lack of working with people with lived experience of visions.

Future work on visions would therefore benefit from inclusion of lived experience, drawing on the ‘There’s nothing about us, without us’ principle (Corstens et al., 2014) to ensure that those often marginalised by their experiences, are instead repositioned to being central and active in the decision making processes about them (Biggane et al., 2019; Corstens et al., 2014). By involving people with lived experience in research, they can offer valuable insights that cannot be obtained elsewhere, such as through expert clinicians or researchers (Turner et al., 2020). It enhances the ability to ask and address meaningful questions in appropriate ways, ensuring that research is relevant to those who will be impacted by this (Biggane et al., 2019). This has led to innovative treatments for auditory hallucinations, such as Talking with Voices (Longden et al., 2021; 2022) which stemmed from the International Hearing Voices Movement, so could also lead to such promising outcomes in people with visions. By listening to and working with people with lived experience, the Talking with Voices intervention saw a shift from traditional goals of therapy of symptom reduction to instead supporting people to change their relationship with their voices to be more positive and understanding (Longden et al., 2021; 2022). To date, there has been a substantial lack of public and patient involvement in visions research. Instead, this has been almost entirely researcher-driven (Waters et al., 2014). If we wish to develop better treatments for visions, we must include and give a voice to people who experience these.

In summary, there is a lack of crucial fundamental knowledge about visions. If we are to develop effective treatments for these, it is essential that we firstly better understand the phenomena of visions. This will enable the development of more appropriate assessment measures of these, which in turn will aid greater understanding of potential causal mechanisms leading to visions that can be targeted in specific, tailored, treatments. Underpinning this process with people with lived experience will ensure meaningful questions and research is conducted in appropriate ways to increase the engagement and success of such work.

### 1.11 A new approach to treatment development

In recent years, there has been a change in how psychological therapies for symptom-specific treatments are developed and delivered. The interventionist-causal paradigm (Kendler & Campbell, 2009) has challenged the standard treatment format of 16-24 sessions of CBT focusing on addressing appraisals and safety behaviours, to instead focus on brief treatments that target specific causal mechanisms underpinning distressing experiences. Such an approach allows for multilevel explanations, whereby there is a recognition that multiple factors interact to cause complex phenomena, such as visions. To achieve this, a stepped approach to treatment development is advised (Clark, 2004; Freeman, 2024; Skivington et al., 2021). The first step is to conduct clinical interviews to ensure researchers have a detailed understanding of the phenomena being explored. The second is to construct a model of maintenance factors which explains why the difficulty does not correct itself. The third is to test these hypothesised maintenance factors using robust and rigorous experimental studies. The fourth step is to design treatments that target such maintenance factors. The fifth step is to then test their efficacy in treatment studies. And finally, if efficacious, the next step is to make the treatment broadly available for use. This paradigm uses robust experimental methods to develop powerful targeted treatments. By manipulating hypothesised causal mechanisms through treatment, it allows the theoretical testing of a model by evaluating the effects on specific symptoms (Kendler & Campbell, 2009). All of this is underpinned by involving people with lived experience in research to ensure it is meaningful and appropriate for those who experience the condition (Clark, 2004; Freeman, 2024). By developing a strong theoretical model that incorporates multiple

mechanisms, it is possible to produce efficacious treatments which are personalised for individuals as they can identify which treatments are better suited to them based on their difficulties (Freeman, 2024; Kendler & Campbell, 2009). Not all may feel relevant for each person and therefore will offer people a sense of choice and ownership of their treatment (Carlisle et al., 2022). Instead of persisting with previous approaches (Thomson et al., 2017; Wilson et al., 2016) given the limitations discussed, this approach offers a novel way to learn about and treat visions.

This thesis aims to apply the first three steps of this translational approach to treatment development to visions. This approach has been revolutionary in developing more effective treatments for people with paranoia in psychosis (Freeman, 2016; Freeman et al., 2021a) and shows promise with people with grandiose beliefs and voice-hearing (Isham, 2023; Sheaves, 2023). But it has yet to be applied to visions. By doing so, this thesis aims to address and potentially overcome previous limitations, and take the first steps to a systematic programme of research to develop the first effective treatment(s) of visions. Given the increasing recognition of the common occurrence of visions in psychosis and their highly distressing nature, it seems timely to begin to address this unmet clinical need.

## 1.12 Thesis aims

The overall aim of this thesis is to develop and test a novel theoretical framework for visions in psychosis. It will do this by working with a Lived Experienced Advisory Panel (LEAP) and peer researcher throughout all stages.

### 1.12.1 The objectives are:

- 1) Use qualitative interviews to understand the phenomenology of visions (Chapter 2).
- 2) Use qualitative interviews to understand people's appraisals of visions (Chapter 3).
- 3) Develop and test an outcome measure to be used in treatment development (Chapter 4).

- 4) Test associations between hypothesised maintenance factors in people with visions (Chapter 5).

## 2 Visual hallucinations in psychosis: What do people actually see?

### 2.1 Chapter Abstract

**Background:** One in three people with psychosis experience visions. However, little is known about what people see, and current treatments have limited benefits.

**Objectives:** To improve the understanding and treatment of visions, this study explored the phenomenology of visions in people with psychosis.

**Methods:** Twelve people with psychosis participated in semi-structured interviews asking about their visions. Reflective thematic analysis was used to analyse the data.

**Results:** Three main themes were generated covering important aspects of phenomenology: 'Content', 'Coherence' and 'Quality'. The first theme 'Content: People see people', demonstrated that the most distressing visions were of people. The second theme 'Coherence: Visions of people who behave like people', captured how visions were coherent with real human behaviour, often by being multimodal experiences that spoke to and touched the observer. The third theme, 'Quality: They look too real' highlighted the compelling sense of authenticity of the visions, making them indistinguishable from reality.

**Conclusions:** Visions represent what we expect to see in everyday life: people, who act and look real. This powerful combination provides insight into the absorbing and all-encompassing nature of visions and their impact on participant's lives. The framework of

'Content', 'Coherence' and 'Quality' provides guidance to support clinicians and researchers to better explore the phenomenology of visions in psychosis

*This chapter is adapted from the journal article attached in Appendix 1: Aynsworth, C., Waite, F., Sargeant, S., Humpston, C. & Dudley, R. (2025) Visual hallucinations in psychosis: What do people actually see? Psychology and Psychotherapy: Theory, Research and Practice, 98(1), 58-73. <http://doi.org/10.1111/papt.12553>*

## 2.2 Introduction

Visions are the experience of seeing something in the absence of external stimuli (Waters et al., 2014). They are common in people with psychosis; the experience when people lose some contact with reality (National Institute of Mental Health, 2023). Approximately one in three people with first episode psychosis experience visions (Allen et al., 2023) and may be even more common in those who also report auditory hallucinations (Dudley et al., 2023c). When present, visions are associated with significant clinical consequences, including more frequent and prolonged hospital admissions, greater likelihood of suicide (Baethge et al., 2005; Mueser et al., 1990; Oorschot et al., 2012), impaired functioning and greater symptom severity (Kreis et al., 2023). Yet currently, there is a lack of effective treatments for visions (Collerton et al., 2005; Thomson et al., 2017; Wilson et al., 2015).

One route to produce more helpful psychological therapies is to first ensure a close and detailed understanding of the unique features and mechanisms that contribute to a specific problem (Clark, 2004). This approach has been successfully applied to other experiences reported by people with psychosis, with persecutory delusions (Freeman, 2016; Freeman et al., 2021a), grandiose beliefs (Isham, 2023), and voice-hearing (Sheaves, 2023). However, such an approach is yet to be applied to visions. To date, there has only been a limited number of studies exploring the phenomenology of visions, which have largely used quantitative approaches. Whilst it is important to highlight that whilst Gauntlett-Gilbert & Kuipers (2003; 2005) used interviews to explore these, they used a structured format and descriptive statistics for the results rather than an in-depth qualitative analysis approach. These found that typically people reported seeing humans, faces or figures with fewer seeing animals and objects (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2003). This work also found that visions in psychosis are most likely to be multimodal experiences. Visions can also talk to and touch the person experiencing them (Dudley et al., 2018; Dudley et al., 2023c; Hoffman & Varanko, 2006). Whilst informative, the quantitative measures commonly used in research often only ask a limited number of questions on visions (Aynsworth et al., 2017a), which lack detailed exploration of these experiences, or include questions that are overly sensitive or too specific which can over- or under-estimate

people's experience of visions (Aynsworth et al., 2023). Thus, there is still a crucial lack of phenomenological description and understanding of visions that are important to understand if better treatments are to be developed.

So, whilst the quantitative approaches have been helpful in highlighting key categories of visions, it is evident that much more detailed phenomenological understanding is needed if treatments are to be able to better target visions (Freeman, 2024; Clarke, 2004). Whilst there have been a handful of individual accounts of visions or interviews about these (Colori, 2020; Gauntlett-Gilbert & Kuipers, 2005; Young Minds, 2024), there has not yet been a systematic exploration and detailed qualitative analysis of visions across people to build a greater understanding of the shared experience of visions. As a result, there are many things we still do not know. For example, there is not a clear understanding of exactly what it is that people beyond 'people', figures' or 'faces'. It is unclear how they appear to the observer, or relationships between the multimodal aspects of visions. Furthermore, we do not know how the visions present themselves or even behave for example. Therefore, a necessary first step to improve the understanding and treatment of visions is to learn from first-hand accounts of the experience. In this study, we used semi-structured qualitative interviews to gather detailed descriptions of the phenomenology of visions. We wanted to address the research question: 'What do people with psychosis who have visions actually see?'.

## 2.3 Method

### 2.3.1 Design

A Big Q qualitative design was used (Kidder & Fine, 1987). Big Q methodology is qualitative research conducted within a qualitative realm, as opposed to conducting small q research which conducts qualitative research outside of a truly qualitative realm such as positivist, realist positioning, codebooks or mixed methods which can involve application of a quantitative techniques alongside qualitative. Small Q approaches believe in a consensus across raters, hence the use of a codebook. Whereas Big Q methodology encourages a

reflexive, interpretivist and non-positive position which acknowledges individuals will inevitably bring bias to the process because of their life experiences and hence the results presented are only one way of interpreting the data.

A Lived Experience Advisory Panel (LEAP) helped to design the study and contributed to the interpretation and understanding of the findings. This study was approved by the NHS Health Research Authority (HRA) Newcastle and North Tyneside 1 Research Ethics Committee (reference: 21/NE/0099).

### 2.3.2 Epistemological position

A critical realist ontological approach was taken to this research. This assumes that whilst there is one shared reality, peoples' perspectives of this are influenced by language, culture, and life experiences, meaning that the 'true' reality is only partially accessible (Clarke, 2021). A contextualist epistemology underpinned this position, which believes that humans act in context, and that they cannot be separated from the lives in which they live (Braun & Clarke, 2021a). Within this stance, data collected does not represent a 'true' reality. Instead, researchers' subjectivity can be used to generate themes and understandings, which will be influenced by their own experiences and biases. Therefore, maintaining reflexivity is essential throughout the analysis.

### 2.3.3 Participants

A criterion-based purposeful approach was taken to form the participant group (Palinkas et al., 2015). This is a commonly used approach in qualitative research that uses information-rich cases to allow for efficient data collection within limited resources (Patton, 2002; Palinkas et al., 2015). This was based on the following inclusion criteria: (a) current experiences of visions defined as 'visual perception-like experiences that occur without an external stimulus. They are vivid and clear, with the full force and impact of normal perceptions, and not under voluntary control' (American Psychiatric Association, 2013), (b) have a psychosis spectrum diagnosis (e.g. F20-F29 as classified in the ICD-10), (c) receiving

care within an NHS mental health team, (d) aged 16 years or above and (e) willing and able to provide informed consent. Exclusion criteria were: (a) visions only when under the influence of drugs or alcohol, (b) visions only when on the borders of sleep, i.e., hypnagogic/hypnopompic hallucinations, (c) visions that are only fleeting or rarely occur so a detailed interview would not be relevant, (d) significant brain injury or neurological condition, including dementia, to ensure that visions are unlikely to be a result of this, rather than psychosis or (e) moderate to severe learning disability meaning it could affect the capacity to provide informed consent. Participants were recruited from NHS psychosis services in the North East of England.

#### 2.3.4 Procedure

The topic guide (Appendix 2) was developed in collaboration with four people with lived experience, existing literature, and consultation with researchers in this field. Feedback encouraged the inclusion of positive aspects of visions to encourage less distressing content to also be shared, as well as asking people about how their visions have evolved over time. Working with the LEAP ensured the topic guide explored people's experiences of visions in an open and curious way, with clear, unambiguous language. Whilst questions and prompts were included in the topic guide, it was used flexibly to respond spontaneously with questions or responses to each participant's narrative. Where people had more than one type of vision, the interview focused on the vision that they felt was most distressing or important to gain the most comprehensive understanding of their experiences. Potential participants were initially approached by a member of their clinical team. Those interested were then contacted via phone to arrange a screening with a Clinical Psychologist, trained in qualitative research (CA). During which the Participant Information Sheet was shared and participants were given the opportunity to ask questions. If willing, an interview was then arranged and conducted by CA. Written informed consent was given prior to participation. This included consent to the use of pseudonymised quotes. Interviews were audio-recorded on an encrypted dictaphone, and then transcribed verbatim and pseudonymised by CA. Participants were able to choose their own pseudonyms. Transcripts were then double checked by CA against their recording to ensure their accuracy.

### 2.3.5 Reflexive thematic analysis

Braun and Clarke's six-phases of analysis (Braun & Clarke, 2006) were used iteratively to ensure thorough data exploration. First, CA familiarised herself with the data, by transcribing the interviews, reading and re-reading the data whilst making initial notes. Initial codes were then generated, by reviewing the data several times. This then allowed CA to generate themes, collating all data relating to each of them in Nvivo 12 (QSR International Pty Ltd, 2021). Part of the analysis was also conducted by hand to consider the data multiple ways to encourage greater reflexivity. Themes were reviewed in supervision and with members of the LEAP, then re-reviewed, generating several thematic maps to consider how best to convey the meaning of the data. Subsequently, themes were then defined, named, and ordered appropriately to reflect a narrative representation of participant's experiences. An example of this iteration was that initially a theme of 'Multimodal experiences' was generated, which involved descriptions of the different multimodal and multisensory hallucinations. However, reporting in such a descriptive way missed the crucial element of how and why multimodal hallucinations particularly impacted on people and caused greater distress. Instead, on reviewing with the LEAP and supervisory team, what emerged was that what was most important in the accounts is that multimodal experiences were the most coherent with how real humans are experienced. We subsequently then removed the aspects of multisensory from the theme, as this told us less about the phenomenology of people's visual experiences and instead how they appraise their hallucinations more generally (explored further in Chapter 3). Another example of the impact of the LEAP in analysis was the adaptation of Table 2:1. Initially, this had included participants demographic information alongside a brief summary of what their visions were. However, summarising people's experiences felt reductive of people's experiences. Considering that both participants and the LEAP members were passionate for people to truly understand their experiences, it was felt that using quotes as descriptions achieved this better as they captured much more detail as to what people's visions were really like. Given the detailed descriptions used, we then removed demographic information to help protect their anonymity.

### 2.3.6 Reflexivity and considerations of data quality

Reflexivity “involves a disciplined practice of critically interrogating what we do, how and why we do it, and the impacts and influences of this on research.” (Braun & Clarke, 2021a, p. 5). To conduct high quality analysis, it is essential to understand the researchers own perspectives (Elliott et al., 1999). To aid this, CA first engaged in a bracketing interview to help elicit values, assumptions, and biases prior to the interviews. This was supported by CA keeping a reflexive journal noting her reflections with regards to both conducting the interviews, and throughout the analytic process. To further reflect on subjectivity, coding and themes were regularly discussed and refined in supervision and with peer researcher, who has relevant lived experience, where different insights or perspectives were considered. The results from both this study and chapter 3 were then discussed with participants, where possible, to further validate our findings. The COREQ guidelines were also followed to support quality assurance (Tong et al., 2007; Appendix 3).

In line with Braun and Clarke's (2021) ownership of subjectivity, the following statement is written in the first person. I am a White British cis-gendered female from a working-class background, working as a Clinical Psychologist. I have specialised in working in a range of services delivering psychological therapy for people with psychosis. This has influenced my position to believe that psychosis (and therefore visions) is largely impacted by people's life experiences and cultural context. Subsequently, I believe that people's experience of psychosis and visions have important meaning for each individual and are not simply a symptom of a psychiatric disorder. The research team are experienced in developing and delivering psychological treatments for distressing psychotic experiences, with Rob Dudley and myself specifically exploring visions within our research. Equally, Samuel Sargeant along with lived experience also explores historical accounts of visual hallucinations from the medieval period onwards. Therefore, our knowledge will have influenced the current analysis (Braun & Clarke, 2021a). However, we hope that the inbuilt quality considerations enabled us to recognise researcher subjectivity, whilst remaining open minded and curious to participants narratives and the subsequent data analysis presented below.

### 2.3.7 Sample size

Unlike small q methodology, Big Q (and hence RTA) recognises data saturation indicates a 'fixed end point', whereby no new information can be learnt. RTA, however, takes the approach that codes are never truly 'fixed' or 'final', as there will always be new information and understanding to learn with new people's experiences or viewpoints (Braun & Clarke, 2021b). As a result, they advise against taking a predetermined sample size ahead of analysis, as judgements about when to stop data are 'inescapably subjective' (Braun & Clarke, 2021b). Therefore, we decided to not include a justification of the sample size. Instead, we emphasise throughout the chapter that this is our analysis and understanding, recognising limits to this, and highlighting that there is much more to learn on this area.

## 2.4 Analysis

### 2.4.1 Contextualising the data

Thirteen people were approached for the study. One person declined to be screened. Twelve participants took part (8 male and 4 female; mean age 38.1 years, SD =10.9 and range 22–58). Seven participants were from Early Intervention in Psychosis teams, four from Community Mental Health Teams, and one from an Inpatient ward. Most participants were diagnosed with Psychosis Not Otherwise Specified (n=8), three with schizophrenia and one with schizoaffective disorder. All but one of the participants were White British. Eight interviews were conducted at clinical bases and four at participant homes. Interviews were on average 81 mins (SD =13:58; range 57–101 min). See Table 2:1 for content of people's visions.

**Table 2:1***Content of participant's visions*

| Participant | Content of visions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sarah       | "I see [deceased friend]... I see her as a normal person...I seen her clear as day and I was hearing her clear as day, like she was sitting right beside us...When she talks to us, it's very, very negative. Telling us to hurt meself, telling us to do things...It's not like I can look through her, it's not an outline of a person. It's actually like I'm looking at you."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Mick        | <p>"I'll have full on visions of people. I always see a man in the corner of me room. It was only ever when I was going to bed at night. Just literally like sought of stood there and stared. He's not like someone I recognise or anything like that. I can tell it's a man. He's quite big. You can see shoulders, y'know when you breathe and move up and down slightly. But no face, no hair, just like bald... it's as clear as you sat in front of me now."</p> <p>"I was seeing people like walking through the garden, hiding, banging on the window, as if trying to like break in and smash the window or something like that... sometimes I can make out a face, sometimes it's like I almost recognise the person...other times there's like no face – I can see clearly they've got the marks of a face but there's no mouth, there's no eyes, it's just like holes."</p> |
| Emily       | "I see mannequins. Sometimes they're dressed, sometimes they're naked. They're tall, discoloured like pale, sometimes they don't have facial features, sometimes they'll have facial features, like when I say facial features I mean like the eyes, the nose, everything you'd see on a human body I see there. It's a human face on a mannequin. There's no distinguishing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

sometimes if it's a male or a female. It's just a mannequin. They're always still in one position. Sometimes they're silent, some of them don't say anything, they just appear but then it's just distressing because they'll say things like, "Put cyanide in your mams tea, go on, do it, do it, hurt yourself", which I try not to listen to. I can feel the breath in my inner ear. It's like somebody licking the insides of my ear."

"I see snakes. Big ones, erm, very long ones. I see them everywhere and they're just like crawling."

Felix

"[I see] a man in a grey t shirt always walking past the window. All I can see is his blue pants and his grey t shirt and [he] kind of hasn't got a face. It's like a shadow, dark and black. It hasn't got any visual looks.... He just walks past slowly."

"Then I seen kids at the bottom of my bed... I used to hear, you know like when you can hear a school playground in the background, I was hearing that and obviously I was lying in bed and kind of waking up, they were there."

"I seen like a lot of shadows, like in the corner of me eye, like just kind of moving. But me most recent ones flies, and rats, and mice in me house."

Scarlett

"[I see] things that I recognised and things that I'd never seen before like the children with no eyes or the black mass, kind of like a human but not. Just imagine like the darkest shadow you can have, the body's like an oval and it's got a round head and it's in the foetal position, but on all fours rather than at the side. It's like stretched like stretched out. It's like malformed but you can see the shape of the head, and then it can kinda like spread to try and feel the wall...But it's just so

black...If I do choose not to ignore it, it normally brings on the tactile hallucinations where I feel itchy and like my skins on fire... I feel like there's ants crawling and it will get really hot and itchy and sometimes it feels like stuff behind my eyes as well. As if it's like almost forcing us to look at it."

Tony

"Sometimes I see, like, figures, shadowy figures sometimes they're a little bit more fleshed out than that. Sometimes, I see deformed creatures, deformed babies, hybrid animals sometimes I see a mix between a man and a dog, which is quite negative and harmful and vicious, erm, other times I just see something – I just thought my [child] was there and [they] wasn't."

"I see this guy who looks like he's been burnt, he's a prominent one at the moment. He tends to hang about in me [child's] bedroom or the landing of the house. He doesn't speak but the voices I get will speak, are commenting on him. I never see his face 'cause he's burnt there, so you see some eyes, he's got some black shit around his face, like black burns. He seems to come out of me kids wardrobe, he seems to live in there, he just walks past us, mainly at night, and he will just go to the other side of the room."

Rodney

"The weird person I see is called [famous person]. He looks like him, I smell the smell [of rotten vegetables] before I see him and that's how I know when he's going to appear, ya kna. I just kna he's gonna bring us down and call us names 'Ah you're useless, you should have done this, you should have done that.'"

"I've seen dogs as well. I smell that first and then I can look down, and I can feel it moving around my legs, ya kna, woving in and out, what they do. And I think, 'My god, who's dogs that?'"

Kyle "I see evil clowns. They're opaque. So, it's exactly the same as me and you. I seen them [the clowns] in the street, but I mostly see them behind the windows. So, if I move back from the window, they've got their hands pressed on the window...They speak to me also... They tell me to kill people. Also calling me names, saying they're going to kill my family."

Joseph "[Famous person] drove past me. And then from that point onwards, I then began to see there was just like stream after stream after stream of famous people driving past me. Just anybody and everybody. It could have been, let's say about 200 hundred people driving past me... It's famous people and people connected to my life.... Some people drive past and I smile and give them a little joke and something, and some people would drive past and belittle [me]...It was all real to me at the time, they all seem real."

Lily "I see my [past abuser] obviously. He's dead now, but I see him... He started to threaten me, and he kept saying, 'See I told you you'd never get rid of me'... he touches me whenever he goes passed, he will either pull my hair or run his hands down my face and my neck...He's just the same as like you and I talking. I can see him the way I can see you."

"I see dead people with half a face."

Yogi

“All different kinds [of people] – mostly the military. I see kids, I see men, women, wounded people, upset people, happy people, it all depends. But most of them are the military who have been shot or even worse. Missing limbs. Blood all over their faces.”

“[I also see] just random people that I don't know, I've never seen. They just stand there, staring at us either smiling, laughing. Or I'll have some ones that are crying. They'll have the facial expression, they'll point at ya, shake their head like you're doing something wrong.”

Liam

“It can vary. It can be completely different. Setting things alight in the house, when I've been sitting watching TV if I've had clothes drying on the radiator, me clothes will combust and go up in flames but the description of the actual flames are not real, they're almost cartoon-like. The same car will go past, what 20 times but the best way of describing them is a cartoon style flat non- dimensional car, so it just looks like a cardboard cut-out, so there's no shape or any sort of dimensions to it, it just a flat.”

“There was a vision of me, of what I was wearing that afternoon, a vision of meself on fire. Flames coming off me back. The best way of describing it was a holographic type image, like a CCTV image of meself being replayed over and over, a loop on repeat, of me shouting...the image itself was that convincing, I think I convinced myself that it actually was happening, being visually replayed in front of us.”

### 2.4.2 Overview of analysis

Three main themes were generated and covered key phenomenological aspects of visions: content, coherence, and quality. The first theme 'Content: People see people' described how participants typically saw visions of humans or human-like beings. This included two subthemes: (i) 'Links with the past' highlighted that visions can relate to participants earlier, often traumatic, life experiences in both direct and thematic ways and (ii) 'Uncanny Valley' identified that whilst visions typically took the form of someone with a human body, there was often a distinct feature or odd quality that identified the vision as not a real human. The second theme was 'Coherence: Visions of people who behave like people', which acknowledged that people's visions often shared dynamic human-like qualities, which added to their compelling nature. This included a subtheme of 'Coherence mirrors mood' explaining how such coherency often fluctuated with participant's moods. The final theme was 'Quality: They look too real'. This captured the real-life perceptual quality of the visions, and the implications of this.

### 2.4.3 Theme 1 – 'Content: People see people'

This theme describes the main content of the visions that participants reported seeing was people. Table 2:1 shows that a range of experiences were reported including animals, insects, or fleeting shadows, but the most distressing or important for participants was seeing people. These experiences seemed to be more distressing, and impactful on participant's lives, as they were much harder to ignore. Some participants recognised the person they saw. This could be people from their past, famous people, or even people from their nightmares. Whilst for others, the people in the visions seemed unrelated and unknown.

*"He looks like [famous person] and he wears black clothes and all black jacket. He's all dressed in black...I just sit on the sofa and he stands up, he never sits down or anything. He just stands there and he paces."* Rodney

*“Just random people that I don't know, I've never seen. I've never seen on movies, never seen on the telly. Just random people. They just stand there, staring at us either smiling, laughing.” Yogi*

The context in which people reported visions was important to the content. When visions of people were seen in participant's homes, they had developed into more of a 'character' or a personified entity with an energy or personality which could stay for prolonged periods of time. Such visions were in some way 'fixed' to a certain place (predominantly their homes), whereas in comparison when outside of their homes, the participants often experienced a random mix of unknown people, that were more fleeting.

*“Each person or whatever I see, it's like they're locked in the place that I see them. So 'The Man' is only ever in the bedroom. I don't see any of the others in the bedroom. All of the others will be in the garden.” Mick*

*“[Famous person] was at my last home I was in as well, but I never seen him out in the open or in the daytime or out walking, it's always in the house that I see [him].” Rodney*

#### *2.4.3.1 Subtheme 1 – 'Links with the past'*

This subtheme reflects how visions often resembled past, and often traumatic, life experiences. Despite not directly asking people about life experiences, traumatic experiences were often discussed. Participants spoke of having struggled throughout their lives. This related to visions in three ways. First, visions could be directly linked to past life experiences, which participants could often also recognise, such as seeing the vision of a person who was related to a traumatic event.

*“I see the older version of [past abuser]. The one I see more clearly is the older [version of abuser], but the younger [version of the abuser] is the one that strangles me. He's the one I*

*see in the morning, with his hands around my throat. I can see the hate in his eyes, it's like he's soulless, there's no soul."* Lily

Second, there were instances where the link was not obviously direct but rather there were thematic links between the visions in the present (such as how the visions made the participant feel) and how the participant felt during past traumatic life events. However, these links were not always obvious to the participant but instead were more so to the researcher throughout the analysis.

*"Sometimes, like, at first my reaction was to like cowl and turn – not be like friendly, not to be accepting of the person driving past me – to see it as a humiliation... you know, like going back to the [birthplace] experience when I was very young, I was absorbing that material as a reaction to the people driving past me. ...Yeh, it triggered me back to that kind of personality self that I've kind of brought in those early years."* Joseph

Third, there could be an association between the time of adversity in participants lives and the visions in the present.

*"This was about the time I was getting bullied. I would have weird kind of nightmares. There used to be like a little like vent thing above the door...There were nothing there, I don't know why it was there, but I used to have nightmares about a faceless man looking through at us whilst I was sleeping and sometimes I'd wake up and I'd see the face there. Only for a second whilst, you know, your brain realises and your eyes realise that you're awake, but when I think about it, the kind of face there with just skin but like no, no eyes or mouth or anything like that, that is very similar to what I see [now]. It's almost like 'The Man's' a grown-up version of that."* Mick

#### 2.4.3.2 Subtheme 2 – ‘Uncanny Valley’

The second subtheme relates to the ‘Uncanny Valley’ effect (Mori, 1970), which explains how objects that bear resemblance to humans, but lack fundamental human qualities, can provoke feelings of eeriness and repulsion. Whilst participants reported seeing humans, they often lacked specific features or had a distinguishable quality that highlighted that the vision was not a real human, which was often puzzling or unsettling for them. The missing human element varied, such as a bodily feature (often eyes or face) was missing or dismembered, the clothing worn was from a past era, or the vision embodied a caricature of a human such as clowns or mannequins.

*“I can tell it's a man. He's quite big. You can see everything...But no face, no hair, just like bald...No features whatsoever...It's as if I'm seeing three quarters of it and the rest hasn't loaded.” Mick*

*“These figures just had no face, flesh coloured, no clothes, no face, nothing identifiable as a human apart from the physique.” Tony*

*“They weren't like kids were dressed now, like. They were kind of dressed as World War 2 type people. So, like, they have faces and stuff, like little boys and girls and they were just playing around. They were dressed like old fashioned so I was kind of thinking ‘Why would they be dressed like that?!’” Felix*

*“I see evil clowns. They've got big fuzzy orange hair. Quite plumpish. Snakes eyes, you know how it's horrible. In blue dungarees, face paint, red nose, sharp teeth. Sometimes, I'll see them walking down the street or hiding behind a bush, but mostly it's behind the window.”*

Kyle

#### 2.4.4 Theme 2 – ‘Coherence: Visions of people who behave like people’

The second theme generated describes how the visions were very much like real humans owing to their human-like qualities and the way in which they behave. This was often due to their multimodal nature, whereby peoples' visions often involved different sensory modalities, such as being able to touch or talk to the person, which added to the visions compelling realness.

*“He will pull at me, or I'll feel his hands around my neck, he touches me whenever he goes passed. He would just grab me, smack my face off the door. I felt his whole hand on my back push me down the stairs...He calls me every name under the sun.” Lily*

*“I would score the mannequins as being the most distressing because when they speak the like hairs on the back of my neck just stand up, it's like I've been electrocuted, it's like being fully wired to a telephone pole...It's the fact they speak. It's the fact I hear the voice and that's distressing.” Emily*

##### 2.4.4.1 Subtheme 1: Coherency mirrors mood

This subtheme reflects how the level of coherence was often dynamic. It often varied depending on participant's mood; with visions often becoming more coherent when low in mood. Several factors contributed to this: the multimodality and content of visions, their behaviour, and the duration they were present. When feeling low, the visions were more likely to be multimodal, such as the visions were more likely to speak and touch the participants. The content could also change when low in mood, with the visions saying more derogatory or insulting comments in a more aggressive nature to the participants, such as by shouting at them. The visions behaviour would also appear more negative and aggressive such as intruding into peoples' personal space, grabbing the participant, or staring in an intimidating way. And finally, when participants' mood was low, the visions would stay present for longer periods of time. Such factors added to the coherent nature of visions making them more believable. In comparison, when feeling calmer, participants

experienced the visions as less multimodal, so the visions would speak less or not at all, and their behaviour was less aggressive. Participants found this less distressing, therefore, enabling them to manage their visions more effectively.

*“Well, sometimes she talks to us when she's there, when I can see her...when she talks it's very negative. A lot of the time it's when I'm really, really low and I'm feeling really low about meself.” Sarah*

#### 2.4.5 Theme 3 – ‘Quality: They look too real’

The final theme generated was in relation to the perceptual quality of how the visions appeared to participants. Visions were not fleeting images in the corner of their eye or vague shadows. Instead, they had a compelling sense of reality in that visions shared the same level of perceptual detail, clarity, intricacy and depth as real people or objects. Such complexity and vividness of the visions, combined with the coherency of these, seemed to make the visions all-absorbing, whereby participants reported finding it almost impossible to disengage their attention.

*“These visions have always been very real to me, they're as real as you to me sitting [there], I could be touching you and it would feel like I'm touching a human, so they're not something like smoke when you put your hand through it, it disappears. They're very physical and they're very real.” Emily*

*“[When paying them attention] they become more real. They're real already but they become more outlined. Like my whole attentions on them, they seem like everything's going blurry but them [the visions]. It's like when my whole attentions on them, nothing else matters 'cause all my attention goes on them. 'Cause I want to know if they're actually real or not.” Yogi*

*"It's like watching a car crash, d'ya know what I mean? You can't look anywhere else. You just like absolutely locked onto it, like. You feel like you wanna run away and hide from it. But you can't take your eyes off it." Mick*

Consequently, owing to such difficulty discerning if visions were real or not, participants struggled to trust their own eyes. Understandably this had a detrimental impact on participant's lives, with them discussing being unable to leave their homes owing to a fear of being overwhelmed, acting inappropriately or being judged by others.

*Yogi: "That's why I don't like being around people, I don't like going out anymore 'cause I don't know who's real and who's not. If I go out – me mate normally says 'Are you coming to [restaurant] or a drink at the pub?', I'll just back down straight 'No'. 'Cause the last time I went in, I saw visions all over the place."*

*Interviewer: "What happened then?"*

*Yogi: "I had to go home. In a bar full of people. Real people and you're seeing even more people that aren't even there. Then other people start looking at you going, 'What's he looking at?'. Just doesn't feel right."*

*"I get really paranoid that people are staring at us and because I don't want them to. I don't know if it's going to be real or not like cause the man I saw, who [partner] didn't see. I don't know if he was just a man that left [the area] or if it was someone I was just seeing. Because [partner] should've seen him by the direction of where he was looking, so I don't like it when that happens so I try and avoid it. I don't want to go out and have a conversation with someone and my partner goes, 'Who are you talking to?'" Scarlett*

## 2.5 Discussion

To our knowledge, this is the first qualitative analysis exploring the phenomenology of visions in people with psychosis. Twelve participants provided rich accounts of their visions, demonstrating the incredible intricacy and intensity of these experiences. The three themes generated highlighted the content, coherence, and quality of visions. Typically, visions represented what people would expect to see in the everyday world: people, who behaved like people (such as having the capability to talk to and touch participants, increasingly when participants were in lower moods as if mirroring their feelings) and looked like humans (shared the same perceptual qualities as real living people). This powerful combination of content, coherence, and quality provides an important insight into how the complexity and vividness of visions contribute to their compelling sense of reality.

These findings are consistent with previous research which found that participants most commonly see people (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2003), and that these are often multisensory and or multi-modal experiences (Dudley et al., 2018; Dudley et al., 2023c; Hoffman & Varanko, 2006; Toh et al., 2022). Yet our study provides much more detailed descriptions of precisely what people see, how the vision behaves and how they appear to the observer. Our findings support the notion that visions are seemingly much more complex, multimodal experiences that can interact with people. They are not silent or static images that can be easily dismissed. Such findings provide insight into why visions can be so distressing and impactful on people's lives (Baethge et al., 2005; Chouinard et al., 2019; Mueser et al., 1990; Oorschot et al., 2012).

Furthermore, whilst not specifically asked about, we found that participants spontaneously spoke about how their visions were related to important (often traumatic) experiences in their lives. As with auditory hallucinations (Hardy et al., 2005), visions seem to have direct content and thematic linkage with adversity and meaningful events. Emphasising that the content or experience of visions is meaningful in the context of the person's life (Calcott et al., 2011; Dudley et al., 2024).

In terms of theoretical understanding, frameworks such as Predictive Processing Frameworks (Fletcher & Frith, 2009; Friston, 2009; Lyndon & Corlett, 2020, Teufel et al., 2015) and Collerton et al's framework (2023) could explain seeing visions that represent what we might expect to see in our social world. Such frameworks suggest that perception is an unconscious process which combines sensory data from the environment with prior beliefs (or expectations) about the world. Therefore, hallucinations may arise by an "over-weighting of prior beliefs relative to sensory perceptions" (Kafadar et al., 2020). As social creatures, we are primed to see dynamic people; static/silent humans are less usual, which could lead the brain's expectations to override perception to make the visions more multimodal in content. The relationship of visions to past trauma and the increasing levels of coherency when people were low in mood (as if the visions were mirroring their moods) could also be explained by these theories (Collerton et al., 2023; Fletcher & Frith, 2009; Friston, 2009; Lyndon & Corlett, 2020, Teufel et al., 2015) – whereby difficult life experiences (both day to day and past) influence people's expectations and biases to an extent which are difficult to undo. Hence such prior beliefs can seemingly override, or even ignore, other sensory data and lead people to see more distressing negative content or people from their past trauma in their visions. However, discussions with the LEAP questioned the reliability these frameworks to explain visions. Whilst there was an acknowledgement that such theories likely play a function in all of our perceptions and can lead to misperceptions at times, it lacks sufficient detail to provide explanations as to how people's visions could be so vivid, complex, and prolonged in duration. In the absence of acceptable or convincing explanations, patients with psychosis have described engaging in a process of meaning making (Chapter 3). From a cognitive perspective, appraisals are central to determining the impact of experiences (Beck, 1976). Working with appraisals is a key part of cognitive therapy approaches to voices (Morrison, 1998) and visions (Collerton et al., 2005; Thomson et al., 2017; Wilson et al., 2015). Therefore, there is an opportunity for further development of cognitive approaches to visions drawing on the phenomenology outlined here to help make sense of (or appraise) people's experiences. For example, seeing visions of people that look and behave like real people (i.e. the coherence and quality of the phenomenon) could provide insight as to why people may appraise their experiences as real

people and are therefore difficult to dismiss. Further to this, an interaction between mood and the phenomenology of visions was described: when participants were lower in mood, visions would present as more negative or aggressive in their behaviour, which could offer an understanding as to why visions are often appraised as threatening (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005).

### 2.5.1 Limitations

There are several limitations to the study that need to be considered. First, the sample was predominantly White British which reflects the demographics of the North-East of England where the study was conducted (94% White British according to the latest census; Office for National Statistics (ONS), 2022) and who access local mental health services (83.7% White British; Campbell-Lee & Cohen-Tovee, 2023). However, given the findings relating to past experiences and social context influencing the content of visions, we expect there may be differences with a more diverse participant group, especially given the inequalities and discrimination that different ethnic groups can face (Equality and Human Rights Commission, 2016; Runnymede Trust, 2021). This is of particular importance given the overrepresentation of people with psychosis from ethnic minority groups (Baker et al., 2021; Selten et al., 2020). Second, this study focused discussions on the most important or distressing visions that people wanted to talk about. However, many people do not find visions problematic (Aynsworth et al., 2023; Linszen et al., 2022). Therefore, such findings may not apply to those who are less distressed by their visions, for example people who are not seeking clinical care, or people in the earlier stages of psychosis (Dudley et al., 2023a; 2023b) or older adults where visions are typically unimodal (Dudley et al., 2018) as such groups may see different types of visions. However, the limited work to date has shown similarities between non-clinical and clinical groups in terms of content of what is seen (people, faces). Third, this study explored visions in people who were able to provide rich detailed accounts of their visions. A greater range of phenomenology may be experienced which has not been captured here.

Future studies investigating different populations and experiences would be helpful to extend our understanding of visions. For example, phenomenology of visions may differ between people diagnosed with psychosis and people diagnosed with other conditions such as eye disease, traumatic brain injury, sleep disorders, similar to those already conducted in dementia (Lai et al., 2016; Renouf et al., 2018), where there is an indication that visual hallucinations may be more unimodal (Dudley et al., 2019). Alternatively, given our results are consistent with the work indicating an important role for trauma in psychosis (Dudley et al., 2023b; 2024; Shevlin et al., 2007; Varese et al., 2012), especially in those with visions (Solesvik et al., 2016), it would be helpful to consider if different types of trauma may lead to the different phenomenology of visions.

### 2.5.2 Research and clinical implications

The findings provide a framework to guide both clinical and research questions through three important areas: the content, coherence, and quality of visions. First, to ensure visions are accurately assessed, better assessment tools, including psychometrically robust measures, are required. This framework could also guide questions during clinical assessments. First, clinicians could explore the detailed content of what people see. This could identify links to past trauma or identify any unique qualities of the visions which could identify this as a vision compared to a real person (such as through the Uncanny Valley effect). Second, clinicians could consider the coherency of their visions such as exploring multimodal aspects of these, and how the visions can change depending on a person's mood. Third, the quality of experiences could be explored to gain more understanding of how the visions physically appear to the person and how that may impact people's reactions to this. By capturing more comprehensive information about visions, it could support the delivery of core therapeutic principles in clinical care, such as normalising and empathy to reduce internalised stigma (Chapter 3; Renouf et al., 2018) and enhance therapeutic alliance (Goldsmith et al., 2015). More specifically, targeted techniques could be developed from this learning. We noted the 'Uncanny Valley' observation that visions often lacked a human quality, which people found distressing. However, such discrepancies could in turn be used to generate doubt and help to test if the vision is real or not, which could foster more helpful coping e.g. if the vision is missing eyes or a mouth, then it could be used to consider

the coherency of the experience. This could be a route to help meet the need for acceptable and convincing explanations of visions that patients are seeking (Chapter 3).

### 2.5.3 Conclusion

Traditionally visions have been viewed as fleeting, unimodal experiences. However, the first-person accounts in this study indicate that visions are much more complex, vivid, and absorbing experiences which share the same perceptual qualities as seeing humans or objects in the everyday world. We provide a framework to support clinicians and researchers to ask about people's visions: to explore the content of what people see, enquire about the coherence of the visions, and consider the perceptual qualities of these.

### 3 “I just want an explanation”: A qualitative investigation of how people with psychosis make sense of visual hallucinations

#### 3.1 Chapter Abstract

**Background:** Visions in people with psychosis are common and are often distressing. Cognitive theory emphasises a central role of appraisals in determining distress. We explored how people make sense of their visions to inform the development of targeted cognitive treatments for visions.

**Design:** Semi-structured interviews were conducted with 12 participants with psychosis recently reporting visions.

**Methods:** Reflexive thematic analysis was utilised.

**Results:** Participants lacked convincing and acceptable explanations as to why they saw visions. The absence of a credible explanation led people to rely on two ways to make sense of their experiences. One was to hold explanations that remained ‘Unconvincing and acceptable’ – such as visions were internally generated in some way, perhaps owing to poor sleep or past trauma. These were unconvincing as they did not account for the life-like reality of how visions appeared. The second was ‘Convincing but unacceptable’ appraisals. These were typically threat-based interpretations – such as ‘It’s here to harm’ or ‘I’m mad’. Whilst these appraisals were often more believable, they were associated with higher levels of distress. Appraisals were not static. They changed in response to dynamic factors such as the presence of visions and the participants’ own emotional state.

Conclusions: Participants described a need to understand why they see visions. Yet the most convincing explanations often led to high levels of distress. Generating credible and acceptable ways of accounting for visions and understanding the dynamic factors that drive vision-specific appraisals may provide a potential route to improve cognitive treatments for these experiences.

*This chapter is adapted from the submitted journal article attached in Appendix 4:*

*Aynsworth, C., Dudley, r., Sargeant, S., Humpston, C., & Waite. F. (2026). "I just want an explanation": A qualitative investigation of how people with psychosis attempt to make sense of visual hallucinations. [Manuscript submitted for publication]. School of Psychology, University of York.*

## 3.2 Introduction

As demonstrated in Chapter 2, visions are complex, vivid, and all-encompassing experiences. In many cases the visions are of people, that behave like people (by talking to and touching the observer) and look like people (sharing the same perceptual qualities as any other “real” experience) (Chapter 1; Dudley et al., 2018). Consequently, they have a compelling sense of reality, making it hard for people to distinguish if visions are real or not. People can find such experiences incredibly distressing (Dudley et al., 2013; 2023; Gauntlett-Gilbert & Kuipers, 2003; Solesvik et al., 2016), which can lead to a greater likelihood of hospitalisation, suicidality, and poorer functioning (Baegthe et al., 2015; Kreis et al., 2023; Meuser et al., 1990; Oorschot et al., 2012).

However, it is not simply the presence of hallucinations alone that accounts for this distress. Instead, a key factor driving distress is a person’s appraisal of such experiences (Garety & Hardy, 2017; Morrison, 1998). Cognitive theory of auditory hallucinations postulates that people with psychosis predominantly have threat-based maladaptive beliefs about the hallucinatory experiences e.g. that voices mean they are vulnerable to harm, either physically or emotionally. In turn, this leads to increased emotional distress and behavioral responses such as hypervigilance or avoidance, which not only increases the likelihood of the occurrence of hallucinations, but also inhibits dis-confirmatory information about their maladaptive thoughts (Chadwick & Birchwood, 1994; Morrison, 1998). In comparison to such negative threat-based appraisals in people with psychosis, non-clinical voice-hearers report more normalising, spiritual or supernatural explanations (Brett et al., 2007; Peters et al., 2017). A central notion therefore of CBT is to reframe these maladaptive beliefs to more normalising appraisals to reduce the associated distress and occurrence of these (Dudley et al., 2023b).

Similarly to auditory hallucinations, appraisals could be key in understanding distress associated with visions. Not only are visions associated with psychosis but they occur in non-clinical populations. Aynsworth et al. (2023) found that 84% of a non-clinical sample reported visions during their lifetime, with 5% of people endorsing these in the last month.

Linszen et al. (2022) found even higher rates of 21.5% occurring within the last month. Many (37%) of these experiences were similar in content (seeing figures, people) to those reported by people with psychosis. Instead, the differences seemed to occur in the way in which people made sense of their visions. People who were not distressed by visions reported more normalising explanations such as that the visions result from their eyes playing tricks on them or from being tired (Aynsworth et al., 2023). Whereas, people with psychosis report that their visions are a threat: they are a sign they are losing their mind, or that they will be physically hurt by the vision (Dudley et al. 2012; Gauntlett-Gilbert & Kuipers., 2005). These differences are consistent with cognitive theory which emphasises the fundamental role of appraisals in accounting for the distress and impact of an experience (Beck, 1976).

However, there is recognition that whilst people with psychosis often hold negative or threat-based beliefs about voices, this can encapsulate numerous different types of appraisals. Mawson et al. (2010) reviewed how different types of appraisals of auditory hallucinations affect distress; considering appraisals of malevolence, supremacy, acquaintance, approval and acceptance. Even within each of these categories, people held a variety of appraisals. Sheaves (2023) recognised that whilst malevolence appraisals are related to distress, most of the variance was unexplained and hence looked further to understanding appraisals of a particular subtype of voice hearing (derogatory and threatening voices). Such growing understanding has been facilitated by various measures of voices that specifically assess different types of appraisals (Armstrong et al., 2022; Mawson et al., 2010; Sheaves et al., 2022). By better acknowledging the wide range of appraisals, it will hopefully lead to further refinement of models and development of more effective treatments (Mawson et al., 2010).

Unlike hearing voices, visions in psychosis have been given little consideration from a cognitive therapy perspective. There have only been two small case series using cognitive therapy for visions, and these showed limited reduction in distressing appraisals (Thompson et al., 2017; Wilson et al., 2016). A possible explanation for this lack of benefit was that

these approaches were not tailored to the unique experience and specific appraisals of visions (Collerton & Dudley, 2004). Instead, they were adapted from auditory hallucinations models which predominantly viewed voices as a threat to people's emotional or physical wellbeing (Chadwick & Birchwood, 1994; Morrison, 2001). Whilst these case studies also extended appraisals to include distress caused by the content and/or persistence of the visions, given the range of different types of appraisals in auditory hallucinations, it would be sensible to assume that similarly there would be a much greater range of appraisals in visions also. However, there is yet to be detailed qualitative analysis of specific appraisals that people may hold in relation to visions. Instead, much of our knowledge of visions has relied on quantitative measures that lack detail about the experience of seeing things that others do not (Aynsworth et al., 2017a).

Owing to the impact and need for improved treatments, it is timely and important to progress the understanding of how people come to appraise their visions. By listening to and learning from people with lived experience, we aim to develop better treatments tailored for visions.

## 3.3 Method

### 3.3.1 Design

This chapter uses the same participants and topic guide as Chapter 2. However, the findings are presented separately as they answer two different research questions.

#### 3.3.1.1 *Lived experience input*

As this study used the same methods as the study presented in Chapter 2, lived experience was combined across both studies. See Chapter 2 for more details. An important point to add here is that the results of these two chapters, where possible, were discussed with participants to further increase the validity of the results. Participants were positive about the findings, indicating that they felt that we had captured their thoughts and experiences

well. Comments included a slight sadness that their clinical care teams had not known such information in order to better support them, but were pleased to be a part of a project that will hopefully change lives for others in the future. They were pleased to know that others had had similar experiences to them, as was apparent in the themes found across the data set, which made them feel less alone with their experiences.

### 3.3.2 Reflexivity and considerations of data quality

Given the research question in this chapter is different to Chapter 2, a reflective statement has been provided below an extension from the one in Chapter 2. It is written from a first-person perspective in line with Braun and Clarke's (2021) ownership of subjectivity. The COREQ guidelines were also followed to support quality assurance (Tong et al., 2007) (see Appendix 5).

### 3.3.3 Reflexive statement

The background of the research team remains the same as the reflexive statement in Chapter 2. Initially I had been concerned about focusing on appraisals only, owing to a concern that the data was viewed through purely a 'CBT' eye given the large influence of this on my own clinical practice, and supervisors experience. However, through detailed exploration of the data, supervision, and discussions with the LEAP, it was evident that appraisals were of central importance for people. To do participant's narratives justice, it was vital that we explored their causes of distress through such detailed focus to allow participants voices to be heard. Especially in an area where so many participants reported feeling unheard.

## 3.4 Results

### 3.4.1 Contextualising the data

See Chapter 2 for more details on participants' demographics. However, a summary of the content of visions are reported below in table 3:1.

**Table 3:1**  
*Summary of participants' visions*

| Participant<br>(Pseudonym) | Summary of vision(s)                                                                                |
|----------------------------|-----------------------------------------------------------------------------------------------------|
| Sarah                      | Deceased friend, that could speak to her.                                                           |
| Mick                       | Unknown people in the back garden, often banging on window.<br>A faceless man in bedroom.           |
| Emily                      | Mannequins that could speak to her.<br>Animals.                                                     |
| Felix                      | A faceless man walking past windows.<br>Insects.                                                    |
| Scarlett                   | A black mass, which could change shape and take on a human form.                                    |
| Tony                       | A man with burn injuries.<br>Shadow figures.<br>Hybrid creature of man and a dog.                   |
| Rodney                     | A famous person, who would smell of rotten food and could talk to him.<br>A dog.                    |
| Kyle                       | Evil clowns banging on windows, threatening to harm him and his family.<br>Animals.                 |
| Joseph                     | Famous people driving past in cars.                                                                 |
| Lily                       | A past abuser who could talk to and touch her.                                                      |
| Yogi                       | A mixture of people, but mostly old military people, who were sometimes injured.                    |
| Liam                       | Cartoon-like representative of objects.<br>Complex scenery.<br>Animals and mythical type creatures. |

### 3.4.2 Overview of analysis

An overarching theme and two main themes were generated to understand how people made sense of their visions. The overarching theme captured an absence of explanations. It

was evident that people did not understand why they saw things that others did not. This drove participants to engage in a process of searching for a way to make sense of their experiences, which is demonstrated in Figure 3:1. This broadly led to two accounts of their experiences. ‘Unconvincing but acceptable’ explanations of their visions (Theme 1) were often held with relatively little conviction as they were not sufficiently comprehensive to explain the full complexity and realness of participants’ visions. ‘Convincing but unacceptable’ explanations (Theme 2) were described as more believable as they captured the life-like experience of visions or were more in line with participants’ views of the world or self. Yet, such accounts were also more unacceptable to participants because they were often threat-based understandings, which caused high levels of distress and negative impact on people’s lives. Therefore, participants were left searching for ‘Convincing and acceptable’ explanations, which were elusive. See Table 3:2 for an overview of the themes with illustrative quotes.

It is worth noting that the themes captured below include both explanations that relate directly to why the visions were occurring but also subsequent appraisals about what seeing visions meant about the participants (discussed further in Appendix 6 in relation to how thematic maps were developed for the results). Therefore, we encourage the reader to see this as a representation of how people make sense of their visions more broadly, which includes the complex dynamics between explanations and appraisals.

### 3.4.3 Overarching Theme – ‘Absence of an explanation’

The overarching theme generated was the absence of explanation for why participants experienced visions. Participants did not have clear ideas as to why they were seeing visions. Despite being in mental health services for many years, participants reported that they were rarely spoken to about their visions, and received little to no support or advice as to how to manage visions or the associated distress. This left participants not only feeling let down by services, but also feeling further confused and concerned by the visions. Subsequently, participants felt stuck, and unable to “move on” with their lives.

*“I’d just like to know what’s like happening, like what’s going on in me brain and, just make it, like just understand things that are like happening to us.” Felix*

*“I don’t know, I wish someone would just tell us, you know. So basically this whole thing, not knowing what it is, has messed my life up cause it’s put my life on hold. That’s all I want. I just want an explanation of, you know, what I’m seeing, what I’m experiencing every day. It’s stopping me from getting on with my life ‘cause at the minute, I’ve got no life, I’ve got no direction, I’ve just got me trying to function the best I can everyday without knowing what’s wrong.” Emily*

The complex, vivid, and all-encompassing nature of the visions (as highlighted in Chapter 2) demanded an explanation. Participants therefore felt compelled to search for their own understanding of what their visions were. This led participants to conclusions that broadly fitted into two categories: ‘Unconvincing but acceptable’ explanations and ‘Convincing but unacceptable’ explanations. Appraisals were not static, instead participants tended to describe a dynamic cycle whereby they would continuously oscillate between the two categories of explanations (discussed further below). What was missing from this process were credible exit routes, which would be ‘Convincing and acceptable explanations’ that could be drawn upon when participants needed them most (when in the presence of a vision). This could offer people an understanding of their visions that felt more believable and appropriate to allow them to live their lives how they wanted and be less affected by visions.

#### 3.4.4 Theme 1 – ‘Unconvincing but acceptable’ explanations

Participants described a range of ‘unconvincing but acceptable’ explanations. These explanations were typically beliefs that the participants could relate to in some degree, so felt somewhat acceptable, such as recognising that on some level the visions may be internally generated, or in some way they themselves were responsible for the visions. They could recognise that the visions may not be owing to an external stimulus so were not necessarily ‘real’.

*“Something I’m just seeing with my mind, it’s not like a real person.” Tony*

**Table 3:2***Summary of themes with illustrative quotes*

| Theme                                    | Illustrative Quote                                                                                                                                                                                                                                      |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overarching theme                        |                                                                                                                                                                                                                                                         |
| Absence of an explanation                | <i>"I'm seeing people that aren't there, and people are just carrying on their lives as if normal and I'm thinking, "Well why is this happening to me? What's happened to me to get this? Why has it happened?" I don't know what's happened." Yogi</i> |
| Main themes                              |                                                                                                                                                                                                                                                         |
| Unconvincing but acceptable explanations |                                                                                                                                                                                                                                                         |
| 1.1 It's my brain playing tricks on me   | <i>"like at the beginning, it was kind of really strange but now I'm kind of used to it now, cause I know like it's kind of all me head, so I kind of just not acknowledge anymore." Felix</i>                                                          |
| It's due to life events                  | <i>"I know the more stressed I am, the more stressed I am, the less sleep I have, the more drugs I take, the more....everything, I see [the vision] more." Sarah</i>                                                                                    |
| Convincing but unacceptable explanations |                                                                                                                                                                                                                                                         |
| It's real                                | <i>"He just looks like, I seen him on [that] day, I can see him just like that. He's just the same as, like, you and I talking...I can see him the way I can see you." Lily</i>                                                                         |
| It's here to harm                        | <i>"But there was always this sort of feeling that goes with it, it was never good, it was always like malicious. I always thought like he wanted to hurt us ... So always they're out to get us or hurt us or something like that." Mick</i>           |

|                    |                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| It's unstoppable   | <i>"I've got no control over when I see her. I've got no control over her."</i> Sarah                                                 |
| I'm mad            | <i>"I thought "That's it. You're mad now. You're going to get locked away."...I thought I'd finally snapped."</i><br>Scarlett         |
| I'm worthless      | <i>"[I'm] Just a fucked up person. A broken person really."</i> Yogi                                                                  |
| I'm being punished | <i>"The main reason I see him all the time is because of what happened...I think it's a bad spirit that's attached to us."</i> Rodney |

---

However, the different explanations presented within this main theme were also mostly unconvincing as participants did not endorse or believe such explanations with any real certainty because they did not feel that they could adequately explain the vivid, complex, and all-encompassing nature of their visions. These explanations were often representative of those used in clinical teams as a way of normalising people's experiences of psychosis (and other mental health difficulties) to reduce associated distress. Typically, these explanations were spoken of by participants as fleeting suggestions which were quickly dismissed as they lacked any coherent or believable justification. Participants spoke of such explanations being more accessible when they felt calmer, or more "rational in their thoughts" but would be inaccessible when experiencing a vision in the moment as the overwhelming realness of the vision would make any such explanations seem implausible.

#### *3.4.4.1 Subtheme 1. 1 - 'It's my brain playing tricks on me'*

There were a range of appraisals that were considered within this subtheme, such as the visions were a result of participants' eyes playing tricks on them or that there was something 'wrong' with their brain which made them see things that were not actually there. Crucially, in such explanations, participants could recognise to some degree that the visions may not be real, but they lacked any detailed understanding as to why or how this may be the case.

*"Well it's part of me, so they're part of me so obviously something within me is dysfunctional, mentally or medically. They're made up of me, so it's me doing it cause it's my brain, it's my brain that's doing it so what they mean to me is supposedly I can say that they belong to me, so it might be me doing them or me not knowing that I'm doing them." Emily*

Participants seemed somewhat reassured to some degree by recognising that the vision may not be real, and such explanations lacked the emotional judgement attached to their visions that was present in later subthemes ('I'm mad' and 'I'm not a good person'). They were spoken of in a more matter of fact, less frightening way.

However, such appraisals often led to a severe lack of trust in their own senses. Participants spoke of no longer being able to engage in everyday activities owing to a loss in their ability to trust their own eyes to appropriately recognise what is real or not, as if living in a perpetual state of confusion.

*"I think the worst part is the uncertainty and the not knowing what's real and what isn't. Have those things actually occurred or did they not? So, it's the whole confusion, the whole what is real, what isn't?" Liam*

#### 3.4.4.2 Subtheme 1.2 – 'It's due to life events'

There were occasions when participants provided somewhat more elaborate explanations relating to their life experiences or emotional state. They typically formed these appraisals through periods of self-reflection where participants were able to consider similarities between their visions and past traumatic life experiences, or patterns in how daily life experiences affected these, such as the visions reflecting their own emotional states, particularly when they were stressed or upset. Such explanations were often reinforced because the content of the visions often became more negative when people were in lower, more negative moods, as if mirroring these.

*"I'm seeing this person because I am going through a traumatic experience and I am so flipping stressed out that this is how my mental health is dealing with my situations is portraying visions." Sarah*

*"It could be like my emotions personified. Like a projection. Rather than 'cause I don't feel things normally, I see them. If I'm in a bad mood, if somethings upset us or something like that, that is when it'll happen. As if it's reacting to my emotional state." Scarlett*

There was also a recognition that such heightened emotional mood states or stress often occurred in combination with disrupted and poor sleep, which further exacerbated the visions.

*“The more stressed I got, the more, more things started to happen. I’d wake up in the morning and have panic attacks before work. Not because of work, but just because of feeling like things were, maybe I’m gonna see something today. I knew something weird was going on. I’d panic and then I started not being able to sleep. Obviously, you’re not sleeping... minds not able to take it.” Mick*

Some participants reported how mental health professionals had attempted to help or explain visions; by sharing similar normalising explanations of hallucinatory experiences e.g. they were to do with their mood, drug use, or poor sleep. However, it seemed that because these explanations often lacked details or any mechanistic explanation as to how such factors could lead to such vivid visions, participants did not seem to hold any real conviction in such explanations. Whilst they could often recognise an element of possibility in the explanations, such as acknowledging both difficult life experiences and visions, such explanations could often feel dismissive as they failed to explain in sufficient detail how exactly that could lead to or cause visions.

*“[Care co-ordinator] just said, “Cause you’re not sleeping” and that was it, so you’re obviously not really the best answer to give someone, is it? You haven’t really explained how [sleep] does it or why does it?” Felix*

*“There’s been loads of traumatic things but I just don’t know why it would make us have visions of people being there.” Yogi*

Whilst the explanations identified within this main theme were mentioned as potential causal factors of visions, these were quickly dismissed when in the presence of a vision. Participants reported it was almost impossible to hold 'normalising' explanations of visions when faced with the powerful complexity of the visions. Therefore, the failure of these explanations to adequately explain such life-like experiences of visions meant they were often unconvincing and quickly dismissed as unacceptable, when they are actually needed the most. This inadequacy therefore drove people further to find 'Convincing but unacceptable explanations' (Theme 2) as a way of finding credible explanations for their visions.

*"When you're in a psychotic episode, everything's real. You don't think, "Ah there's a clown that can't be real." You think, "Ah, there's a clown, shit what's going on?! What am I going to do?". It puts you in a state of reality where everything's real. And you believe strongly that it's real. Nothing can deter you away from the fact of you thinking it's real." Kyle*

#### 3.4.5 Theme 2 – 'Convincing but unacceptable' explanations

The second main theme generated was 'Convincing but unacceptable' explanations. These were often more convincing to participants because the beliefs about their visions seemed to concur with their world view, that they had developed from prior negative life experiences (that the world and people in it were unsafe) as well as provide more credible explanations for the vivid life-like experiences of their visions. Yet, such explanations were still ultimately unacceptable as they were primarily threat-based, which led to high levels of distress and negative impacts on participants' lives.

Participants tended to hold such 'Convincing but unacceptable' appraisals with more conviction when in the presence of a vision, particularly when they were multimodal. Given the vision's perception of realness, human quality, and all-encompassing nature, participants felt unable to access more normalising explanations (such as those discussed in 'Unconvincing but acceptable' explanations) and hence believed that the explanations

identified within the 'Convincing but unacceptable' theme offered more plausible explanations of these experiences. Participants also identified different psychological contributory factors that seemed to further their conviction in such 'Convincing but unacceptable' explanations. For example, when they were experiencing increased negative emotions such as high levels of worry, low self-esteem or negative intrusive mental images, or when feeling physically unwell e.g. experiencing poor sleep, feeling sick. Such states seemed to influence appraisals in two ways. First, such factors increased the likelihood of seeing visions, particularly multimodal experiences (hallucinations occurring in multiple sensory modalities at the same time), which felt more life-like, leading to the increased conviction in such threat-based explanations. Second, the experience or combination of these factors typically reduced people's feelings of resilience to effectively cope with the visions, hence viewing them as more threat-based.

#### *3.4.5.1 Subtheme 2.1 'It's real'*

When in the presence of visions, participants predominantly believed that the visions were real. They described that given the perceptual acuity of their visions being exactly the same as real external stimuli (as demonstrated in Chapter 2), it gave the visions a complexity and vividness that they could not explain away as not being real. Such beliefs were particularly strong when the vision was present. The all-encompassing nature of visions made it almost impossible for participants to disengage from the experience.

*"I mean it's just too real for it to be in me mind. I mean, your mind cannit project visions of people, like there, in solid form and all that, and hear things and see things and smell things. I don't think it can."* Rodney

#### *3.4.6 Subtheme 2.2 'It's here to harm'*

This subtheme highlighted the belief that the visions were there to physically or emotionally harm the participants, their friends or family. Such beliefs were often strengthened by the multimodal nature of visions, where they would verbally express their intent to harm the

participant or loved ones, or the experience of multisensory voices (hallucinations believed to originate from another source than the visual hallucination) that also commented on their visions.

*"I think they just want me dead. Cause they would go away if I was dead... They wouldn't keep harassing me and harassing me if they didn't want something similar to that. It's the clown that's telling us to kill people. Also calling me names, saying they're going to kill my family..." Kyle*

*"I see this guy who looks like he's been burnt. He doesn't speak but the voices I get will speak, are commenting on him....The main things [the voices] say about it is that I'm gonna end up like him, if I'm not careful. Since then, I've been absolutely paranoid about smoke detectors and carbon monoxide alarms and that kind of stuff, make sure they work in case he's actually saying that as a way of warning me of what I'm going to end up looking like, and so are the children." Tony*

Participants also spoke of fearing potential repercussions or punishment by the visions for not having behaved appropriately e.g. for speaking about the visions during the interview. This occurred even when the visions were not present, as if they were still able to listen in or watch the participants.

*"P: I'm dreading to gan home tonight, man. Just in case, ya kna."*

*I: "Do you think talking about it makes it more likely that he would be there?"*

*P: "Aye, yeh." Rodney*

Such threat-based and negative appraisals often led people to take steps to keep themselves safe from the visions. There was an array of different safety behaviours discussed but typically participants used avoidance and hypervigilance. Such behaviours

reinforced participants' threat-based beliefs as they were not able to form alternative explanations for their experiences.

*"Barely got out – erm, felt unsafe obviously with someone constantly walking past me windows, so I was like, every noise and thing like that I heard in the house was kind of like freaking us out. So, I was making sure that I'd locked me doors, to make sure that no one could get in." Felix*

*"Cause I'm thinking [the visions] will hurt [my child]... I'll be in bed every hour when [their] asleep, just checking [they're] safe...I check [their] breathing, I check [their] belly, to check if it pushes me hard up, just to see if [they're] breathing." Yogi*

Participants also believed the visions could cause them psychological harm. They spoke of the visions as wanting to drive them "insane", as if the visions had a personal vendetta against them and would not stop until the participants ended their lives or were mentally broken.

*"I think [the visions] job is to terrorise me. He always said that he would never let me go and I would never have peace. Never. He said he will always be there." Lily*

It was not always the presence of visions that was distressing for people, but also the anticipation of their occurrence. Some participants described an impending doom when the visions were not there, whereby they would sit and worry (typically through visual mental imagery) as if preparing them for its inevitable arrival.

*"You're just constantly on edge. You can't relax at all because you're just waiting for the next thing to happen, and then it doesn't happen and you're like, "Ah well, it didn't happen*

*yesterday, so it's got happen today". D'ya know what I mean? ... It's put so much fear in you, that you're you usually just waiting for it to happen again, so you can get it over with. Mick*

### 3.4.7 Subtheme 2.3 – 'It's unstoppable'

This subtheme captures the explanations that the visions were out of the individual's control and were an inevitable part of participants' daily lives. Participants discussed not being able to exert any power or influence over the visions, resulting in them feeling passive and powerless to the visions' existence, presence, duration, and behaviour. Participants explained that they were simply stuck with the visions.

*"I don't feel like I have any control whatsoever. I just have to wait for him leaving, ya kna, after he's said his things and all that, I just have to wait for him to disappear." Rodney*

The sense of losing control was exacerbated by the belief that they were unable to escape the visions. Participants felt intruded upon by the visions, as if nowhere was safe – not even their homes. This was particularly distressing as home was for many participants their only 'safe space'.

*"I ask him to stay out of my bedroom, it's the one place I ask him to stay out of, but it's the one place he's there all the time. So, I've taken to sleeping down here." Lily*

Prolonged feelings of no control often developed into a sense of resigned acceptance. Participants felt that they would inevitably see visions for the rest of their lives. This further reinforced beliefs that they were powerless and therefore had to accept a life with visions and no future prospects of recovery.

*“You don’t ever grow used to it, it’s always a shock but you kind of settle in the fact that it’s not going to get better. D’ya know what I mean? You just come to terms with it. I know a lot of people might be defeated by that thought or a lot of people might think that’s a bad way to look at it, but in a way it kinda helps...because if you’re not waiting for yourself to get better, then you know, you can just focus on what’s there in front of ya.” Mick*

In some cases, such loss of control led to the belief that participants only chance of escaping the visions was by ending their own lives. Such desperation led to several participants acting on or continually contemplating such thoughts.

*“I want to disappear from the earth, if I disappear then maybe I won’t see the visions. If I could just spend my whole life in a coma, I would pick that any day of the week rather than live the life that I have right now”. Emily*

This appraisal was often exacerbated by dissociative-like experiences of losing control of themselves and their body, as if being taken over by the visions when they were present.

*“When I see them daily, you just think you won’t see them if I’m dead. I’ve had those thoughts and I tried it...I just didn’t want to see them again. It felt like they were taking over me, rather than me coping with them. I was more focused on them than anything.” Yogi*

#### 3.4.8 Subtheme 2.4 – ‘I’m mad’

This subtheme was related to the idea that seeing visions meant that participants were going “mad”, “crazy” or losing grip with reality. This included both self- and other-appraisals and therefore often led participants to be fearful of speaking out about their experiences in case of being sectioned or judged negatively by others. Subsequently, participants spoke of a loss of confidence in themselves because of them seeing visions, and perceived

themselves to be different from others. This is distinct from the explanation that the vision was there to cause physical or emotional harm directly – subtheme ‘It’s here to harm’.

*“I thought I was losing me mind. I was all ready for the trip to the bloomin’ psychiatric unit, I thought I’d be sectioned.” Sarah*

*“I couldn’t imagine of the stuff I’ve discussed there talking to me GP about. I could imagine a GP looking at us, as if to say, “There’s something not right here, you’re coming with us now.” That’s one of the biggest worries I think I’ve had is the fact that you’ve got that threat where they can section ya.” Liam*

Such concern of judgement was often caused by a strong sense of internalised stigma about one’s visions. This was largely caused by cultural influences and societal views of psychosis, whereby people with psychosis are often portrayed as “crazy” or “mad”. As a result, participants often felt unable to seek help or speak to others about their experiences. This limited the opportunity for them to consider alternative explanations of their experiences.

*“I just don’t just want [people] thinking that I’m weird or to be relegated to a different level of human existence.” Tony*

*“Whenever you see or hear something in the films or TV, they’re always depicted as like, ya kna, they’re absolutely nuts, like. It’s always, ya kna, attached with things like you want to kill yourself or stuff like that. All the time. And that’s all anyone ever sees about it.” Mick*

*“[I thought] I’d get sectioned. Cause you see these stories online, when you’ve seen all these movies on that when people who admit they’ve got mental health problems, that’s the first thing the GP’s going to do, section us and strap us to a bed.” Emily*

The feeling of being stigmatised or ‘different’ was not always triggered by the occurrence of visions. Some people had long held beliefs that they were “mad” or an outsider of society. Therefore, the presence of visions seemed to act as the confirmation of such appraisals.

*“I always thought I was a bit nuts to be honest, like. I’ve always been a bit weird so it kind of made sense. I was like, “This is like, typical me.””* Mick

In some cases, appraisals of being “mad” extended to fears that participants were therefore dangerous. This belief manifested itself in two ways. First, participants were fearful that they may act on the demands of the visions, despite this being at odds with their personal values. Second, participants feared that they may act to protect their family member or friends from the visions and unintentionally harm their loved ones in the process. Both fears further exacerbated beliefs of them being “mad” because they believed it meant that they had the capacity to act out of character and may cause harm. Understandably, this caused high levels of distress and shame for the participants.

*“If one [a vision] was coming at me [child] with something, and I went and jumped in but I actually get [my child], something like that, I could physically do that, I’ve got no control over ‘cause I’m thinking it’s someone completely different.”* Yogi

#### 3.4.9 Subtheme 2.5 – ‘I’m worthless’

For some participants seeing visions indicated that they were worthless, damaged or were in some way not a good person. Such appraisals were often reinforced by the multimodal nature of visions, whereby the vision confirmed these appraisals through verbally abusing participants.

*"It makes you feel worthless and just, don't know, just feel horrible." Liam*

*"He keeps calling us names for not doing what he wants us to do. And I keep saying, 'I'm not gonna do that, I'll get in to trouble, ya know.'" And he keeps saying, "Ah you're just a pussy, man, you're useless, you're worthless, you're good for nobody, you can't even do that." and "You can't even do this"." Rodney*

Some participants understood the visions to be an external representation of their low self-esteem; their deepest fears or core beliefs about themselves mirrored back to them. Often because they believed they were bad or worthless, they saw the visions' purpose as a way to humiliate or shame them by reflecting to them the way in which society may see them.

*"The feeling I got from [the vision] was like he was some kind of sick pervert kind thing, for want of a better word...Yeh and then [the voice] was just sitting there talking to me, sometimes he would say, "That's how people see you, people see you like him"...When [the visions] all started, like the dog man, the more I started believing everything about what's happening, the more I start believing that I am a pervert myself and I should just be killed basically, not be let out into society.... The more I thought like that and I got home for example, the more he'd [the vision] be there." Tony*

#### 3.4.10 Subtheme 2.6 'I'm being punished'

For some people, the visions were understood as a punishment by an external force for a previous wrongdoing, as if to seek revenge. Often, the supposed wrongdoing was unknown by the participant, instead it was more of a feeling that they had done something wrong at some point during their lives. Whereas for others, they could recognise the potential cause or event which meant that external agents or paranormal entities, such as spirits or a curse, were punishing them. Despite spiritual beliefs often being protective for people, for these participants being cursed or seeing spirits was not viewed as a special or positive trait. Instead, it was because they deserving of a punishment and hence the visions persisted.

*“Well, I think it’s almost like a curse ‘cause my [parent] used to dabble in some really stupid stuff when they was younger, like the occult and stuff, so I believe it stuck with them and then when they died, it needed someone else to stick to.” Scarlett*

*“Because of that altercation, that afternoon. It all stemmed from the start of me going outside and obviously acting aggressively and violent, from that afternoon, this software [causing the visions] was used to manipulate, to threaten us, belittle us and to get revenge on us basically.” Liam*

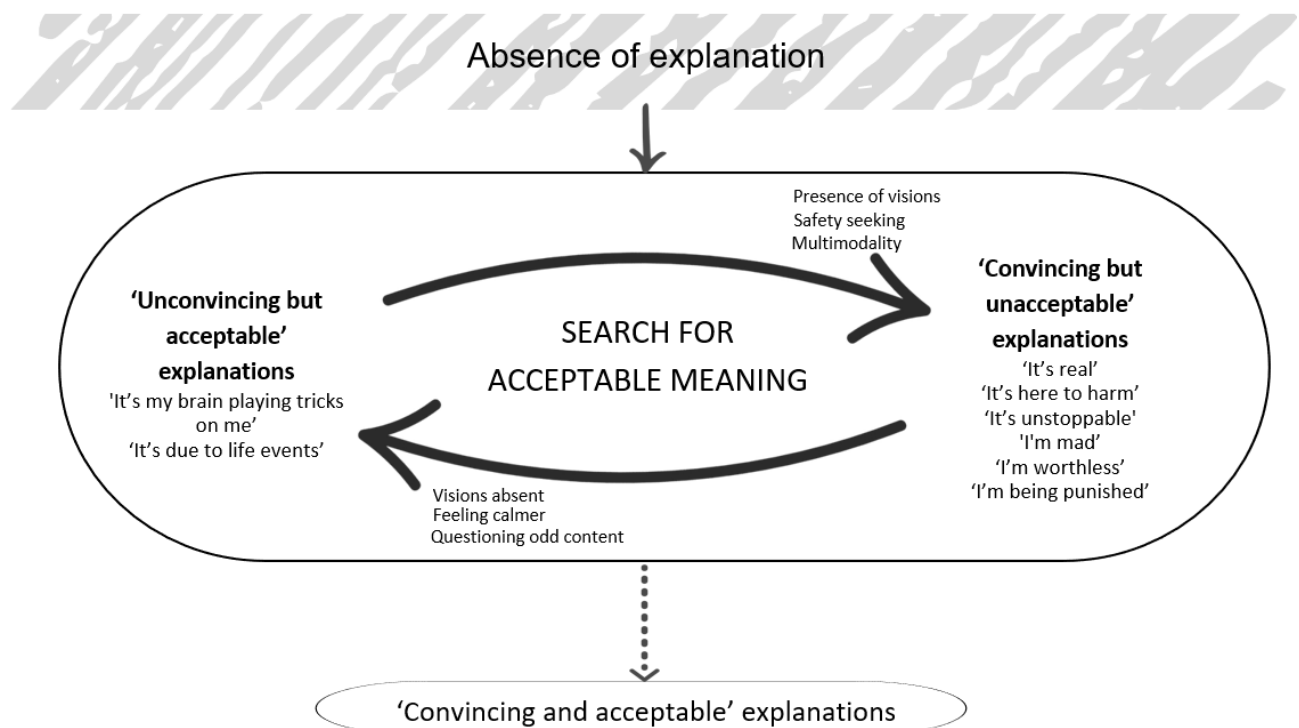
#### 3.4.11 Summary - The search for an explanation

People reported not knowing why they see visions. This drove a dynamic yet unsatisfactory search to try to make sense of their visions (Figure 3:1). This led people to two types of explanations. First, those that were ‘Unconvincing but acceptable’. These types of explanations were possible but lacked any real depth or justification so felt difficult to believe. Second, there were ‘Convincing but unacceptable’ explanations. Whilst these were predominantly more threat-based and distressing, such explanations often confirmed people’s core beliefs about themselves and the world, or captured the life-like realness of visions, making them more believable, yet they were still unacceptable because of the distress they caused.

Participants seemed to oscillate between these different types of explanations with the presence or absence of several factors or processes. See Table 3:3 for a summary of factors that increase people’s conviction in ‘Unconvincing but unacceptable’ appraisals. When such factors were not present, people could sometimes consider appraisals that were less threat-based, such as normalising explanations (Unconvincing but acceptable explanations) whereas when present, these factors often reinforced people’s threat-based appraisals (Convincing but unacceptable).

However, participants were ultimately searching for explanations to enable them to live the lives they wanted. They could not reach such an explanation and therefore were stuck in this cycle with no satisfactory exit. What is missing from this cycle are ‘Convincing **and** acceptable’ explanations which are able to explain the compelling reality of the visions, and so enable them to live without fear and distress.

**Figure 3-1** *The dynamic process of understanding visions*



**Table 3:3**

*Dynamic factors which influenced the presence and conviction of ‘Convincing but unacceptable’ appraisals.*

| Dynamic factors influencing appraisals                                                  |
|-----------------------------------------------------------------------------------------|
| Presence of visions in the moment                                                       |
| Multimodal nature of visions                                                            |
| Multisensory experience of other hallucinatory experiences e.g. auditory hallucinations |
| Safety-seeking behaviours                                                               |
| Heightened negative emotional states (or stress)                                        |
| Rumination/high levels of worry                                                         |
| Vivid mental imagery                                                                    |

---

Poor sleep  
Low self esteem  
Dissociation (being absorbed by visions)  
Prior negative beliefs of world

---

### 3.5 Discussion

Visions in people with psychosis can be compelling and seemingly real experiences (Chapter 2) which are associated with high levels of distress. Despite this, they are not well understood or treated. This study used qualitative methods to gain rich, detailed, first-person accounts of how people with psychosis make sense of their distressing visions. There was a notable absence of credible, satisfactory explanations of visions. This absence resulted in a search for meaning that led to explanations that were ‘Unconvincing but acceptable’ or ‘Convincing but unacceptable’. ‘Unconvincing but acceptable’ appraisals could not account for the full complexity and vividness of people’s visions meaning they were often dismissed as implausible. ‘Convincing but unacceptable’ explanations, despite being more threat-based and distressing, felt more believable to people as they were more plausible explanations in that they accounted for the authenticity of the visions, and were consistent with their prior views of themselves and the world. It is evident that people lack ‘Convincing **and** acceptable’ explanations of visions, which, if developed, may allow people to better understand their experiences, become less distressed, and improve their lives.

It is important to note that searching for meaning was a dynamic process as people were not static in their appraisals. Participants often cycled between the two competing types of explanations. Factors identified as driving people to hold more distressing ‘Convincing but unacceptable’ appraisals included (but were not limited to) the visions being present, their multimodal quality, and the use of safety-seeking behaviours. For example, when their visions are present, participants reported that they were too real and life-like to dismiss or rationally explain in the moment. This was made worse when the visions were multimodal, as they appeared capable of verbally or physically reinforcing such a threat. Therefore, participants often resorted to safety-seeking behaviours to avoid harm coming to them, be

it physical, social, or emotional harm. These behaviours then prevented them from learning contradictory evidence against such appraisals. In comparison, when the vision was absent, participants felt calmer and were more able to consider the possibility of normalising explanations, such as the visions were a result of stress or past trauma. However, this capacity quickly diminished when in the presence of the vision again. Such a dynamic process has been found in those at risk of developing psychosis (Brew et al., 2017). Therefore, to improve the lives of people with visions in psychosis, convincing **and** acceptable explanations of visions need to remain credible, even in the presence of the vision.

However, appraisals were also influenced by the other factors besides the presence of the vision. Visions tended to happen more when people experienced a combination of factors such as poor sleep, heightened negative emotional states (e.g. worry, anger), dissociation, intrusive mental imagery, and low self-esteem. These potentially influential mechanisms could be potential targets for future treatment development (see Paulik & Taylor, 2024 and Chapter 5). For example, if people were able to sleep better, worry less, and feel better about themselves, it could reduce the likelihood of visions occurring, as with other psychosis symptoms.

These findings have wider clinical implications. First, our findings are consistent with the cognitive theory that appraisals are key in driving distress (Beck, 1976). They may also help to explain why previous attempts to apply CBT to visions may not have led to significant improvements (Thomson et al., 2017; Wilson et al., 2016). The framework presented here demonstrates that visions are more than a threat to psychological and physical wellbeing (Collerton & Dudley, 2004). Threats also included a loss of control over participant's personal behaviour, visions and wider lives, as well as confirming people's inner negative core beliefs about themselves. This work also highlights that visions are not silent or still images, rather they frequently talk to, and touch the person (Aynsworth et al., 2025; Dudley et al., 2019) making them even harder to dismiss as a trick of the mind (Dudley et al., 2023; Montagnese et al., 2021).

Finally, this study emphasised how typical normalising explanations, commonly used by clinicians, are limited when it comes to explaining people's visions, especially when these are multimodal experiences. Clinicians often normalise hallucinatory experiences through explanations such as poor sleep, trauma, brains playing tricks on people or confusion in identifying the origin of information (Aynsworth et al., 2017b; Dudley et al., 2022; 2024). However, these alternative explanations were not convincing and appeared to contribute towards people holding more threat-based beliefs because of their inability to explain the complexity of visions. This pattern that was also found in a non-clinical sample (Aynsworth et al., 2023), whereby appraisals of visions being due to stress and tiredness increased participants' distress. This could be an important factor in explaining the smaller effects found for CBT for psychosis (Bighelli et al., 2018; Turner et al., 2014) compared to other disorders, such as CBT for panic disorder (Butler et al., 2006; Gould et al., 1995) and generalised anxiety disorder (Cuijper et al., 2014; Hanrahan et al., 2013). In CBT for panic disorder, the appraisal "My racing heart means I am having a heart attack" can instead be understood with a scientifically credible alternative explanation of "I am experiencing panic, which is leading to an increase in adrenaline which is causing my heart to race quickly". Whereas, we do not yet have such a mechanistic explanation for visions to truly offer alternative, culturally acceptable explanations for these experiences. Therefore, more credible and mechanistic explanations that can viably explain how these processes may lead to visions are needed. These need to be simple and credible enough to be useful when people need them the most (Dudley et al., 2024). Such drive to understand the cause of visions is also evident in other psychotic experiences whereby understanding causal mechanisms is a key treatment preference (Hamilton et al., 2025), demonstrating the timeliness of further research into this area.

### 3.5.1 Limitations

To our knowledge, this study presents one of the first qualitative studies exploring how people make sense of their visions and provides a framework which researchers and clinicians can use to assess appraisals of visions. However, there are a number of limitations.

First, it is important to note that the sample lacked racial diversity. All but one participant were white British. It is possible that people from different cultural backgrounds have different appraisals of visions. For example, in some communities, unusual visions may be interpreted as encounters with jinn (supernatural beings in Islamic tradition) (Lim et al., 2026) or in spiritualist cultures, people can see visions as clairvoyancy, which is by definition the power to see things that others cannot (Cambridge University Press, n.d.). Hence, whilst this framework is a helpful foundation to build upon, it is likely that there are other important appraisals to capture in relation to visions. Second, the interviews primarily focused on visions that were most important for people, and therefore inevitably on more negative visions. Exploring and understanding positive and less distressing visions would also be important in developing alternative explanations and interventions for such experiences. Third, only people who had experienced visions within the last month were included. It could be helpful to explore with people who experience less frequent visions or those who no longer experience visions as this could broaden the range of appraisals, particularly those that may be 'Convincing and acceptable'.

### 3.5.2 Future directions

Future work could firstly develop a robust measure to assess appraisals that could capture a broader range of experiences and aid the assessment process further (Aynsworth et al., 2017a). Such a measure could then be used to guide and evaluate treatments in order to better support people with visions. Second, greater exploration of potential psychological mechanisms contributing towards visions and threatening appraisals e.g. poor sleep, low self-esteem, could identify potential targets for such treatments.

### 3.5.3 Conclusion

This study provides a framework to support clinicians and researchers to begin this work. Developing our understanding of explanations, as well as causal mechanisms, of visions will enable us to provide more convincing and acceptable explanations to help reduce the significant distress often associated with visions.

## 4 Developing a new self-report outcome measure for visions: Hamilton Visions Questionnaire

### 4.1 Chapter Abstract

**Background:** Visions are commonly reported by people with psychosis. However, the occurrence and impact of visions is not well understood. This is in part because existing measures are limited in how they describe key characteristics of visions. Many of the existing options are lengthy interviews or consist of only a few items on a broader assessment measure meaning measures capture too much or too little information. Questions risk being overly sensitive or too specific, focus predominantly on frequency, and many of the measures fail to demonstrate robust psychometric properties. Importantly, intervention studies lack outcome measures that are valid, reliable, and sensitive to change. Therefore, we aimed to develop a clinically relevant, and psychometrically sound self-report outcome measure for visions in people with psychosis.

**Methods:** In collaboration with people with lived experience, an existing self-report measure of auditory hallucinations (the Hamilton program for Schizophrenia Voices Questionnaire) was adapted to measure visions (HViQ). 1100 participants who reported visions in the last month completed the HViQ (404 clinical participants with non-affective psychosis, 696 non-clinical individuals from the general population). Exploratory and confirmatory factor analysis (EFA, CFA) were performed. Internal reliability, test-retest reliability (N=114) and convergent validity were conducted to assess the HViQ.

**Results:** CFA confirmed a three-factor model of constructs labelled: Emotional impact, Intrusiveness, and Perceptual quality, which explained 62% of the variance. The HViQ new measure demonstrated excellent internal reliability at both baseline and follow up time points, and fair to excellent test-retest reliability across all items.

Conclusions: The HViQ is the first validated self-report outcome measure specifically for visions in psychosis, developed with people with lived experience. It is a psychometrically robust measure, which has the potential to improve clinical and research practice. However, visions are complex experiences which require more detailed assessments to capture other important factors such as their co-occurrence with hallucinations in other modalities as well as with appraisals, which also drive associated distress.

## 4.2 Introduction

Chapter 2 and Chapter 3 demonstrate that visions are complex, vivid, all-encompassing experiences that impact people's lives. Chapter 3 demonstrated that given such experiences, people are compelled to search for a meaning of these. The current lack of psychological treatments for visions means that we do not have convincing and acceptable explanations to better support people with these. Therefore, the future goal is to develop effective treatments targeting visions (Freeman, 2024). However, in order to evaluate treatments, we need to develop a suitable outcome measure (Clarke, 2006; Coster, 2013; Freeman, 2024).

According to Coster's (2013) guiding framework for choice of outcome measures, we must first define what an appropriate outcome for a vision's treatment would measure. To do this, past literature and measures were reviewed, but with particular emphasis on learning from the qualitative interviews (Chapter 2 and 3) to ensure that important factors would be captured in a measure. The transcripts from the qualitative interviews (Chapter 2 and 3) were reviewed for this purpose. The factors contributing to distress were noted and used to form the basis of the measure. When asked what a treatment goal would be patients typically said to no longer have visions, or at least have visions that were less distressing or easier to manage. Therefore, we wanted a measure to capture distressing visions. It was evident that more than the presence alone caused distress for people. Various factors influenced distress and therefore it would be important to capture a wide range of factors to account for the complex phenomenological experience of visions. These included i) frequency, ii) duration, iii) distressing content, iv) negative appraisals, v) perceptual quality, vi) absorption, and vi) impact.

### 4.2.1 Frequency

During the interviews, participants often spoke of how increased frequency typically made the visions more difficult to manage. When asked about goals for therapy, most participants

wanted the visions to go completely and have a life free from these experiences. Therefore, highlighting that frequency is key to people's goals and distress is important to capture in an outcome measure.

Whilst frequency is the most commonly asked type of question in visions measures (Aynsworth et al., 2017a), they typically ask about this in a broader time frame such as lifetime in the Multimodal Unusual Sensory Experiences Questionnaire (MUSEQ; Mitchell et al., 2017) or the past month, such as in the Specific Psychotic Experiences Questionnaire (Ronald et al., 2014). For a measure to be clinically useful, it would need to mirror typical clinical sessions which tend to be weekly or bi-weekly, therefore having a shorter time frame such as a reviewing visions over the last week.

#### 4.2.2 Duration

Understanding the duration of visions is also important. Participants reported that whilst brief visions could be also distressing (especially if frequent), typically visions that lasted for longer periods such as minutes to hours as more difficult to cope with. When their visions appeared for shorter periods, they felt less intrusive and impactful on people's daily lives. Being able to capture duration in a measure could therefore be helpful in assessing distress.

#### 4.2.3 Distressing content

Throughout the interviews, some participants described the content of visions was mundane and therefore less distressing. However, when the content was negative, this could cause great distress for participants. This could be for a range of reasons, such as seeing physically injured people, gruesome, bloodied content, or strange creatures, or even content related to past traumas e.g. past abusers. Given then the range of content that could cause distress, using specific questions focused on pre-determined content to determine how distressing a vision is may be less helpful than a question that simply asks about whether the content is negative and to what extent.

#### 4.2.4 Negative Appraisals

The interviews identified that negative appraisals were key in understanding distress in visions (Chapter 3; Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005). Predominantly participants held 'Convincing but unacceptable' beliefs, which were believable but unacceptable because of their negative impact. Whilst this covered a wide range of appraisals, typically those associated with higher distress were those that were threat-based beliefs as well as subsequent negative beliefs about themselves as a result of seeing visions. Therefore, capturing negative appraisals of both the vision and the observer would be important in a measure.

#### 4.2.5 Perceptual quality

A further key factor that participants were keen to emphasise during the interviews was the perceptual quality of the visions. Mostly visions had the same visual quality and clarity as all other external visual perceptions, which made it incredibly difficult for people to determine if they were real or not. When visions were less perceptually accurate, such as being less vivid or blurred, it could make it slightly easier for participants to dismiss these as visions and disengage from these. Thus, assessing the visions perceptual quality and perceived realness could be key in understanding distress.

#### 4.2.6 Absorption

Given the vividness and realness of the visions, participants often described being absorbed when in the presence of visions. Such intrusiveness made it difficult to disengage from the vision. They were often only able to do so when the vision had disappeared. Visions with such all-encompassing and encapsulating natures, therefore had a much greater impact on people's ability to cope when in the presence of these. In comparison, when visions were less absorbing or life-like, participants felt that they had a greater ability to ignore or disengage from these and therefore allowing them to cope better with visions. Being able to capture intrusiveness could therefore be important in understanding vision-related distress.

#### 4.2.7 Impact

Given the impact of the factors discussed above, throughout the interviews, participants often reported being unable to live the lives that they wanted, whilst they continued to see visions. This was mainly due to being unable to cope with or manage the visions.

Participants very rarely had any positive coping strategies. Instead, they predominantly relied on unhelpful safety seeking behaviours to try and manage the visions, mainly in the form of avoidance of people, social situations, and other daily living activities such as employment, or food shopping. Therefore, assessing the impact of people's lives in a measure would be helpful to ensure we understand the wider influence of visions.

#### 4.2.8 Outcome rater

Coster's (2013) guidelines also highlight the importance of considering who is best placed to score the outcome data. Participants and the LEAP explained how clinical services rarely, if at all asked about their visions. When participants did speak of these, they felt unsupported and unheard (Chapter 3). This could be owing to clinical bias towards auditory hallucinations experiences leaving staff feeling unconfident to discuss visions (Waters et al., 2014) or visions being seen as symptoms in other populations rather than psychosis, such as trauma, dementia, or eye disease (Bluer et al., 1924; Waters et al., 2014). Therefore, it is important to hear people's experiences directly, rather than relying on clinician's perceptions, and hence a self-report measure is best fitting this instance (Coster, 2013). This is of particular relevance given that in other areas of psychosis, self-report measures are often the starting to assessing people's experiences (e.g. Mitchell et al., 2017; Freeman, et al., 2020; 2021; Lambe et al., 2025). Given that outcome measures should ideally be repeated session by session, when asked, people with lived experience highlighted the importance of a brief self-report measure to reduce burden and manage any concentration difficulties.

#### 4.2.9 Scale evaluation

Boateng et al. (2018) provided a helpful guideline from developing new measures, which highlights other areas of scale development and evaluation that are important when considering the use of a measure. In terms of scale development, measures should be tested and developed in appropriate sample sizes (typically 10:1 people per item) in representative samples of the target population, with appropriate exploration of its factor structure to ensure it is measuring the latent construct in question. In terms of scale evaluation, it is also important to ensure that any measure used, demonstrates adequate validity and reliability, to ensure that the measure is assessing the desired construct in a consistent way, as well as measurement invariance to demonstrate consistency in the use of the measure across different groups (Boateng et al., 2018).

#### 4.2.10 Current visions measures

A helpful place to start is a past systematic review of visions measures (Aynsworth et al., 2017a). It noted various limitations of the current measures which are important to consider when considering an outcome measure. Firstly, as commented on in the qualitative interviews and the LEAP, it was noted that in measures of psychosis symptoms, visions are not often asked about, and if they do, it only had a limited number of questions. For example, one of the specific measures of hallucinations commonly used with people with psychosis only focuses on auditory hallucinations. The PSYRATS asks about voices and delusions but does not consider hallucinations in other modalities (Haddock et al., 1999). When visions are asked about as part of a broader symptom assessment, it would often consist of a few questions, and predominantly focus on frequency, such as in the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE; Mason et al., 1995), the Rating Scale for Psychotic Experiences (Choinard & Miller, 1999), or the Launay-Slade Hallucination Scale (LSHS; Launay & Slade, 1981). Second, the measures often lack robust psychometric qualities which question the suitability of their wider use (Aynsworth et al., 2017a). Third, even when measures do ask specifically about visions, the questions can be too broad, inclusive and sensitive (such as in the LSHS, it asks if your eyes ever play tricks on you) or too restricted and specific (such as the LSHS also asks if you see a face floating in front of you) which could mean that many visions are not being captured as they are not floating faces,

but instead other visions such as people, shadows, animals or objects. This issue of sensitivity versus specificity can therefore lead to the overestimation or underestimation of visions (Aynsworth et al., 2023). Fourth, most of the vision-specific measures are long interview-based measures (e.g. North East Visual Hallucinations Interview; Mosimann et al., 2008 or the Appraisals and Reactions to Visual Hallucinations Interview; Dudley et al., 2012), which are less helpful for repeated assessments or ease of administration. Typically, these are clinician rated, which can require training and are prone to clinician bias (Zimmerman et al., 2018). Fifth, most vision measures have been developed in the context of organic disorders such as eye disease (e.g. Institute of Psychiatry Visual Hallucination Interview; Santhouse et al., 2000) or Parkinson's disease (e.g. Rush Hallucinations Scale; Pappert et al., 1999) and hence cannot assume to be applied to those with psychosis (Aynsworth et al., 2017a). Sixth, there was a lack of service user involvement in the development of measures meaning that important factors for people who experience visions may not be appropriately captured (Aynsworth et al., 2017a).

An updated review of this search was conducted using the search terms (“visual hallucinat\*”) AND (“scale” OR “measure” OR “interview” OR “questionnaire” OR “self-report” OR “prevalence” OR “survey” OR “task”) across the same databases: Web of Science, PsychINFO, MEDLINE, and Scopus. 2179 papers were identified. 564 duplicates were removed, leaving 1615 articles which were then screened out by title. This left 77 papers. These were reviewed and removed by abstract. However, of these there were no new measures specifically targeted to assess visions, as outlined in the criteria above. However, Paulik & Taylor (2024) did use an adapted version of the Hamilton Schizophrenia Voice Hearing Program (HPSVQ; van Lieshout & Goldberg, 2007) , but it was developed by clinicians so lacked lived experience input, and was only used with 11 participants in their study so was unvalidated.

After considering the literature, it is evident that no current measures of visions met the criteria outlined above by Coster (2013) and Boetang et al., (2018) for what is needed from an outcome measure for distressing visions. Therefore, a key next step to developing

effective treatments of visions is to develop a new measure to ensure “comprehensible, meaningful and accurate measurements” of these experiences (Freeman, 2024, p.148).

#### 4.2.11 A novel measure of distressing visions

Owing to the lack of suitability of vision measures, existing measures of voice hearing were explored to consider the potential to adapt to these for visions. Similar to visions, voices were often explored within general psychosis measures, such as PANSS (Kay et al., 1987) and CAPS (Bell et al., 2006), rather than in their own specific assessment. When considering auditory hallucinations specific measures, the PSYRATS is the most commonly used (Haddock et al., 1999; Berry et al., 2021). It captures several different aspects of voice hearing, related beliefs about these, and impact. However, as it is a clinician rating interview, it can be time consuming to administer and subject to clinician or researcher bias. Instead, a brief self-report measure which could be repeated in routine clinical practice needs to be considered.

The Hamilton Program for Schizophrenia voice hearing questionnaire (HPSVQ; van Lieshout & Goldberg, 2007) offers a potential option that could be adapted for use with visions. It is a 9-item brief, accessible self-report measure of voice hearing in people with psychosis. Importantly, it is one of the few measures that captures the factors outlined above that have been highlighted as important in understanding distress in people with visions. In addition, the HPSVQ has robust psychometric properties, demonstrating acceptable levels of validity and reliability (Berry et al., 2021; van Lieshout & Goldberg, 2007). Given such qualities, the HPSVQ could offer a promising foundation to adapt to assess visions. As noted, Paulik & Taylor (2024) actually adapted the Hamilton for visions for an outcome measure in their treatment study.

Therefore, this study aimed to develop the first brief self-report outcome measure for distressing visions by adapting an existing measure of auditory hallucinations, the HPSVQ (van Lieshout & Goldberg, 2007), to instead ask about people’s experience of visions. To

ensure its suitability, this scale would need to be: informed by people with lived experience of vision, assess the complex phenomenological experience of visions, tested on a large representative sample, useable across gender and age, and demonstrates excellent reliability and validity.

## 4.3 Method

### 4.3.1 Study design and participants

This was a cross-sectional questionnaire study, comprising of two groups of participants (clinical and non-clinical). Most participants completed a one-off baseline assessment pack. A subgroup of the clinical sample also completed a follow-up assessment pack a week later to establish test-retest reliability. The baseline assessment packs included the same measures for both groups. The only differences were that the clinical pack asked the following questions, “How long have you been in mental health services?” and “If available, would you like a treatment for visions?” which were not relevant for the non-clinical group and therefore were removed. The non-clinical group was also asked additional questions about their demographics section including region, employment status, income, and highest level of education. See Appendix 7 and 8 for the assessment packs (baseline and follow up). The recruitment processes differed between groups, which are explained below.

#### 4.3.1.1 *Clinical Participants*

Participants were recruited 43 NHS mental health trusts across England and Wales between 4<sup>th</sup> March 2024 and 1<sup>st</sup> September 2025. National Institute for Health Research Delivery Networks (RDN) led and facilitated recruitment at each site. Participants were identified by four routes: i) care teams who could refer people who were suitable and consented to be contacted, ii) participants who had previously given consent to be contacted about future research studies, iii) self-referral or iv) Trust ‘Opt Out’ systems whereby it is assumed that everyone is suitable to be contacted about relevant research, unless they have explicitly opted out from being contacted. If interested, participants were then contacted and screened by staff, where they were given the Participant Information Sheet and the opportunity to ask any questions. Before taking part, participants provided written or

remote consent. Participants had the option as to how they wanted to participate in the study; with support of a staff member (either face to face or remotely over the telephone or video call) or independently online via a Qualtrics link. If meeting in person, participants chose whether this was at a clinical base or in their homes. After completing baseline assessments, participants were given the option to complete a follow-up pack a week later to establish test-retest reliability. Responses varied between 3-10 days after the initial baseline. Participants were paid £10 for reimbursement for their time and efforts for each assessment pack completed.

Inclusion criteria were i) a diagnosis of non-affective psychosis (ICD-10 F20-29), first episode psychosis or a working diagnosis of non-affective psychosis, ii) currently experiencing visions (present within the last month. Despite this being different to the week timeline of the HViQ, this timeline was chosen to encourage the inclusion of people with a wide range of vision frequencies to better identify their relationship to a contributory mechanisms (Chapter 5), and iii) currently in receipt of a secondary or tertiary NHS mental health team. Exclusion criteria were i) visions as a result of an organic or neurological disorder such as dementia or brain injury, ii) visions only owing to the use of substances or alcohol, and iii) inability to understand the questionnaires in their current format and language.

Ethical approval was given by NHS Health Research Authority North West – Preston Research Ethics Committee (Reference: 23/NW/0358).

#### *4.3.1.2 Non-clinical participants*

An online survey was conducted, with a quota sample for a group of 2000 people representative of the UK general population. Participants were recruited through a market research company (Cint) between 20<sup>th</sup> March 2025 and 14<sup>th</sup> April 2025. The quotas were based on the UK Office for National Statistics population estimate for gender, age, and region (2020). Before taking part, participants were shown a Participant Information Sheet to read and were given research contact details, in case they had any questions. They

provided informed consent prior to taking part. After completion, they were given a debrief sheet to explain the purpose of the study and direct to further support, if needed.

Besides the 2000 participants who provided a full data set, there was additional data that was also included in the current analysis for participants who were partial completers (people who had started the survey and completed the HViQ but did not complete the full assessment pack and therefore were not included in the quota).

Inclusion criteria were i) aged 18 and over, and ii) a UK resident. Exclusion criteria were: i) currently receiving treatment from a secondary or tertiary NHS mental health service such as Early Intervention in Psychosis teams, Community Mental Health Teams, inpatient wards, ii) visions only when under the influence of substances or alcohol or iii) diagnosis of organic or neurological conditions such as a dementia or eye disease e.g. Charles Bonnet syndrome.

Ethical approval was given by University of York Psychology Departmental Ethics Committee (Reference number: 202480).

### 4.3.2 Measures

#### 4.3.2.1 *Hamilton Program for Schizophrenia Voices Questionnaire (HPSVQ; van Lieshout & Goldberg, 2007)*

The HPSVQ is a 9-item self-report measure. It measures the characteristics, content and impact of voice-hearing. Items are scored on an ordinal 5-point Likert scale from 0 (least “severe” or impairing) to 4 (most “severe”) over the past week. Total scores aim to indicate the severity of voices. Higher scores indicate higher severity. Owing to its good psychometric properties and ease of use, the HPSVQ is used in psychosis treatment studies (Dudley et al., 2022; 2024; Hayward et al., 2021). van Lieshout & Goldberg (2007) found it has good internal reliability (0.74-0.85 at different time points, N = 20) and test-retest reliability (measured through Intraclass Correlation co-efficient) was good (.72). It also

demonstrates strong convergent validity ( $r = .76, p < .001$ ) with the Auditory Hallucination Psychotic Symptom Rating Scale (PSYRATS; Haddock et al., 1999). Berry et al. (2021) found a robust two factor model ( $N = 401$ ;  $n = 285$  with psychosis,  $n = 116$  non-psychosis) capturing ‘voice severity’ and ‘voice-related distress’. ‘Voice severity’ included items on frequency, loudness, duration, clarity, obeying commands, and interference on lives. ‘Voice-related distress’ included items on distress, negative self-appraisals, negative content, and interference on people’s lives. They argued that this finding supports the notion that these two factors are distinct and separate concepts that may not always, but can often, be related. Whilst interference on life was relevant to both factors and hence cross loaded onto both of these.

Given these features, its ease of use, and its ability to meet important criteria for understanding distress in visions, the HPSVQ was adapted (with permission from the authors) to instead measure visions (Hamilton Visions Questionnaire; HViQ). Where appropriate, we directly replaced the word ‘voices’ with ‘visions’ in order to retain the same structure as the HPSVQ. However, for some items, the exact wording from the HPSVQ did not directly apply to visions as it was too specific to voices. In such cases, the wording was changed but with the intention of keeping the same concept or focus of the question. For more details see Lived experience section below for development of adapted items.

#### *4.3.2.2 Lived experience input*

People with lived experience reviewed the measure to explore its phrasing and suitability. This included one peer researcher with more research experience, and two current service users. All had current experience of visions and would like a treatment for these. In terms of their demographics, all were White British. There were two males and one female, two of whom were aged 25-35, and another aged between 50-60. Feedback and changes are outlined below:

- 1) Overall feedback included that the measure was accessible, quick and easy to complete meaning that it felt suitable to complete regularly in routine clinical or research practice. Visions can often fluctuate in frequency, duration and therefore

the week timeframe was appreciated as it gave a more focused time period which was easier to score, as opposed to longer timeframes such as two weeks or the past month. They felt that this questionnaire albeit brief was able to capture a lot of important aspects for understanding the distress associated with their own visions.

- 2) The questions were reviewed for appropriate language, in particular those where the wording could not be directly changed as it was not relevant to visions. This included item 2, “How bad are the things the voices say to you?” was discussed in relation to how this could be adapted to visions. Whilst we considered phrasing this “How bad are the visions to you?”, feedback was that it was not clear what was being measured. Instead, we agreed that the focus was on the content on the voices in the original item, rather than the behaviour, and therefore decided to phrase the question as “How negative is the content (e.g. physical appearance) of the visions?”. This was clearer for people to understand that they were rating the content of visions.
- 3) The other item queried in more detail was item 3, “How loud are the voices?”. Initially, we considered this as ‘intrusiveness’ but the feedback was that this was confusing as it could mean both the physical proximity of the vision or the ability to intrude on what someone was doing. People with lived experience explained that it was rare that people would allow themselves to get in close proximity to the visions, owing to fear of potential harm from them. Therefore, asking about its ability to grab their attention would be a better equivalent for this question, as similarly it was inferred that louder voices would be more attention grabbing or intrusive on people’s behaviour. So, this was adapted to “How attention grabbing or noticeable are the visions?”.
- 4) People with lived experience also expressed a strong preference to include an additional question, “How often does the vision feel real?” as this was highlighted as a key difficulty for people in their coping with visions, that was not previously captured in the original 9-items. We had discussions regarding how this would relate to the other question of “How clearly do you see the visions?” which assessed

perceptual quality of the vision. People acknowledged that whilst perceptual quality is a contributor to determining if something is real, it was not the sole factor. People spoke of an overwhelming sense of realness when faced with a vision in the moment, regardless of the perceptual quality, as if an automatic bodily reaction (e.g. fight or flight response). This often seemed one of the most problematic aspects for people when they spoke of the visions as people felt unable to override this feeling. This was strongly touched upon in Chapter 3, which highlighted that most 'logical' explanations are irretrievable when faced in the room with a vision because of their realness. Therefore, we extended the questionnaire to include, "How often does the vision feel real?".

- 5) Discussions also included the relevance of Item 9 which was "How often do you do what the voices say?", which captured the inability to resist the commanding of voices or delusional thoughts about these. However, people with lived experience felt this was less relevant to visions, as relationships to visions tended to be more external than just hearing voices, given the placement of visions in people's external visual field. This created a sense of distance between the visions and the observer which helped them feel a greater sense of personal autonomy to resist any commands of the visions. However, they did acknowledge that the vision could often still try to make people behave differently and therefore the item was retained and instead adapted to "How often does the vision control you and what you do?". Whilst it was suggested we could change this to "How often does the vision try to control you and what you do?", we decided to retain the original phrasing to be as close to the original structure as possible.

#### *4.3.2.3 Specific Psychotic Experiences Questionnaire – Hallucinations scale (SPEQ; Ronald et al., 2014).*

The SPEQ is a self-report 9-item measure, which explores the frequency of a range of hallucinatory symptoms in the last month. Questions include "1. Did you hear noises or sounds when there is nothing to explain them?" and "5. Do you see things that others cannot?". Scores are rated from '0 – Not at all' to '5 – Daily'. Higher scores indicate higher

severity of symptoms. The SPEQ has good construct validity ( $r = .060$  with the Psychosis-like symptom measure from the Avon Longitudinal study of Parents and Children (Zammit et al., 2011), good test-retest reliability ( $r = .65, p < .001$ ) and good internal consistency ( $\alpha = .87$ ). For this reason, it is commonly used in psychosis research (Dudley et al., 2022; Freeman et al., 2021a; Reeve et al., 2021; Waite et al., 2023). The internal consistency for this dataset was good ( $\alpha = .888$ ).

#### *4.3.2.4 Multi-Modality Unusual Sensory Experiences Questionnaire (MUSEQ) – Visual Hallucinations Subscale (Mitchell et al., 2017)*

The MUSEQ-Visual Hallucination subscale is an 8-item scale, scoring the lifetime occurrence of unusual visual sensory experiences. It asks about a range of visual experiences from broad items e.g. “1. My eyes play tricks on me” to more specific items that are more representative of visions in psychosis e.g. “8. I saw people, faces, or animals, and then found that nothing was there”. Items are scored from ‘0 – Never (Never happened)’ to ‘4 – Frequently (At least monthly)’. Higher scores indicate more frequent unusual visual experiences. It holds good internal consistency ( $\alpha = .88$ ), and acceptable test-retest reliability ( $r = .72, p < .001$ ). The scale demonstrates good convergent validity with other unusual sensory measures (LSHS-M-II; Larøi & van der Linden, 2005,  $r = .71, p < .01$ ; CAPS, Bell et al., 2006,  $r = .61, p < .01$ ; O-LIFE, Mason et al., 1995,  $r = .6, p < .01$ ). The internal consistency for this dataset was good ( $\alpha = .854$ ).

### 4.3.3 Statistical analysis

#### *4.3.3.1 Factor analyses*

##### *4.3.3.1.1 Suitability of assessing factor structure*

Bartlett's Test of Sphericity (Bartlett, 1954) and Kaiser-Meyer Olkin Measure of Sample Adequacy (KMO; Kaiser, 1974) were used to confirm suitability of the dataset for factor detection. Bartlett's test evaluates the null hypothesis that the correlation matrix is the identity matrix (e.g. that variables are orthogonal, deeming them as unrelated and unsuitable for factor analysis) (Strestha, 2021). A significant value indicates that the variables are related and hence the dataset is suitable for factor analysis (Strestha, 2021).

The KMO assesses the suitability of the sample for factor analysis, with scores 0.8-1 indicating an adequate sample (Strestha, 2021).

#### 4.3.3.1.2 Parallel analysis

Factor analyses were conducted in JASP (JASP team, 2024). Parallel analysis (Horn, 1965) based on polychoric correlations (appropriate for ordinal data), with pairwise deletion, was used to identify the number of factors to retain in the measure. Rather than determining factors based on eigenvalues of over 1, as typically used in factor analysis, parallel analysis compares eigenvalues from the real data set to a random data set to identify whether factors are due to chance or not (Ruscio & Roche, 2012; Wood et al., 2015). It then recommends retaining factors with significant eigenvalues as this would indicate the factors are not due to chance (Ruscio & Rocher, 2012; Wood et al., 2015).

#### 4.3.3.1.3 Exploratory and confirmatory factor analysis

The sample was randomly split into two groups to perform exploratory factor analysis (EFA) and then confirmatory factor analysis (CFA). Each sample group (clinical, non-clinical full completers, and non-clinical partial-completers) were randomly split 50:50 to ensure equal numbers of the three samples were represented in each of the two datasets for the EFA and CFA. Prior to conducting EFA, evidence of multicollinearity between variables was considered (correlation co-efficients of  $> .9$ ). Poor-fit criteria were also used to consider the appropriateness of items. These included weak factor loading ( $< .3$ ), low communalities ( $< .2$ ) or cross loading onto multiple factors ( $< .3$ ).

To evaluate the fit of the measurement model, the comparative fit index (CFI), the Tucker-Lewis index (TLI), the standardised root mean square (SRMR), and the root mean square error of approximation (RMSEA) were used. See table 4:1 for criteria levels, as defined by Hu and Bentler (1999) and (Kline, 2005).

**Table 4:1***Model of fit indices*

| Fit indices | Acceptable fit | Good fit |
|-------------|----------------|----------|
| CFI         | >0.9           | >0.95    |
| TFI         | >0.9           | >0.95    |
| SRMR        | <0.08          | <0.08    |
| RMSEA       | <0.08          | <0.06    |

#### 4.3.3.1.4 Assessing measurement invariance

To assess validity of the HViQ across different populations, measurement invariance was conducted across gender and age. Traditionally, measurement invariance has been explored via chi-squared, however there is increasing awareness that this can be overly sensitive to small or unimportant deviations (Putnik & Borstein, 2017). Instead, the following consecutive steps are recommended for measurement invariance for categorical data (Bowen & Masa, 2015; D’Urso et al., 2022; Putnick & Bornstein, 2016): (i) Configural invariance ensures the factor structure across groups; (ii) metric (weak), constrains factor loadings to ensure equivalence of these, (iii) scalar (also known as threshold in ordinal data) (strong), constrains the factor loadings and thresholds to ensure equivalence of these. If measurement invariance is supported, it indicates equivalence that the model is equivalent across groups and appropriately applies to different populations. To consider if measurement invariance is supported, change in CFI and RMSEA are compared between each increasingly constrained model with the preceding one. Rutkowski and Svetina (2014) recommend thresholds of change in CFI <.002 and RMSEA <.03 at the metric level, then changes of CFI <.01 and RMSEA <.01 at the scalar level.

#### 4.3.3.2 Scale evaluation

All evaluations for the adapted scale properties were conducted in IBM SPSS Statistics (version 29). Internal consistency was determined using ordinal alpha (Gadermann et al., 2012; Zumbo et al., 2007). Acceptability as defined by Cicchetti (1994) indicated that a coefficient alpha below 0.70 is unacceptable; 0.70 to 0.79 is fair; 0.80 to 0.89 is good; 0.90 and above is excellent.

Test-retest reliability was measured by intraclass co-efficient (ICC) for individual items, as well as a whole (Gadermann et al., 2012; Zumbo et al., 2007). Acceptability as defined by Cicchetti (1994) indicated that where ICC coefficient is below 0.40 it is considered poor; 0.40-0.59 is fair; 0.60-0.74 is good; and 0.75 and above is excellent.

Convergent validity was assessed using Pearson's correlation with other visual hallucinations measures; SPEQ (Ronald et al., 2013) and MUSEQ (Mitchell et al., 2017). Correlations were be rated according to the following criterion:  $<.2$  = very weak,  $0.2-0.39$  = weak,  $0.4-0.59$  = moderate,  $0.6-0.79$ = strong, and  $0.8<$  very strong relationship (Evans, 1996).

#### *4.3.3.3 Missing data*

Only participants who had completed at least 80% of the HViQ were included in the analysis. There was only 0.5% of missing data from the baseline HViQ and 0.2% from the follow up HViQ. As data was deemed to be missing as random, missing data in EFA/CFA was managed with pairwise deletion. Data was normally distributed allowing for the use of parametric tests throughout.

#### *4.3.3.4 Data quality checks*

Additional quality checks were applied. Participants were screened and excluded from the quota if they demonstrated evidence of being a bot, straight lining or speeding (those who completed the assessment pack in less than a third of the median time), or inappropriate answers as evident in any free-text responses, which demonstrated poor engagement with the questionnaires.

## 4.4 Results

### 4.4.1 Participants

For the clinical participants, 434 consented to take part. Of those, 8 did not complete after consent, 13 were excluded for being ineligible after consent, 8 did not provide data on the HViQ so were not included, and 1 did not complete >80% of the HViQ. Therefore, 404 were included in the final analysis. 114 clinical participants completed a follow up assessment one week later.

Of the 2000 nonclinical participants surveyed, 566 full completers reported visions in the last month and therefore were included in the analysis. A further 130 partial completers also reported visions in the last month and completed the HViQ. Therefore, 696 non-clinical participants were included in the final analysis. See Table 4:2 for the demographics and clinical characteristics.

In terms of demographics across the groups, they were relatively similar proportionately across age, ethnicity, religion, and gender assigned at birth. Gender differences seemed more apparent in the clinical group where approximately two thirds of the sample were males (which is representative of clinical services) whereas the non-clinical group were more evenly split across the two groups. Those in clinical services reported higher levels of being 'single', compared to the non-clinical group who reported more married/cohabiting and 'in a relationship' status. In comparison to the UK representative statistics, there were lower levels of White British people in each group (85%; ONS, 2021) demonstrating greater representation of ethnic minorities within this sample.

In terms of the clinical group, almost half of those were diagnosed with schizophrenia, with equal numbers of those diagnosed with first episode psychosis, psychosis not otherwise specified, and schizoaffective disorder. Almost half of the sample were recruited from Community Mental Health Teams and a third from Inpatient Wards.

**Table 4:2**  
*Participant demographics*

| Demographics             | Clinical participants<br>(N=397) |      | Nonclinical<br>participants (N=696) |      |
|--------------------------|----------------------------------|------|-------------------------------------|------|
|                          | n                                | %    | n                                   | %    |
| Age                      |                                  |      |                                     |      |
| 16-18                    | 8                                | 2.1  | N/A                                 |      |
| 18-24                    | 37                               | 9.3  | 132                                 | 19   |
| 25-34                    | 95                               | 23.9 | 214                                 | 30.7 |
| 35-44                    | 92                               | 23.2 | 161                                 | 23.1 |
| 45-54                    | 86                               | 21.7 | 113                                 | 16.2 |
| 55-64                    | 66                               | 16.6 | 47                                  | 6.8  |
| 65+                      | 3                                | .8   | 29                                  | 4.2  |
| Missing                  | 10                               | 2.5  | 0                                   | 0    |
| Gender                   |                                  |      |                                     |      |
| Male                     | 245                              | 35.3 | 366                                 | 47.3 |
| Female                   | 140                              | 61.7 | 329                                 | 52.6 |
| Non-binary               | 6                                | 1.5  | 1                                   | .1   |
| Prefer a different term  | 4                                | 1    |                                     |      |
| Missing                  | 2                                | .5   |                                     |      |
| Assigned gender at birth |                                  |      |                                     |      |
| Yes                      | 383                              | 96.2 | 677                                 | 97.3 |
| No                       | 9                                | 2.3  | 16                                  | 2.3  |
| Prefer not to say        | 3                                | .8   | 3                                   | .4   |
| Missing                  | 3                                | .8   | 0                                   | 0    |
| Sexual Orientation       |                                  |      |                                     |      |
| Heterosexual             | 311                              | 78.3 | 597                                 | 85.8 |
| Gay/Lesbian              | 31                               | 7.8  | 23                                  | 3.3  |
| Bisexual                 | 26                               | 6.5  | 45                                  | 6.5  |
| Pansexual                | 8                                | 2    | 8                                   | 1.1  |
| Asexual                  | 5                                | 1.3  | 7                                   | 1.0  |
| Use another term         | 4                                | 1    | 6                                   | .9   |
| Prefer not to say        | 8                                | 2    | 10                                  | 1.4  |
| Missing                  | 4                                | 1    | 0                                   | 0    |
| Ethnicity                |                                  |      |                                     |      |
| Indian                   | 8                                | 2    | 24                                  | 3.4  |
| Pakistani                | 7                                | 1.8  | 21                                  | 3    |
| Bangladeshi              | 4                                | 1    | 3                                   | .4   |
| Chinese                  | 1                                | .3   | 5                                   | .7   |

|                                                        |     |      |     |      |
|--------------------------------------------------------|-----|------|-----|------|
| Any other Asian background                             | 8   | 2    | 7   | 1    |
| English, Welsh, Scottish, Northern Irish or British    | 286 | 72   | 458 | 65.8 |
| Irish                                                  | 3   | .8   | 5   | .7   |
| Gypsy or Irish Traveller                               | 2   | .5   | 5   | .7   |
| Any other White background                             | 5   | 1.3  | 12  | 1.7  |
| White and Black Caribbean                              | 11  | 2.8  | 14  | 2    |
| White and Black African                                | 7   | 1.8  | 14  | 2    |
| White and Asian                                        | 3   | .8   | 8   | 1.1  |
| Any other mixed or multiple ethnic background          | 9   | 2.3  | 13  | 1.9  |
| Caribbean                                              | 7   | 1.8  | 8   | 1.1  |
| African                                                | 9   | 2.3  | 65  | 9.3  |
| Any other Black, Black British or Caribbean background | 9   | 2.3  | 14  | 2    |
| Arab                                                   | 7   | .3   | 5   | .7   |
| Any other ethnic group                                 | 12  | 3.1  | 7   | 1    |
| I prefer not to say                                    | N/A |      | 8   | 1.1  |
| Missing                                                | 5   | 1.3  | 0   | 0    |
| Religion                                               |     |      |     |      |
| Buddhist                                               | 2   | .5   | 12  | 1.7  |
| Christian                                              | 171 | 43.1 | 331 | 47.6 |
| Hindu                                                  | 3   | .8   | 11  | 1.6  |
| Jewish                                                 | 2   | .5   | 7   | 1    |
| Muslim                                                 | 22  | 5.5  | 52  | 7.5  |
| Sikh                                                   | 4   | 1    | 8   | 1.1  |
| Alternative religion                                   | 43  | 10.8 | 14  | 2    |
| No religion                                            | 12  | 31.2 | 231 | 33.2 |
| Prefer not to say                                      | 20  | 5    | 30  | 4.3  |
| Missing                                                | 6   | 1.5  | 0   | 0    |
| Relationship status                                    |     |      |     |      |
| Single                                                 | 266 | 67   | 209 | 30   |
| In a relationship (living separately)                  | 43  | 10.8 | 49  | 7    |
| In a relationship (cohabiting)                         | 25  | 6.3  | 98  | 14.1 |
| Widowed                                                | 3   | .8   | 11  | 1.6  |
| Married/Civil partnership                              | 37  | 9.3  | 303 | 43.5 |
| Separated                                              | 11  | 2.8  | 7   | 1    |
| Divorced                                               | 9   | 2.3  | 17  | 2.4  |
| I prefer not to say                                    | 1   | .3   | 2   | .3   |

|                                            |     |      |     |      |
|--------------------------------------------|-----|------|-----|------|
| Missing                                    | 2   | .5   | 0   | 0    |
| Region                                     |     |      |     |      |
| North East of England                      | 28  | 6.9  | 31  | 4.5  |
| North West of England                      | 85  | 21   | 73  | 10.5 |
| Yorkshire and The Humber                   | 53  | 13.1 | 52  | 7.5  |
| East Midlands                              | 22  | 5.5  | 56  | 8    |
| West Midlands                              | 47  | 11.6 | 64  | 9.2  |
| East of England                            | 14  | 3.5  | 53  | 7.6  |
| London                                     | 43  | 10.6 | 139 | 20   |
| South East of England                      | 75  | 18.6 | 105 | 15.1 |
| South West of England                      | 23  | 5.7  | 48  | 6.9  |
| Northern Ireland                           | N/A | N/A  | 11  | 1.6  |
| Scotland                                   | N/A | N/A  | 34  | 4.9  |
| Wales                                      | 14  | 3.5  | 30  | 4.3  |
| Diagnosis                                  |     |      |     |      |
| Brief Psychotic Disorder                   | 6   | 1.5  |     |      |
| Delusional Disorder                        | 3   | 0.7  |     |      |
| First Episode Psychosis                    | 61  | 15.3 |     |      |
| Psychotic Disorder Not Otherwise Specified | 63  | 15.8 |     |      |
| Schizophrenia                              | 196 | 49.1 |     |      |
| Schizoaffective Disorder                   | 62  | 15.6 |     |      |
| Other Psychosis Spectrum Disorder          | 8   | 2    |     |      |
| Current clinical service                   |     |      |     |      |
| CMHT                                       | 183 | 46.1 |     |      |
| Day hospital                               | 1   | 0.3  |     |      |
| EIP                                        | 78  | 19.6 |     |      |
| Forensic CMHT                              | 1   | 0.3  |     |      |
| Forensic Inpatient Ward                    | 8   | 2    |     |      |
| Psychiatric Inpatient Ward                 | 126 | 31.7 |     |      |

*Note.* Diagnosis N = 399 , clinical service N = 397. For clinical samples only. CMHT = Community Mental Health Team, EIP = Early Intervention in Psychosis team

#### 4.4.2 Factor analysis

##### 4.4.2.1 EFA

Bartlett's test of Sphericity was significant ( $\chi^2=2957.964$ ,  $df = 45$ ,  $p < .001$ ) and KMO= .897, indicating that factor analysis was appropriate on the first subsample (N=550). Parallel analysis identified two and three factor solutions that seemed viable. The three-factor model

explained 61.3% of the variance but had a cross-loading item onto two factors (Item 3, attention grabbing). See Table 4:3 for factor loadings. The two-factor model advised dropping this item but only explained 57.5% of the variance. See Table 4:4 for factor loadings. However, the three-factor model was considered the most appropriate from a theoretical and empirical perspective. Therefore, the item was retained on Factor 3 as it had a higher loading onto this factor. The three factors identified represented constructs previously identified as important for understanding visions: Factor 1 – Emotional impact; Factor 2 – Intrusiveness; and Factor 3 – Perceptual quality. See Figure 4:1 for path diagram. The between-factor correlation coefficients demonstrated that these constructs were related but not identical ('emotional impact' and 'intrusiveness'  $r = .835$ ; 'emotional impact' and 'perceptual quality',  $r = .708$ ; 'intrusiveness'  $r = .588$ ).

**Table 4:3**  
*Three factor model factor loadings*

| Item                     | Factor loadings                   |                             |                                     | Communalities<br>(h <sup>2</sup> ) |
|--------------------------|-----------------------------------|-----------------------------|-------------------------------------|------------------------------------|
|                          | Factor 1 -<br>Emotional<br>impact | Factor 2 -<br>Intrusiveness | Factor 3 -<br>Perceptual<br>quality |                                    |
| 6. Distress              | .858                              |                             |                                     | .833                               |
| 2. Negative<br>content   | .840                              |                             |                                     | .632                               |
| 7. Worthless             | .753                              |                             |                                     | .721                               |
| 5. Interference          |                                   | .643                        |                                     | .801                               |
| 9. Control               |                                   | .554                        |                                     | .472                               |
| 1. Frequency             |                                   | .547                        |                                     | .465                               |
| 4. Duration              |                                   | .502                        |                                     | .498                               |
| 8. Quality               |                                   |                             | .840                                | .659                               |
| 10. Feels real           |                                   |                             | .621                                | .487                               |
| 3. Attention<br>grabbing | <i>.479</i>                       |                             | .485                                | .518                               |

*Note.* Item 3. Attention grabbing loading demonstrated across two factors. Italics used to indicative other potential factor loading, which was not retained.

**Table 4:4**  
*Two factor model factor loadings*

| Item        | Factor loadings |          | Communalities (h <sup>2</sup> ) |
|-------------|-----------------|----------|---------------------------------|
|             | Factor 1        | Factor 2 |                                 |
| 6. Distress | .944            |          | .827                            |

|                       |      |      |      |
|-----------------------|------|------|------|
| 2. Negative content   | .902 |      | .617 |
| 7. Worthless          | .887 |      | .729 |
| 5. Interference       | .704 |      | .712 |
| 9. Control            | .401 |      | .422 |
| 8. Quality            |      | .924 | .600 |
| 4. Feels real         |      | .718 | .474 |
| 8. Duration           |      | .614 | .525 |
| 10. Frequency         |      | .554 | .420 |
| 3. Attention grabbing |      |      | .428 |

#### 4.4.2.2 CFA

Bartlett's test of Sphericity was significant ( $\chi^2 = 2206.339$ ,  $df = 45$ ,  $p < .001$ ) and KMO = .882, indicating that factor analysis was appropriate on the second subsample ( $N = 550$ ).

The CFA demonstrated that the 10-item three-factor model was within the excellent fit range (CFI = 0.989, TLI = 0.985, RMSEA = 0.047, SRMR = 0.053) demonstrating the data fit the three-factor structure well. See Appendix 9 for final version of HViQ.

#### 4.4.2.3 Measurement invariance

Measurement invariance was supported across all levels, including the strongest scalar level for both gender and age. (See Tables 4:5 and 4:6). Thus, demonstrating that the HViQ has stable factor structure (configural), equal strength of items (metric), and the same thresholds of the scales' function (scalar) across both gender and age.

**Table 4:5**

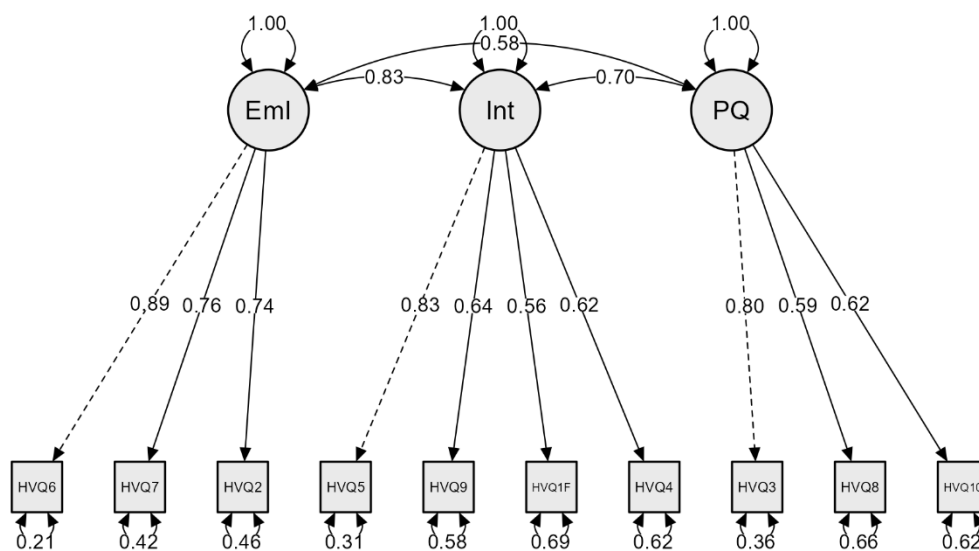
*Model comparisons to assess measurement invariance of HViQ*

|                    | CFI                  | RMSEA                | SRMR                 |
|--------------------|----------------------|----------------------|----------------------|
| Configural         | 0.996                | 0.027                | 0.055                |
| Metric             | 0.997                | 0.023                | 0.057                |
|                    | ( $\Delta = 0.001$ ) | ( $\Delta = 0.004$ ) | ( $\Delta = 0.002$ ) |
| Scalar (threshold) | 0.998                | 0.019                | 0.054                |
|                    | ( $\Delta = 0.001$ ) | ( $\Delta = 0.004$ ) | ( $\Delta = 0.003$ ) |

Note.  $\Delta$  = change

**Table 4:6***Model comparison to determine measurement invariance across age for HViQ*

|                    | CFI                           | RMSEA                         | SRMR                          |
|--------------------|-------------------------------|-------------------------------|-------------------------------|
| Configural         | 1.000                         | 0.000                         | 0.060                         |
| Metric             | 1.000<br>( $\Delta = 0.000$ ) | 0.000<br>( $\Delta = 0.000$ ) | 0.064<br>( $\Delta = 0.004$ ) |
| Scalar (threshold) | 1.000<br>( $\Delta = 0.000$ ) | 0.000<br>( $\Delta = 0.000$ ) | 0.062<br>( $\Delta = 0.002$ ) |

Note.  $\Delta$  =change**Figure 4-1***Path diagram with standardised estimates for HViQ*

Note. Eml = Emotional impact, Int = Intrusiveness, PQ = Perceptual quality.

#### 4.4.3 Scale evaluation

##### 4.4.3.1 Total scores

The mean total score for the overall sample was 18.49 ( $SD = 8.37$ ,  $N = 1100$ ). The mean total score for the clinical sample was 23.53 ( $SD = 8.74$ ,  $n = 404$ ), in comparison to the non-clinical sample which was 15.57 ( $SD = 6.58$ ,  $n = 696$ ). An independent t-test was conducted HViQ scores between the clinical and non-clinical groups. There was a significant difference in the scores with the clinical reporting higher scores,  $t(667.912) = 15.872$ ,  $p = <.001$ . See Table 4:7 for mean total scores for each factor, with t-tests comparing the factor means across

groups. Across all three factors, the clinical group scored significantly higher than the non-clinical group.

**Table 4:7**

*Mean scores for each factor and t-tests comparing the clinical and non-clinical groups*

| Factor             | Overall  |           | Clinical<br><i>n</i> = 404 |           | Non-clinical<br><i>n</i> = 696 |           | T-test                                  |
|--------------------|----------|-----------|----------------------------|-----------|--------------------------------|-----------|-----------------------------------------|
|                    | <i>M</i> | <i>SD</i> | <i>m</i>                   | <i>sd</i> | <i>m</i>                       | <i>sd</i> |                                         |
| Emotional impact   | 4.49     | 3.50      | 6.13                       | 3.83      | 3.55                           | 2.90      | t(659.301)= 11.657,<br><i>p</i> = <.001 |
| Intrusiveness      | 6.52     | 3.58      | 8.44                       | 3.92      | 5.43                           | 2.85      | t(13.367)= 633.252,<br><i>p</i> = <.001 |
| Perceptual Quality | 7.45     | 2.86      | 8.94                       | 2.79      | 6.59                           | 2.54      | t(14.241)= 1095, <i>p</i> = <.001       |

#### 4.4.3.2 Internal Consistency

The HViQ demonstrated good internal consistency at both baseline ( $\alpha = .871$ ) and follow up ( $\alpha = .881$ ). Internal consistency for each factor was emotional impact  $\alpha = .847$  (good), intrusiveness  $\alpha = .775$  (acceptable), and perceptual quality  $\alpha = .699$  (questionable).

#### 4.4.3.3 Test-retest reliability

114 clinical participants completed the HViQ a week later to assess test-retest reliability (baseline total *mean* = 24.35, *SD* = 8.01, follow-up total *mean* = 23.07, *SD* = 8.71). Intraclass correlations co-efficient were calculated for each item, demonstrating fair to excellent reliability (Table 4:8). Total scores were also used to calculate overall test-retest reliability for the measure as a whole demonstrating excellent stability (ICC = .845).

**Table 4:8**

*Mean and standard deviation scores for each item on the HViQ*

| Item | Baseline<br>Mean (SD) | Clinical<br>Baseline<br>Mean (SD)<br><i>n</i> = 404 | Nonclinical<br>Baseline<br>Mean (SD)<br><i>n</i> =696 | Follow<br>up Mean<br>(SD)<br><i>n</i> =114 | Test re-test<br>correlation<br>ICC | Significance<br>level |
|------|-----------------------|-----------------------------------------------------|-------------------------------------------------------|--------------------------------------------|------------------------------------|-----------------------|
|------|-----------------------|-----------------------------------------------------|-------------------------------------------------------|--------------------------------------------|------------------------------------|-----------------------|

|    |                |             |              |                |      |           |
|----|----------------|-------------|--------------|----------------|------|-----------|
| 1  | 1.81<br>(1.07) | 2.38 (1.19) | 1.4 (0.82)   | 2.35<br>(1.12) | .805 | Excellent |
| 2  | 1.52<br>(1.29) | 2.03 (1.47) | 1.23 (1.07)  | 2.15<br>(1.38) | .736 | Good      |
| 3  | 2.38<br>(1.25) | 2.87 (1.23) | 2.09 (1.17)  | 2.95<br>(1.10) | .552 | Fair      |
| 4  | 1.94<br>(1.09) | 2.39 (1.25) | 1.68 (0.88)  | 2.53<br>(1.24) | .822 | Excellent |
| 5  | 1.49<br>(1.31) | 2.07 (1.42) | 1.16 (1.11)  | 2.10<br>(1.32) | .791 | Excellent |
| 6  | 1.67<br>(1.36) | 2.26 (1.46) | 1.33 (1.18)  | 2.35<br>(1.36) | .704 | Good      |
| 7  | 1.30<br>(1.34) | 1.83 (1.50) | 0.99 (1.13)  | 1.96<br>(1.43) | .780 | Excellent |
| 8  | 2.56<br>(1.17) | 3.08 (1.09) | 2.27 (1.10)  | 3.11<br>(1.01) | .751 | Excellent |
| 9  | 1.29<br>(1.18) | 1.59 (1.29) | 1.108 (1.07) | 1.71<br>(1.22) | .606 | Good      |
| 10 | 2.51<br>(1.21) | 2.99 (1.24) | 2.23 (1.09)  | 3.12<br>(1.09) | .744 | Good      |

*Note:* Follow up mean only included clinical participant. Item details: 1. How frequently do you see visions? 2. How negative is the content (e.g. the physical appearance) of the visions? 3. How attention grabbing or noticeable are the visions? 4. How long do the visions usually last? 5. How much do the visions interfere with your daily activities? 6. How distressing are the visions? 7. How bad (worthless/useless) do the visions make you feel about yourself? 8. How clearly do you see the visions? 9. How often does the vision control you and what you do? 10. How often does the vision feel real?

#### 4.4.3.4 Convergent validity

There is currently no gold standard measure for visions or an alternative brief self-report measure that explores the same content as the HViQ, therefore the ability to confidently assess convergent validity was limited. However, we attempted to explore this by comparing the HViQ to the SPEQ and MUSEQ vision subscale. It is important to note however that both the SPEQ and MUSEQ only score frequency over the last month (SPEQ) and lifetime (MUSEQ) but includes a monthly option. In comparison, the HViQ explores a range of items such as frequency, distress, negative content, worthless, and perceptual quality. Given the difference in content, strong correlations were not expected but convergent validity was still included to demonstrate relatedness to visions measures in general. Owing to the difficulty in establishing convergent validity, this was assessed in eight different ways. Firstly, total HViQ scores were correlated to total scores on the SPEQ and MUSEQ. Secondly, by comparing the total HViQ to item 5 of the SPEQ (“Did you see things

that others cannot?”) which specifically explores frequency of visions, and item 8 of the MUSEQ (“I saw people, faces or animals, and then found that nothing was there”) which explores the frequency of visions which content is most commonly reported in people with psychosis. Thirdly, we correlated the frequency item 1 on the HViQ (How frequently do you see visions?”) to the frequency items on the SPEQ and MUSEQ total and individual frequency items (SPEQ item 5 and MUSEQ item 8), mentioned above. Very weak to moderate correlations were found, see Table 4:9 for more details. The strengths of correlations varied across the different questions and questionnaires, which demonstrates the difficult in truly assessing this given the different content of the HViQ to other measures.

**Table 4:9**

*Convergent validity of the HViQ with the SPEQ and MUSEQ total scores and frequency items.*

| Measure                     | Total HViQ score |              | HViQ frequency score |              |
|-----------------------------|------------------|--------------|----------------------|--------------|
|                             | Correlations     | Significance | Correlations         | Significance |
| SPEQ Total                  | .499             | <.001        | .371                 | <.001        |
| SPEQ vision frequency       | .525             | <.001        | .435                 | <.001        |
| MUSEQ Total                 | .363             | <.001        | .224                 | <.001        |
| MUSEQ vision frequency item | .321             | <.001        | .158                 | <.001        |

*Note.* SPEQ = Specific Psychotic Experiences Questionnaire – Hallucinations Subscale (Ronald et al., 2014), MUSEQ (Multimodal Unusual Sensory Experiences Questionnaire – visual subscale (Mitchell et al., 2017).

## 4.5 Discussion

Despite at least one in three people with psychosis experiencing visions, there are a lack of appropriate measures to adequately identify and assess visions in routine clinical practice. Therefore, in order to better identify visions, and help in efforts to improve treatment effectiveness, there is a clear need for reliable and valid measures, that are easy to use, acceptable to people with lived experience and fit for purpose. Consequently, working together with people with lived experience, we developed the HViQ. To our knowledge it is the first self-report outcome measure for visions in psychosis, which explores a range of attributes that are important to understanding distressing visions, such as negative content, distress, and impact of these. The 10-item scale demonstrated good levels of internal reliability and test-retest reliability.

Furthermore, CFA confirmed the suitability of a three-factor structure, which relates well to constructs identified in Chapters 2 and 3 which drove negative distress and impact of visions; emotional impact, intrusiveness, and perceptual quality. 'Emotional impact' includes questions relating to the negative content of the vision, feelings of worthlessness, and distress caused by these. Such variables were important in contributing to appraisals of threat and associated distress. 'Intrusiveness' explores the frequency, duration, interference on people's lives and the visions' perceived attempts to control them. Such variables were often reported to relate to feelings of powerlessness and loss of personal autonomy which drove distress. 'Perceptual quality' explores the physical appearance of the visions such as how attention grabbing the vision is, its perceptual quality and perceived realness. Such variables were key in making visions harder to dismiss, more absorbing and therefore more difficult to manage. In sum, the HViQ assesses key constructs that are known to be related to distress and impact of visions, indicating its suitability of use in both clinical and research practice.

This study developed the first self-report outcome measure of visions using both clinical and non-clinical participants who report seeing things others do not. It is the largest ever study to validate a vision-specific measure with both clinical and non-clinical participants. The

HViQ is a short, easily administered self-report measure. Its timeframe exploring visions in the last week and excellent test-retest reliability demonstrates its suitability for repeated use in routine clinical and research practice. It was developed alongside people with lived experience who found it accessible and ensured it measured meaningful characteristics, which are key in understanding distressing visions. The HViQ is adapted from the HPSVQ, which focuses on voice hearing. Given the high amount of people who experience voices alongside visions, this provides a helpful opportunity to use the two measures in parallel to capture two core experiences of psychosis.

Given that people under-reported visions because these are not routinely asked about in clinical practice (Aynsworth et al., 2025), the HViQ could be used as a quick and easy screening tool to better assess visions in clinical practice. Using the HViQ, could support clinicians to feel more confident in how to appropriately explore visions and support more targeted interventions for these.

#### 4.5.1 Limitations

As with any research, there were limitations. Firstly, adapting a previous measure means that the HViQ was somewhat constrained by the questions asked in the HPSVQ items. Whilst the HPSVQ was specifically chosen because of its items relevance to important characteristics identified in understanding visions, developing an entirely new measure could have allowed greater scope for exploring these. For example, factors such as co-occurrence of hallucinations across sensory domains and (multimodality, multisensory) and the behaviour that results from a response to the visions are also key in understanding the distress and impact (Chapter 3) but were not captured in the HViQ. Chapter 3 also highlighted the wide range of negative appraisals people hold in relation to visions, which warrants greater exploration than was included in the HViQ. Therefore, there remains a need for the development of further assessment measures to better assess the wide range of factors influencing visions. These can then be used alongside the HViQ to form part of a more comprehensive assessment of visions.

Secondly, we were not able to assess test-retest reliability in the non-clinical sample. Given experiences are less frequently reported in non-clinical populations than in people with psychosis, there may be limits to HViQ only assessing visions over the last week. Therefore, further exploration is required to assess the measure's stability over time in a non-clinical population.

Thirdly, in its current format, the HViQ explores visions as if they were a homogeneous entity. Helpfully, people with lived experience highlighted that it does not capture individual differences within visions. People often report having more than one vision which can vary in their impact; for example, some visions may be positive, some may be negative, some may be negative to a lesser or more extent than others. Subsequently, people may find it hard to only give one answer per question. Therefore, we suggest when using the HViQ, it could be useful to have a discussion with the person as to how best to utilise the measure to suit their needs. It could be taking a general average score for all visions over the past week would be the most suitable way. However, this does not seem unique to visions, and instead an issue with hallucinations measures more general.

Fourthly, not all psychometric properties advised by Boetang et al. (2018) were explored. Despite involving people with lived experience and expert research clinicians in the field in the development of the measure, which could help to inform face validity (the extent to which the respondents believe the measure appropriately assesses the construct targeted and the objectives of the measure (Boetang et al., 2018)) and content validity (the extent to which the respondents believe the measure appropriately assesses the construct targeted and the objectives of the measure (Boetang et al., 2018)), these were not formally assessed. In addition, although construct validity was explored through EFA and CFA, there are further areas worthy of investigating to establish this more robustly. For example, exploring discriminative validity (the extent to which the concept being measured is different from another distinct concept (Boetang et al., 2018)) and predictive validity (the extent to which scores can predict future outcomes (Boetang et al., 2018)).

A further area of validity requiring exploration is convergent validity. There is currently no gold standard of a measure for an outcome measure for distressing visions (Aynsworth et al, 2017a). Therefore, we were limited in the ability to assess convergent validity, especially in the way the data was collected online. Whilst significant correlations were found with the SPEQ and MUSEQ, the correlations were weak to moderate. This is unsurprising as the HViQ measures different content and time frame to the SPEQ and MUSEQ which both only capture frequency; the SPEQ over the last month, and the MUSEQ over lifetime (but includes an option to endorse these experiences within the last month on its Likert scale). In comparison, the HViQ captures the last week. The HViQ also considers a wider range of items such as distress, negative content, and control. Therefore, the items in the HViQ are not directly comparable to the SPEQ and MUSEQ so the convergent validity scores should be considered with caution.

#### 4.5.2 Conclusion

The HViQ is a brief self-report outcome measure that assesses important factors in understanding distressing visions in both people with psychosis and the general population. The HViQ can be used in both clinical and research practice to enhance our understanding and treatment of visions. It has also demonstrated high psychometric validity and reliability. However, further measures covering other key aspects of visions are needed if we want to offer a more comprehensive and detailed assessment of visions.

## 5 Visual hallucinations: Developing a theoretical model of psychological factors

### 5.1 Chapter Abstract

**Background:** Chapters 1-3 identified that visions are poorly understood, and that there are a number of potential factors that could contribute to the occurrence of visions: poor sleep, low self-esteem, high levels of worry, emotional dysregulation, vivid mental imagery, as well as symptoms of trauma such as dissociation or nightmares. The aims of this chapter were first to better understand the phenomenology of visions in both clinical and non-clinical people reporting visions. Second, to evaluate the contribution of a range of potential causal factors to help develop a psychological theoretical model of visions that could inform future treatment development. Third, to establish if people with psychosis and visions want a treatment for these.

**Method:** A cross-sectional questionnaire study was conducted in people who have experienced visions in the last month, consisting of both a non-clinical sample (N=696) and those in clinical services with a diagnosis of non-affective psychosis (N=404). Descriptive methods were used to explore the phenomenology of visions. Then Structural Equation Modelling (SEM) was conducted to test the associations of the theoretical model of visions including the following factors: low self-esteem, worry, perseverative thinking, poor sleep, dissociation, mental imagery, nightmares, other hallucinatory experiences, paranoia, and emotional regulation.

**Analysis:** Both clinical and non-clinical participants reported seeing visions of people, figures/shadows, and animals. Both groups reported multimodal visions, but the content of these were much more negative in clinical participants. They were also more likely to report a higher number of visual experiences in general as well as more multimodal experiences in relation to the non-clinical group. SEM tested a theoretical model of visions that accounted

for 43% of the variance which included the following factors: nightmares, other psychotic symptoms, low self-esteem, and worry. 75.9% of clinical participants wanted a treatment for visions.

Conclusions: This study found that there was little difference between the content of visions in non-clinical and clinical participants. However, there is an indication of an increase in the quantity of visions and their quality (more multimodal) in people with psychosis and visions. In terms of predictors of visions, nightmares, other psychotic symptoms, low self-esteem, and high levels of worry were identified in the SEM. Such factors could be contributory causal factors in the occurrence of visions, which could be targeted as part of future treatment development. However, causality cannot be evidenced through cross sectional design and therefore, future research should look to test these putative mechanisms through causal-interventionist and experimental designs.

## 5.2 Introduction

The first step to advance treatments is developing a detailed understanding of the phenomena to be studied (Clarke, 2006; Freeman, 2024). This has been demonstrated in Chapters 2 and 3, which described the complex and vivid realness of people's visions, and their detrimental impact on people's lives. However, this was based on a small number of participants, who kindly provided rich and detailed information about their experiences. We still do not know much about the experiences across a larger, more representative sample. Therefore, the work reported in this chapter aimed to explore this further.

Once the phenomenology is better understood, a next step is to identify potential contributory factors that can be tested rigorously through experimental design and treatment studies (Kendall & Campbell, 2009). In Chapters 1 and 3, various psychological factors were identified that influenced not only people's distressing appraisals, but also the frequency and behaviour of the visions. These factors included (i) low self-esteem, (ii) high levels of worry, (iii) poor sleep, (iv) dissociation, (v) vivid mental imagery, and (vi) nightmares which are discussed in more detail below. All of these mechanisms are targetable, measurable factors that importantly can be targeted and tested within a treatment, providing an exciting opportunity to develop new targeted treatments for visions. The next steps to do this are by rigorously evaluating the proposed theoretical model to identify potentially key contributory factors of visions (Freeman, 2024; Kendler & Campbell, 2009). To aid this process a brief summary is provided below on the possible candidate mechanisms identified.

### 5.2.1 Low self-esteem

*"I feel that's 90% of why I'm seeing the visions – the low mood.....when I'm feeling bad about myself, they're much worse." Sarah*

Low self-esteem is when a person holds negative assessments (or beliefs) of one's worth and value of themselves (Bailey, 2003). In Chapters 2 and 3, participants described how low

self-esteem both preceded the initial onset of visions, and their daily occurrence. In the qualitative interviews (Chapter 3), people with visions reported holding negative self-beliefs such as, “I am worthless” long before the initial occurrence of visions. But when encountering daily stressors, such as arguments with friends or family, or financial difficulties, these negative self-beliefs were triggered and subsequently visions became more frequent and severe (more prolonged, intrusive, and aggressive experiences). The visions’ presence then reinforced their negative self-beliefs (either by the presence and associated stigma of visions or by mirroring such negative thoughts in their behaviours towards the observer e.g. verbally insulting them), which inevitably made the person feel worse about themselves and consequently saw more visions. Thus, creating an unhelpful maintenance cycle.

Low self-esteem has been identified as key to CBT for psychosis, with the recognition that dysfunctional beliefs about self, others and the world, are able to both trigger and maintain auditory hallucinations and other symptoms of psychosis (Daemen et al., 2022; Freeman et al., 2029; Garety et al., 2001; Postma et al., 2021). For example, if someone has had a history of abuse in their childhood, they may have developed dysfunctional beliefs about themselves (e.g. “I am worthless”), others (e.g. “People are out to harm me”), and the world (e.g. “the world is dangerous”). Therefore, they can develop feelings of paranoia as a way of protecting from such fears coming true by taking preparatory action against these such as being hypervigilance or socially isolating themselves from others to avoid harm. However, this only acts to reinforce and strengthen these beliefs because it does not allow someone to learn alternative beliefs that perhaps they are safer than they thought (Freeman et al., 2016). Support from studies also indicate that low self-esteem acts as a maintenance factors for paranoia (Fowler et al., 2006) and auditory hallucinations (Smith et al., 2006). Subsequent targeted treatments for low self-esteem therefore have reduced paranoia and auditory hallucinations (Freeman et al., 2014). Whilst not yet explored in relation to visions, given its key role in other psychosis symptoms, it would seem plausible that low self-esteem could also be related to visions.

### 5.2.2 Worry

*“The visions are bad but I feel like when you’re not having a vision and you’re waiting for them to happen, that’s worse.” Mick*

Worry is “a chain of thoughts and images, negatively affect-laden and relatively uncontrollable” (Borkovec et al., 1983, p.10). In the qualitative study (Chapter 3), people often reported feeling threatened by their visions, either emotionally or physically, believing the visions will harm them in some way. People explained that they would then spend long periods worrying about the visions, whether it was present or not. Worry brings implausible ideas to mind and keeps them there, which then exacerbates people's distress (Freeman et al., 2015). Worry can also be associated with positive beliefs such as that it can help people cope with future situations through preparatory problem-solving to reduce any potential negative outcomes, but which then further increases worry by bringing distress and anxiety to mind (Wells & Butler, 1997). In the case of visions, worry increased people's sense of threat from the visions, which consequently made the visions more aggressive. This further reinforced the belief that people needed to protect themselves from the visions, which elicited more worry and subsequent safety seeking behaviours, such as hypervigilance, or acting in ways to reduce the likelihood of seeing visions, such as avoiding leaving the house. Such safety seeking behaviours prevent people from receiving any dis-confirmatory evidence that they may not be under such perceived threat from the vision as they initially believe, therefore they never habituate to the anxiety which further drives the need to worry in order to avoid this (Freeman, 2016). The consequence of which is even more increasing likelihood of seeing visions, which are distressing and hence creates an unhelpful maintenance cycle between worry and visions.

Worry has been found as a key causal mechanism in the occurrence of other psychotic experiences, such as paranoia (Freeman et al., 2019), voice hearing (Hartley et al., 2014), and other anomalous experiences e.g. sense of unreality with surroundings and perceptual alterations (Freeman et al., 2015). More specifically, treating worry has been effective at reducing paranoia in people with psychosis (Freeman et al., 2015). Worry has yet to be

explored in relation to visions. Given these findings, and the participants reports, it is plausible that worry could also be related to visions.

### 5.2.3 Poor sleep

Interviewer: *“The nights that you don’t sleep, does that have an impact on the visions?”*

Scarlett: *“It does, yeh. It’s normally a lot more frequent and stronger.”*

Sleep disruption is common in patients with psychosis: half of patients have insomnia (Freeman et al., 2009; 2019; Waite et al., 2020). In the qualitative interviews, participants described the interaction between poor sleep and visions: when visions occurred, they disrupted sleep as people felt anxious and vulnerable. In turn, poor sleep led to seeing more visions, creating an unhealthy cycle between sleep and visions. Poor sleep is a contributing factor to both the onset and persistence of other psychotic symptoms as it increases the likelihood of negative affect, low self-esteem and hallucinations (Freeman et al., 2015; Harrington & Cairney, 2021; Robbins et al., 2025; Sheaves et al., 2025). The mechanism of doing so could be that sleep deprivation inhibits the suppression of unwanted intrusive thoughts (Harrington & Cairney, 2021), which therefore increases emotional distress. Sleep treatments have shown some potential benefits of reducing psychotic symptoms, such as delusions and hallucinations (Freeman et al., 2017; Waite et al., 2020) with large randomised clinical trials currently underway to establish effectiveness (Waite et al., 2023). Given this and the relationship between visions and sleep-related problems (outlined in Chapter 1), it seems likely that visions could also be related to sleep, but are yet to have been explored specifically.

### 5.2.4 Dissociation

*“It felt like they were taking over me, rather than me coping with them. I was more focused on them than anything.” Yogi*

Dissociation is the disruption of integrating conscious awareness of one’s body, emotions or surroundings (American Psychiatric Association, 2013). People feel disconnected from their

bodies or the world around them. Participants described a range of ways in which dissociation contributed to visions. Mostly people described feeling fully absorbed in the visions, unable to break their attention away, and subsequently feeling disconnected from their surroundings. This loss of connection meant they often doubted their own judgement as to what was real and what was not, which triggered further anxiety and increased the frequency and severity of visions. Some people also reported that visions caused such high distress that this would trigger dissociation, as a way of disconnecting from their frightening reality. Dissociation has been found to lead to voice hearing (Černis et al., 2021b) by causing people difficulty when distinguishing their internal thoughts from external events. Treatments for trauma, which often reduce people's dissociation, have been found to reduce psychotic symptoms (Pilton et al., 2015; van der Berg et al., 2015; Varese et al., 2021; 2024). Therefore, dissociation could also be an important factor to understand in relation to visions.

### 5.2.5 Mental imagery

*"I have images of violent things just pop up in my head and then it just popped out, in front of me in the room and I could see it all". Emily*

Mental imagery are "internally generated thoughts which can be seen, heard, or in some way perceived with sensory qualities" (Sulfaro et al., 2023, p.1). Mental imagery can include recall of past experiences, as well as novel stimuli, such as future hypothetical events (Pearson et al., 2015). Mental imagery seems to occur on a continuum with hallucinations, where it shares features such as vividness and perceptual-like qualities with hallucinations (Pepin et al., 2026). It has been found to be more modifiable and flexible to manipulation by the observer but can still feel uncontrollable, like hallucinations (Pepin et al., 2026). Yet hallucinations seemed to be more externally located, more distressing, and involve more negative emotional content (Pepin et al., 2026).

Mental imagery was referenced in multiple ways during the interviews (Chapter 3). Some participants reported having a very vivid mental imagery whereby they could easily and richly imagine past or future events in their mind's eye. Even when the visions were not

there, participants reported being preoccupied with visions and saw them vividly in their mind which made them feel more fearful of these, which could then increase the likelihood of seeing more visions. Other people described how intrusive visual images could be projected into or seen in the external world, making it difficult to decipher if these were internally or externally generated experiences. However, not everyone explicitly thought they had vivid mental imagery, in fact they often felt like they did not have such abilities. Yet through the interviews, mental imagery was often still mentioned in a more indirect nature such as having vivid nightmares or visually ruminating about the visions.

As discussed in the Introduction (Chapter 1), visions could be caused by source monitoring difficulties; misattributing internal images to external events (Aynsworth et al., 2017b; Brébion et al., 2008; Rogers et al., 2024). Vivid mental imagery has been suggested as a key factor in this, as it could make it harder for people to distinguish internally generated images from external stimuli (Aynsworth et al., 2017b). It has been found that mental imagery can present as hallucinatory experiences when top-down information is overweighted so that it overrides bottom-up perceptions, and this can especially occur in situations when there is low quality bottom-up signalling (Sulfaro et al., 2023). This relates back to previous findings that visions often occur in the dark, at night, when the quality of bottom-up information would be more degraded (Dudley et al., 2013).

Therefore techniques that have focused on changing people's mental imagery have been beneficial in psychosis, for both auditory hallucinations (Ison et al., 2014) and paranoia (Taylor et al., 2020). More recently, imagery rescripting of intrusive images associated with visions has been found to be a beneficial treatment for these (Taylor & Paulik, 2024). Yet this relationship has not been explored on a larger scale.

#### 5.2.5.1 Nightmares

*"I used to have nightmares about a faceless man looking through at us whilst I was sleeping and sometimes I'd wake up and I'd see the face there...that is very similar to what I see [now]. It's almost like 'The Man's' a grown-up version of that."* Mick.

Mental imagery can feel uncontrollable, similar to hallucinations (Pepin et al., 2026). There are examples where mental imagery is more involuntary such as unwanted intrusive thoughts (Pearson et al., 2015) and nightmares (Phelps et al., 2008). Nightmares are vivid, immersive, and distressing mental images which wake individuals, and disrupt their restorative sleep (Sheaves et al., 2023). The brain tends to respond as if it is experiencing the event (e.g. seeing and feeling the experiences in the nightmares) and hence trigger negative emotional states in the person experiencing these (Sheaves et al., 2015). Such negative states can then trigger further emotions, by putting people into a state of hyperarousal which could further trigger nightmares (Sheaves et al., 2015). Nightmares can then induce behavioural responses that further encourage perceived threat as people may start avoiding people or places in order to avoid perceived consequences of nightmares (Sheaves et al., 2016).

During the qualitative interviews, although not specifically included in the questions, the experience of nightmares were discussed in two ways: a general experience of nightmares affecting their sleep, and nightmares that were related to the visions. For some people, they spoke of nightmares being common experiences in their lives which could impact on their sleep, not necessarily directly related to visions. Whilst for others, they spoke of how they often saw the visions directly in the nightmares, which often caused a great deal of distress. This is probably unsurprising given that nightmares are common in psychosis, with half of people with psychosis found to screen positive for nightmare disorder (Reeve et al., 2019; Waite et al., 2020). A likely parallel given the high rates of nightmares in post-traumatic stress disorder (Lemyre et al., 2019; Van Liempt et al., 2023), and the links of psychosis to trauma (Giannopoulou et al., 2023; Morrison et al., 2003; Pastore et al., 2022; Varese et al., 2012). It has been suggested that nightmares are more common in psychiatric disorders as they occur during REM sleep, which is the period of sleep where people process their emotional memories of the day (Sheaves et al., 2023). The increased burden of distressing and negative emotional experiences daily for people with psychiatric diagnoses could increase the burden on REM sleep (Sheaves et al., 2015) resulting in the ineffective processing of emotion memories that can lead to intrusive nightmares (van der Helm & Walker, 2012).

The process can be made worse by people who experience higher levels of dissociation, such as those with psychosis (Pilton et al., 2015), as this reduces the opportunity to process emotional memories before sleep, and hence place greater burden on REM sleep, contributing to more nightmares (Holmes et al., 2005). Whilst the role of nightmares has been acknowledged in relation to other symptoms of psychosis (Kammerer et al., 2021; Sheaves et al., 2015), they have not been explored in relation to visions.

### 5.3 A new model of visions

As explained above, a number of potential contributory factors have been identified from empirical literature and more specifically from the interviews conducted in Chapters 2 and 3. Where empirical evidence exists to support their role, these factors are investigated as independent or sole factors (Brederoo et al., 2021; Panayi et al., 2024). In contrast, this study takes the approach that the causation of visions are likely multifactorial and that there is unlikely to be one single mechanistic cause. Instead, each factor is classified as an 'INUS condition' – 'an insufficient but non-redundant part of an unnecessary but sufficient condition' (Mackie, 1965), whereby each factor is not sufficient on its own, or even necessary to cause visions, but the presence of these increases the likelihood of seeing visions. Whilst we recognise that a range of genetic, neurobiological and environmental factors will create risk factors to experience visions (Teeple et al., 2009; Waters et al., 2014), this study focuses on psychological processes that are likely to increase the chance of experiencing visions. This will then enable us to identify clear targetable treatment targets for the future. Such an approach has led to some of the most effective psychological treatments for paranoia in psychosis (Freeman et al., 2021a), so could also offer a novel way to develop better treatments for visions. This approach also lends itself well to explain the dynamic nature of visions, by recognising these factors are changeable, and can be present to more or less extent for people on a daily basis. This can then explain how visions are not often continuous experiences but instead occur in relation to potential triggers or intermittently (Gauntlett-Gilbert & Kuipers, 2003). Whilst it is unknown at this stage how all of these factors interact to cause and maintain visions, a hypothesised model is outlined below, largely based on our learning from this approach in paranoia (Freeman, 2016).

Distressing visions are likely to be based on feelings of vulnerability and low self-esteem, which are influenced by people's difficult life experiences (Chapter 2 and 3; Hardy et al., 2017; Dudley et al., 2024). Such feelings of inferiority and vulnerability are then made worse by appraisals of the visions of being a physical or emotional threat to themselves or people they care about, or a loss of control (Chapter 3). The multimodal nature of visions reinforces such threat beliefs and feelings of low self-esteem, by mirroring these in their behaviour towards the observer e.g. the visions acting in aggressive or derogatory ways towards them. Worry and rumination are perceived as a way to protect people through their positive beliefs that worry can help them to avoid such threat. Yet in reality, worry only tends to further increase distress through exacerbating such fears through bringing implausible ideas into their minds and keeping them there, which increase distress (Freeman, 2016). Associated safety behaviours to avoid such threat prevent the learning of dis-confirmatory information, and further reinforces people's threat beliefs (Freeman, 2016). Such worry can lead to attentional biases towards seeking out information that is important to the observer, and disengaging from others that could actually offer dis-confirmatory evidence of visions (Collerton et al., 2023), again which strengthens attention and focus paid to visions. This attentional bias could lead to feelings of dissociation and disconnection from the world. Made worse by the absorbing and complex nature of the visions, which can even further exacerbates feelings of dissociation from the moment and a loss of control. All such factors are made worse under conditions of poor sleep and nightmares, which both lead to increased unwanted thoughts and subsequently greater emotional dysregulation. This will only further increase the likelihood of seeing distressing visions. All such factors lead to an increased influence of prior expectations (top-down influences) when making perceptual judgements, which override incoming sensory data which could therefore lead to greater confusion and judgement of perceptual experiences as being external, and hence more visions. Such expectations could be further complicated by vivid mental imagery which causes even more overreliance on top-down processes, and can produce the experience of external hallucinations. In addition to multimodal visions, other hallucinatory experiences are common for those who see visions (Dudley et al., 2019; 2023c; McCarthy-Jones et al., 2017). They often hear other unrelated voices for example which can also further

exacerbate this cycle. Such voices could further comment on someone's safety or reinforce feelings of threat and then further reinforce the need to stay hypervigilant. Other psychotic symptoms such as paranoia or unusual beliefs could exacerbate this model by further driving thoughts of the visions being a threat to them, which could lead to the even more pressure on top-down processes to override sensory input and hence the perception of perceived even more realistic visions, by way of being hypervigilant in order to keep themselves safe.

In summary, we have identified plausible candidate factors that could increase the likelihood of experiencing distressing visions and proposed a theoretical model based on this. The next steps are to robustly test these as contributory factors (Freeman, 2024; Kendler & Campbell, 2009). To do this, it requires a large sample of people who experience visions to allow us to adequately test associations across various different potential contributory factors (Freeman & Loe, 2023; Isham, 2023; Sheaves, 2023). Typically, studies using this approach have used both clinical and non-clinical groups to do this for two reasons. Firstly, psychotic symptoms seemingly occur along a continuum (Baumeister et al., 2017; DeRosse & Karlsgodt, 2015; van Os, 2009), meaning visions do not only occur in people with psychosis (Aynsworth et al., 2023; Linszen et al., 2022) therefore including a wider range of participants would allow this model to be tested on a greater range and variety of visions, and a more representative sample. This also allows the opportunity to explore changes in visions across a continuum of experiences (DeRosse & Karlsgodt, 2015). Secondly, recruiting both clinical and non-clinical participants also allows the use of more robust and sophisticated analytic methods.

To date there has not been a study that directly compares visions reported in people with psychosis with those in non-clinical participants. Past research has noted similar content in the types of visions reported in people with psychosis compared to those in non-clinical populations, not seeking care for these (Aynsworth et al., 2023) but differences in the content and questions asked across measures, makes it difficult to directly compare the studies. Therefore, the first aim of this study was to describe the phenomenology of visions

across the two groups. This allows consideration as to whether these two groups report similar visual experiences.

The second aim is to test the identified contributory factors of visions to help inform the understanding of what leads to visions and identifies possible future treatment targets. The third, and final aim, is to establish whether people want treatments (in particular psychological treatments) for visions to assess the clinical need for these.

## 5.4 Method

### 5.4.1 Study design and participants

This was a cross-sectional design consisting of two groups of participants (clinical and non-clinical) who reported visions within the last month, completing a one-off baseline assessment pack. This pack comprised of novel measures of visions and established self-report measures exploring potential contributory factors such as poor sleep, high levels of worry and low self-esteem. This study used the same sample as Chapter 4 (see for more detailed recruitment and participation processes).

#### 5.4.1.1 *Lived experience input*

People with lived experience advised on all aspects of the study. Below are examples of feedback and changes made based on their involvement.

- 1) Terminology has been highlighted as key when explaining this study and its results. Initially, mechanisms were spoken of as “potential causal mechanisms” based on previous research (Freeman, 2024; Kendler & Campbell, 2009). However, feedback was that this did not feel entirely accurate, as whilst the variable mechanisms made visions worse, as raised in Chapter 3, terming these “causal” felt unconvincing and dismissive as in and of themselves as they still did not provide comprehensive or ‘convincing and acceptable’ explanations. Instead, emphasis instead has been on the phrasing of ‘contributory factors’ so whilst people recognise these are dynamic factors that make visions worse, they are not necessarily the absolute cause of visions, nor necessarily the original cause of onset. This has also been key when facilitating teaching session on visions and the need for this study, whilst supporting recruitment across the different NHS sites.
- 2) Initially to measure dissociation, the Černis Felt Sense of Anomaly (ČEFSA; Černis et al., 2021a) global items were included for its brief 5-item nature to reduce assessment burden. However, on reviewing this, people with lived experience felt that the items included were too ambiguous and therefore could cause confusion when completing this, especially if doing so alone. For example, when rating the

items such as 'Things seem strange' or 'My experiences seem peculiar', people were confused as to whether this would include their experience of hallucinations or not, as by nature most people would typically report that hallucinations were strange or peculiar, but given it's a dissociation measure, it was unclear whether hallucinations should be exempt from influencing the scores. Therefore, we considered the use of the Dissociative Experiences Measure, Oxford (DEMO; Černis et al., 2018) or the Dissociation Experiences Scale (DES-II; Carlson & Putnam, 1993). There was a strong preference to use the DEMO as people felt this most accurately captured their experiences. Therefore, the ČEFSA was replaced with the DEMO.

- 3) Promotional materials were used to encourage self-referrals. From discussions, it was clear that some people would prefer more information before contacting somebody about a study, whereas for others, they just would prefer a brief headline to grab their attention and then they can find more information once they contacted the research team. Therefore, we created two versions of the leaflets and posters which could be used flexibly to maximise the appeal of the project across a range of people. See Appendix 10 for examples of the two different versions of the leaflets.
- 4) Feedback from people with lived experience, the qualitative interviews (Chapter 2 and 3) as well as participants throughout this study, consistently emphasised to the research team that visions were rarely asked about in clinical practice. This was then evident from working closely with staff across the sites, whereby across the board, sites were finding it difficult to identify potential participants. We discussed this and agreed that we would make amendments to the recruitment process to include self-referrals and the use of opt-out systems, whereby potential participants could be contacted directly rather than rely on clinic teams to identify people. It was also decided that teaching sessions would be offered to all sites, with three aims: i) to encourage a curiosity of clinicians to ask about visions, ii) to support clinicians to feel more confident in how to ask about visions in their clinical practice, and iii) promote the study. These sessions were mostly co-facilitated with the Peer Researcher. In total, 15 sessions were offered over 8 NHS trusts, reaching over 350 members of

staff.

- 5) There were concerns from the research team about the length of the questionnaire being burdensome. However, feedback was whilst that may be the case for some people, it is clear in the Participant Information Sheet that they could stop at any time. Instead, people with lived experience reported that they actually appreciated the opportunity to think about their visions in more detail, and consider how they may relate to other experiences. Therefore, they would value the time and support to be curious about such a wide range of experiences and hence we did not reduce the length of the assessment pack.

## 5.4.2 Assessments

### 5.4.2.1 *Visions*

#### 5.4.2.1.1 Phenomenology of questions

To gain information about the phenomenology of visions, participants were asked a series of questions designed specifically for this study. Firstly, participants were asked about the content of their visions. Participants were given a list of categories (e.g. people, faces, shadows, objects, or animals) and asked to if they had seen any of these as visions in the last month. They could endorse as many were suitable. They were then asked, "Please could you briefly provide more details describing exactly what you see?" which had a free-text response box for people to provide more detail of their visions.

Secondly, the multimodal nature of the visions were explored. As there is no validated measure of this, Dudley et al's (2024) multimodal hallucination measure was used. This asked about the different modalities i.e. "Does the vision ever talk to you?", "Does the vision ever touch you?", "Is the vision ever associated with a particular smell?" with 'yes' or 'no' responses. If the participant answered yes to any of these questions, there were then asked about the frequency of their multimodal nature of their visions by asking "If so, how often?" with the options of 'Never', 'Rarely', 'Sometimes', 'Often', 'Always'. Finally, to find out about the emotional content of the multimodal aspect of the visions, the participants

were asked “When the vision talks to, what type of voice/touch is it?”, “When the vision talks to, what type of touch is it?” or “When the smell is present, what type of smell is it?”. The options included were ‘Very negative’, ‘Quite negative’, ‘Neutral’, ‘Quite positive’, and ‘Very positive’.

#### 5.4.2.1.2 Treatment for visions

To gain insight into the clinical need and demand for future treatment developments, the clinical participants were asked “If available, would you like a treatment for your visions?” with a binary response of ‘Yes’ or ‘No’. If yes, they were then asked, “Would you like this to be a psychological treatment such as talking therapy?” with binary responses of ‘Yes’ or ‘No’. If they answered ‘no’ to that question, they were asked “What type of treatment would you prefer?” and given a free-text response option to state their preference.

#### 5.4.2.2 Measures

##### 5.4.2.2.1 Hamilton Visions Questionnaire (HViQ)

The HViQ is a 10-item self-report measure exploring people’s experiences of visions (see Chapter 4). Scores range from 0 to 40, with higher scores reporting higher severity such as greater distress and impact. For this sample, the internal consistency is good at both baseline ( $\alpha = .871$ ) and follow up ( $\alpha = .881$ ). It demonstrates excellent test-retest reliability (ICC = .845). In Chapter 4, CFA found a robust three factor structure: emotional distress, intrusiveness, and perceptual quality.

##### 5.4.2.2.2 Brief Core Schema Scale – Self (BCSS; Fowler et al., 2006)

This is a 12 item-scale, formed of two subscales (positive and negative self-items). Statements include “*I am unloved*” and “*I am successful*”. Items are initially endorsed ‘yes/no’. If ‘no’ this item is scored 0. If ‘yes’, the item is then scored on a 4-point Likert scale from ‘1-Believe it slightly’ to ‘4-Believe it totally’. The positive scales have good internal consistency of  $\alpha = .78$  and  $\alpha = .79$  for the positive scales for non-clinical and clinical samples. The negative scale has good internal consistency  $\alpha = .86$  and  $\alpha = .80$  for non-clinical and clinical samples. Test-retest reliability was  $r = .84$  for the negative and  $r = .82$  for positive

scale, both with  $p < .001$ . It demonstrates good convergent validity with the Rosenberg Self-esteem Scale (Rosenberg, 1965), for both the negative ( $r = .64$ ) and positive scales ( $r = 0.65$ ), both  $p < .001$ .

#### 5.4.2.2.3 Dunn Worry Questionnaire (DWQ; Freeman et al., 2020)

The DWQ is a 10-item self-report measure assessing general worry over the last month. Questions include *“I’ve been worrying a lot”* and *“Worry had caused me to feel upset”*. Items are scored from ‘0-None of the time’ to ‘4-All of the time’. It has excellent internal consistency and test-retest reliability with intraclass correlations of .97. It has a high level of item discrimination ( $\alpha = 1.98 - 5.03$ ).

#### 5.4.2.2.4 Perseverative Thinking Questionnaire (PTQ; Ehrling et al., 2011)

The PTQ is a 15-item self-report measure that assesses how someone typically thinks about negative problems. Questions include *“I can’t do anything else whilst thinking about problems”* and *“My thoughts prevent me from focusing on other things”*. Items are rated on a 4-point Likert scale from ‘0-Never’ to ‘4-Almost always’. It captures a broader range of processes, other than just worry, such as rumination which was also discussed during the interviews. Higher scores demonstrate higher levels of repetitive negative thinking. The PTQ evidences excellent internal consistency across clinical and nonclinical samples ( $\alpha = .94 - .95$ ), satisfactory test-retest reliability ( $r = .69, p < .001$ ), as well as significant correlations with other ruminative negative thoughts measures Response Style Questionnaire (Nolen-Hoeksema, 1991) ( $r = .72$ ), Penn State Worry Questionnaire (Meyer et al., 1990) ( $r = .70$ ) and the Rumination Scale ( $r = .62$ ) (McIntosh et al., 1995).

#### 5.4.2.2.5 Insomnia Sleep Index (ISI; Bastien et al., 2001)

The ISI assesses a range of sleep problems, including sleep onset, early morning waking, and current satisfaction and distress with sleep pattern over the last two weeks. Questions include *“How satisfied/dissatisfied are you with your sleep?”* and *“How worried/distressed are you about your current sleep problems?”*. Items are scored on a 5-point Likert scale

ranging from 0 – 4. Total scores can be categorised into different severities: no significant insomnia (0-7), subthreshold insomnia (8-14), moderate insomnia (15-21) and severe insomnia (22-28). It demonstrates good internal consistency ( $\alpha = .74$ ), strong convergent validity with sleep diaries ( $r = .65$ ), good predictive and content validity, and sensitivity to change.

#### 5.4.2.2.6 The Dissociative Experiences Measure, Oxford (DEMO, Černis et al., 2018)

The DEMO is a 30-item measure assessing a range of dissociative experiences within the last two weeks. Questions include “I have the feeling that other people, other things and the world surrounding me are not real” and “Sometimes my mind goes absolutely blank”. Items are scored on a 5-point Likert scale from ‘1-Not at all’ to ‘5-Most of the time’, with higher scores indicating greater dissociation. It has excellent internal consistency ( $\alpha = .985$ ) and moderate to strong convergent validity with the Dissociative Experiences Scale – II (Carlson & Putnam, 1993) ( $r = .58 - .7, p < .001$ ) and Wessex Dissociation Scale (Kennedy et al., 2004) ( $r = .67 - .74, p < .001$ ).

#### 5.4.2.2.7 The Plymouth Sensory Imagery Questionnaire (Psi-Q; Andrade et al., 2014)

The Psi-Q is a 21-item self-report measure exploring mental imagery across all modalities: vision, sound, smell, taste, touch, bodily sensation and emotional feeling. Items include “*Imagine the appearance of a bonfire*” or “*Imagine the sound of a car horn*”. Participants rate the vividness of their mental image on a 10-item Likert scale from ‘1- No image at all’ to ‘10 – As vivid as real life’. The Psi-Q demonstrates excellent internal validity ( $\alpha = .91$ ), as well as good convergent validity with the Vivid of Visual Imagery Questionnaire (Marks, 1995) ( $r = 0.67, p < .001$ ).

#### 5.4.2.2.8 Disturbing Dreams and Nightmares Severity Index (DDNSI; Krakow et al., 2002).

The DDNSI is a 5-item self-report measure assessing nightmare severity. Questions include “*How would you rate the severity of your disturbing dreams and/or nightmare problem?*” and “*How would you rate the intensity of your disturbing dreams and/or nightmares?*”.

Items vary in scoring predominantly on Likert scales, with higher scores indicating greater problems with nightmares. Item 2, “How many disturbing dreams/nightmares do you have in a week?” in a free-text range and can be scored from 0-14. It has excellent 0.92 internal consistency (Lee et al., 2021) and acceptable test-retest reliability ( $r = .705, p < .001$ )

#### 5.4.2.2.9 The Specific Psychotic Experiences Questionnaire – Hallucinations scale (SPEQ; Ronald et al., 2014).

The SPEQ is a 9-item self-report measure that assesses hallucinatory experiences in all modalities: auditory, visual, tactile, olfactory and gustatory, over the last month. Unlike the multimodal interview (Dudley et al., 2024) which was used to ask about the vision’s multimodal nature, the SPEQ instead explores multisensory experiences, treating hallucinations in different modalities as unrelated experiences. Questions include “Did you hear voices commenting on what you’re thinking or doing?” and “Did you detect smells which don’t seem to come from your surroundings?” Items are scored from ‘0-Not at all’ to ‘5-Daily’. It has good internal consistency ( $\alpha = .87$ ) and acceptable test-retest reliability ( $r = .65, p < .001$ ). It demonstrates construct validity ( $r = .60, p < .001$ ) against the psychosis-like symptoms measure from Avon Longitudinal Study of Parents and Children 16-year child questionnaire (Zimmet et al., 2011).

#### 5.4.2.2.10 Revised-Green Paranoid Thoughts Scale Part B (RGPTS; Freeman et al., 2021b)

The R-GPTS is a 10-item self-report measure of persecutory thoughts over the last month. Statements include “*Certain individuals had it in for me*” and “*I was sure that someone wanted to hurt me*”. Items are scored on a 5-point Likert scale from ‘0-Not at all’ to ‘4-Totally’. The Persecution scale is strongly discriminative of shifts in paranoia and has high reliability across the spectrum of severity ( $\alpha > .90$ ).

#### 5.4.2.2.11 Emotion Reactivity Scale (ERS; Nock et al., 2008)

The ERS is a 21-item self-report measure assessing people’s emotional reactivity on a regular basis. Statements include “*My feelings get hurt easily*” and “*My emotions go from*

*neutral to extreme in an instant*". Items are rated on a 5-point Likert scale, from '0-Not at all like me' to '4-Completely like me'. Higher scores indicate greater emotional dysregulation. It has good internal reliability overall ( $\alpha = .94$ ), as well as for the individual subscales: sensitivity scale,  $\alpha = .88$ , arousal/intensity scale,  $\alpha = .86$ , and persistence subscale,  $\alpha = .81$ . The ERS demonstrates convergent validity through moderate-to-large correlation with the other emotional regulation scales ( $r = .37 - .60, p < .01$ ).

### 5.4.3 Analysis

Phenomenology data was analysed in numerous ways. The content was explored with descriptive methods to examine the phenomenological similarities and differences between the clinical and non-clinical group, using IBM SPSS (Version 27). Firstly, t-tests were used to explore the difference in the number of categories of visions reported and the number of multimodal experiences reported. Chi-squares used to explore the presence of multimodal experiences across groups, given this was binary data. Finally, Mann Whitney U tests explored multimodality further as this included ordinal data regarding how frequently multimodal experiences occurred and the emotional content of these. To do this, the emotional content was coded '0- Very Negative', '1 – Fairly negative', '2- Neutral', '3-Fair positive', and '4-Very positive'. With lower scores indicating more negative content.

Analyses for the EFA, CFA, and SEM conducted on JASP (JASP team, 2024). Ten cognitive and behavioural measures were included in the analysis. KMO was performed to ensure sampling adequacy of this data set. All measures had previously had an EFA conducted, and therefore, firstly CFAs were conducted to confirm the relationships between the variables and latent factors. We assessed each factor's internal reliability on this dataset, using the composite reliability index. Scores can vary from 0-1, with higher scores indicating greater internal consistency. Second, individual SEMs were performed on each factor, regressing these onto visions (HViQ) to explore individual effects of each factor, as well as ensuring if the factor is working as expected prior to combining these. Regardless of if significant or not, the factor was retained for the model as theoretically it has been proposed as a potential contributory factor and therefore important to explore in relation to others. Third,

we combined all of the factors into an integrated SEM with visions (HViQ) as the response variable to explore the relationships between the constructs. SEM was used as it offers exploration of correlation between latent factors, as well as including a measurement model and structural model (Schreiber et al., 2006). Measurements with multiple factors were input as higher order factors into the final model. For factors to be included in the combined SEM, each factor requires 3 items (Bollen, 1989). In SEM, diagonal weighted least squares was used with pairwise deletion, as data was ordinal in nature (Brown, 2006). In order to eliminate any irrelevant variables, backwards elimination strategy was used to assess the role of non-significant factors. Any predictor with negative co-efficients (against their expected direction from the individual SEMs's and theoretical understanding) were then removed to address potential suppressor effects (Smith et al., 1992).

#### *5.4.3.1 Missing data*

Data was only included for each measure if the participant had completed over 80% of the items. As data was deemed to be missing as random, missing data in EFA/CFA was managed with pairwise deletion. Missing data varied across measures but was all between 0-0.8% of data for each measure, deeming this to be missing at random.

#### *5.4.3.2 Data quality checks*

Additional steps were taken to ensure quality in the non-clinical sample. See Chapter 4 (4.3.5.4 Data quality checks) for more details.

## 5.5 Results

### 5.5.1 Participants

434 clinical participants consented to take part, however 30 were excluded from the analysis for reasons including becoming ineligible after consent, not completing HViQ, or withdrawing after consent. Therefore, 404 clinical participants were included in the analysis.

For the non-clinical participant, 566 participants completed the assessment pack in full. 130 people partially completed the assessments and so were still included in the analysis.

Therefore, there were 696 non-clinical participants included. In total, the sample included 1100 participants. See Chapter 4 for the demographics and clinical characteristics.

### 5.5.2 Phenomenology of visions

Descriptive statistics for the content of what people reported seeing is shown in Table 5:1.

Overall, it appears that the content reported by the clinical and non-clinical groups were similar with people reporting a wide range of experiences. The most commonly reported experience was seeing people, followed by figures/shadows, then faces, and animals.

Although the clinical group tend to report most experiences more frequently than the non-clinical groups, except for scenery which the non-clinical group reported more. See Appendix 11 for examples of free-text responses of clinical and non-clinical reports of visions.

**Table 5:1**

*Frequencies for the reported content of visions in total, and across clinical and non-clinical groups*

| Content         | Total N = 1100 (%) | Clinical n = 404 (%) | Non-clinical n = 696 (%) |
|-----------------|--------------------|----------------------|--------------------------|
| People          | 571 (51.9)         | 262 (64.9)           | 310 (44.5)               |
| Faces           | 382 (34.7)         | 166 (58.9)           | 216 (31)                 |
| Figures/shadows | 537 (48.8)         | 225 (55.7)           | 312 (44.8)               |
| Animals/insects | 276 (25.1)         | 134 (33.2)           | 142 (20.4)               |
| Objects         | 234 (21.3)         | 101 (25)             | 134 (19.3)               |

|                         |            |           |            |
|-------------------------|------------|-----------|------------|
| Unusual creature        | 105 (9.5)  | 45 (11.1) | 60 (8.6)   |
| Scenery                 | 146 (13.3) | 29 (7.2)  | 117 (16.8) |
| Religious character     | 68 (6.2)   | 28 (6.9)  | 44 (6.3)   |
| Uncanny valley effect   | 133 (12.1) | 68 (16.8) | 65 (9.3)   |
| Flashing colours/lights | 226 (20.5) | 80 (19.8) | 147 (21.1) |
| Other                   | 46 (4.2)   | 38 (9.4)  | 12 (1.7)   |

*Note.* Participants could select multiple options. The ‘Uncanny valley effect refers to findings in Chapter 2, that whilst people reported seeing people there was often a unique or bizarre experience to the person e.g. missing eyes, faceless, or appearing severely injured/dead, or wearing old fashioned clothes. ‘Other’ was included to capture experiences that did not fall with the set categories offered above.

Participants could endorse multiple different visions (from one category of visions e.g. just people to multiple categories e.g. people, faces, objects, and scenery). The number of different types (or categories) of visions endorsed are demonstrated in Table 5:2. There appears to be a difference in the number of categories reported across the groups. Whilst it was common for the non-clinical group to only report one or two different categories of visions, this was higher in the clinical group, with people with psychosis often reporting between 3-6 different types of content. A t-test indicated that clinical participants ( $m = 2.91$ ,  $sd = 1.822$ ) reported significantly more categories of visions than the non-clinical participants ( $m = 2.24$ ,  $sd = 1.537$ ;  $t(6.250) = 732.053$ ,  $p < .001$ ).

**Table 5:2**

*The number of different categories of visions endorsed across clinical and non-clinical groups.*

| Number of different types of visions | Clinical |      | Non-clinical |      |
|--------------------------------------|----------|------|--------------|------|
|                                      | <i>n</i> | %    | <i>n</i>     | %    |
| 1                                    | 9        | 2.2  | 293          | 42.1 |
| 2                                    | 85       | 21   | 169          | 24.3 |
| 3                                    | 102      | 25.2 | 129          | 18.5 |
| 4                                    | 91       | 22.6 | 45           | 6.5  |
| 5                                    | 53       | 13.2 | 30           | 4.3  |
| 6                                    | 33       | 8.2  | 14           | 2    |
| 7                                    | 9        | 2.2  | 8            | 1.1  |
| 8                                    | 8        | 2    | 4            | 0.6  |
| 9                                    | 6        | 1.5  | 1            | 0.1  |
| 10                                   | 1        | 0.2  | 3            | 0.4  |

### 5.5.2.1 Multimodal visions

Next, the multimodal nature of visions was explored to consider if these differ across the two groups. Firstly, the frequency of multimodal experiences (regardless of type) were explored. As seen in Table 5:3, it was rare that people with psychosis reported visions as unimodal experiences, they were much more likely to report visions that were associated with at least one other hallucinatory modality. In contrast, it was more common for people to only experience unimodal visions, without other hallucinations associated with their visions in the non-clinical sample. A t-test indicated the clinical group ( $M = 1.565$ ,  $SD = .998$ ) reported significantly more hallucinatory modalities associated with the visions compared to the non-clinical group ( $M = 0.957$ ,  $SD = 1.02$ ,  $t(1091) = 7.848$ ,  $p < .001$ ).

**Table 5:3**

*Frequencies of different number of hallucinatory modalities associated with visions across the clinical and non-clinical groups.*

| Number of modalities associated with vision | Clinical (n = 404) | Non-clinical (n = 696) |
|---------------------------------------------|--------------------|------------------------|
| 0 (visions only)                            | 77 (19.1)          | 304 (43.7)             |
| 1                                           | 133 (32.9)         | 190 (27.3)             |
| 2                                           | 116 (28.7)         | 130 (18.7)             |
| 3                                           | 71 (17.6)          | 72 (10.3)              |

The relationships between visions and multimodal experiences were then considered further by exploring the type of modality, the frequency of which these co-occur with visions, and the emotional content of these. See Table 5:4 for further details. Whilst both groups endorsed multimodal visions, the clinical group reported higher rates of these across all sensory modalities (visions that could talk, touch, or were associated with a smell). A series of chi-squares demonstrated that clinical group were significantly more likely to endorse visions that talked to ( $\chi^2(1, 1094) = 66.692$ ,  $p < .001$ ) and touched them ( $\chi^2(1, 1094)$

= 36.730,  $p < 0.001$ ), but were not significantly different on visions that were associated with a smell ( $X^2(1, 1092) = 3.225, p = .073$ ).

**Table 5:4**

*The presence, frequency and emotional content of multimodal hallucinations accompanying the vision*

| Multimodality     | Visions that talk             |                  | Visions that touch            |                  | Visions that smell            |                  |
|-------------------|-------------------------------|------------------|-------------------------------|------------------|-------------------------------|------------------|
|                   | Clinical<br>( <i>n</i> = 398) | Non-<br>clinical | Clinical<br>( <i>n</i> = 398) | Non-<br>clinical | Clinical<br>( <i>n</i> = 396) | Non-<br>clinical |
| Present           |                               |                  |                               |                  |                               |                  |
| Yes               | 241<br>(60.3)                 | 244 (35.1)       | 197<br>(49.3)                 | 216 (31)         | 138 (34.5)                    | 206 (29.6)       |
| Frequency         |                               |                  |                               |                  |                               |                  |
| Never             | 1 (0.4)                       | 6 (0.9)          | 1 (0.2)                       | 2 (0.3)          | 2 (1.4)                       | 2                |
| Rarely            | 29 (11.7)                     | 47 (19.3)        | 49 (24.9)                     | 50 (23.1)        | 22 (15.8)                     | 45               |
| Sometimes         | 72 (29.1)                     | 123 (50.4)       | 72 (36.5)                     | 85 (39.4)        | 61 (43.9)                     | 92               |
| Often             | 71 (28.7)                     | 48 (19.7)        | 40 (20.3)                     | 51 (23.6)        | 34 (24.5)                     | 48               |
| Always            | 74 (30)                       | 20 (8.2)         | 35 (17.8)                     | 28 (13)          | 20 (14.4)                     | 19               |
| Emotional content |                               |                  |                               |                  |                               |                  |
| Very negative     | 84 (35.7)                     | 25 (10.2)        | 67 (35.6)                     | 22 (10.2)        | 41 (30.6)                     | 19 (9.2)         |
| Quite negative    | 42 (17.9)                     | 23 (9.4)         | 35 (18.6)                     | 29 (13.4)        | 27 (20.1)                     | 26 (12.6)        |
| Neutral           | 68 (28.9)                     | 79 (32.4)        | 53 (28.2)                     | 63 (29.2)        | 34 (25.4)                     | 62 (30.1)        |
| Quite positive    | 22 (9.4)                      | 69 (28.3)        | 13 (6.9)                      | 58 (26.9)        | 15 (11.2)                     | 63 (30.6)        |
| Very positive     | 19 (8.1)                      | 48 (19.7)        | 20 (10.6)                     | 44 (20.4)        | 17 (12.7)                     | 36 (17.5)        |

To explore the frequency of multimodal experiences and their emotional content, a series of Mann Whitney U tests were conducted. See Table 5:5 for these. For visions that talk to people, the clinical groups experienced these significantly more frequently, and the vision's speech had significantly more negative content in than the non-clinical group. For visions that touched people, there were no differences between the groups on how frequently they experienced these. However, the clinical group reported significantly more negative content of the visions touch. For visions that were associated with a smell, there was no significant difference between the groups in the frequency of these. However, there was a trend for the clinical group to experience these more frequently. In terms of emotional content, the

clinical group reported significantly more negative smells associated with visions than the non-clinical group.

**Table 5:5**

*Mann Whitney U Tests results across the frequency and emotional content of multimodal visions*

|                    | Clinical             | Non-clinical         | U       | Z      | p     |
|--------------------|----------------------|----------------------|---------|--------|-------|
| Visions that talk  |                      |                      |         |        |       |
| Frequency          | N = 245, MR = 288.85 | N = 244, MR = 201.27 | 19220.5 | -7.152 | <.001 |
| Emotional Content  | N = 232, MR = 186.02 | N = 244, MR = 288.4  | 40478.5 | 8.339  | <.001 |
| Visions that touch |                      |                      |         |        |       |
| Frequency          | N = 196, MR = 209.2  | N = 216, MR = 204.05 | 20639   | -0.48  | .647  |
| Emotional Content  | N = 188, MR = 159    | N = 216, MR = 240.36 | 28482   | 7.159  | <.001 |
| Visions that smell |                      |                      |         |        |       |
| Frequency          | N = 138, MR = 183.16 | N = 206, MR = 165.38 | 12743   | -1.725 | .085  |
| Emotional content  | N = 134, MR = 135.49 | N = 206, MR = 193.27 | 18493   | 5.427  | <.001 |

*Note.* For frequency scores, the higher the score, the more frequent the experience. For emotional content scores, the higher the score, the more positive the experience. Note. To control for multiple tests, a Bonferroni correction was applied.

### 5.5.3 Potential contributory factors - CFA

#### 5.5.3.1 Brief Core Schema Scale (Fowler et al., 2006)

Fowler et al (2006) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A bi-factor CFA model was fitted to evaluate the items, and the result showed excellent model fit (robust  $\chi^2(53) = 143.340$ ,  $p < .001$ , RMSEA = .043, SRMR = .046, CFI = .992, TLI = .990). See table 5:6 item loadings for the two-factor model. The composite reliability was good to excellent (see table 5:7).

**Table 5:6**  
*Item loadings for the two-factor model of BCSS*

| Item |                  | Factor loadings | Mean  | SD    |
|------|------------------|-----------------|-------|-------|
| 1    | I am unloved     | .602            | 0.928 | 1.412 |
| 2    | I am worthless   | .860            | 1.025 | 1.491 |
| 3    | I am weak        | .806            | 1.023 | 1.44  |
| 4    | I am vulnerable  | .519            | 1.452 | 1.535 |
| 5    | I am bad         | .675            | 0.706 | 1.286 |
| 6    | I am a failure   | .911            | 1.175 | 1.548 |
| 7    | I am respected   | .723            | 1.757 | 1.491 |
| 8    | I am valuable    | .817            | 1.920 | 1.557 |
| 9    | I am talented    | .754            | 1.759 | 1.628 |
| 10   | I am successful  | .756            | 1.414 | 1.582 |
| 11   | I am good        | .726            | 2.354 | 1.497 |
| 12   | I am interesting | .747            | 1.946 | 1.558 |

**Table 5:7**  
*Composite reliability for the two factors of BCSS*

| Factor               | Coefficient $\omega$ | Coefficient $\alpha$ |
|----------------------|----------------------|----------------------|
| Negative self esteem | .869                 | .873                 |
| Positive self esteem | .889                 | .887                 |
| Total                | .923                 | .896                 |

#### 5.5.3.2 Dunn Worry Questionnaire (DWQ; Freeman et al., 2020)

Freeman et al. (2020) previously conducted EFA and CFA, Thus, we only conducted a CFA to evaluate factor loading and model goodness-of-fit in this study. A one-factor CFA model was fitted to evaluate the items, and the results showed an excellent model of fit (robust  $\chi^2(35) = 35.516$ ,  $p = .444$ , RMSEA = .004, SRMR = .028, CFI = 1, TLI = 1). See table 5:8 for item loadings of one-factor model. The composite reliability was excellent ( $\omega = .949$ ,  $\alpha = .949$ ).

**Table 5:8***Item loadings for one-factor model for DWQ*

| Item |                                                               | Factor loading | Mean  | SD    |
|------|---------------------------------------------------------------|----------------|-------|-------|
| 1    | I've been worrying a lot.                                     | .804           | 2.493 | 1.204 |
| 2    | In my mind I have been going over problems again and again.   | .821           | 2.456 | 1.250 |
| 3    | There was little I could do to stop worrying.                 | .781           | 2.275 | 1.284 |
| 4    | I have been worrying even though I didn't want to.            | .844           | 2.275 | 1.313 |
| 5    | Worry has stopped me focussing on important things in my day. | .808           | 2.379 | 1.335 |
| 6    | Worry has stopped me sleeping.                                | .739           | 2.198 | 1.335 |
| 7    | Worry has caused me to feel upset                             | .794           | 2.211 | 1.337 |
| 8    | Worry has made me feel stressed.                              | .850           | 2.455 | 1.276 |
| 9    | Worry has made me feel anxious                                | .869           | 2.431 | 1.286 |
| 10   | Worry has made me feel hopeless.                              | .770           | 2.100 | 1.373 |

### 5.5.3.3 Perseverative Thinking Questionnaire (PTQ: Ehrling et al., 2011)

Ehrling et al. (2011) previously conducted CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A one-factor CFA model was fitted to evaluate the items, and the result showed excellent model fit (robust  $\chi^2(90) = 115.998$   $p = .034$ , RMSEA = .018, SRMR = .034, CFI = .999, TLI = .999). See table 5:9 for item loadings on the one-factor model. The composite reliability was excellent ( $\omega = .955$ ,  $\alpha = .955$ ).

**Table 5:9***Item loadings for the one-factor model of PTQ*

| Item |                                                               | Factor loading | Mean  | SD    |
|------|---------------------------------------------------------------|----------------|-------|-------|
| 1    | The same thoughts keep going through my mind again and again. | .765           | 2.466 | 1.192 |
| 2    | Thoughts intrude into my mind.                                | .787           | 2.441 | 1.207 |
| 3    | I can't stop dwelling on them.                                | .802           | 2.320 | 1.265 |
| 4    | I think about my problems without solving any of them.        | .722           | 2.067 | 1.270 |

|    |                                                            |      |       |       |
|----|------------------------------------------------------------|------|-------|-------|
| 5  | I can't do anything else while thinking about my problems. | .783 | 1.978 | 1.310 |
| 6  | My thoughts repeat themselves.                             | .798 | 2.382 | 1.224 |
| 7  | Thoughts come to my mind without me wanting them to.       | .765 | 2.438 | 1.255 |
| 8  | I get stuck on certain issues and can't move on.           | .802 | 2.216 | 1.281 |
| 9  | I keep asking myself questions without finding an answer.  | .767 | 2.093 | 1.281 |
| 10 | My thoughts prevent me from focusing on other things.      | .792 | 2.168 | 1.282 |
| 11 | I keep thinking about the same issue all the time.         | .807 | 2.241 | 1.279 |
| 12 | Thoughts just pop into my mind.                            | .722 | 2.447 | 1.211 |
| 13 | I feel driven to continue dwelling on the same issue.      | .745 | 2.066 | 1.266 |
| 14 | My thoughts are not much help to me.                       | .689 | 2.038 | 1.290 |
| 15 | My thoughts take up all my attention.                      | .745 | 2.143 | 1.270 |

#### 5.5.3.4 Insomnia Sleep Index (Bastien et al., 2001)

Bastien et al. (2001) previously conducted a principal components analysis on this scale. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A one-factor CFA model was fitted to evaluate the items, and the result showed an excellent model fit (robust  $\chi^2(14) = 55.195$ ,  $p < .001$ , RMSEA = .056, SRMR = .047, CFI = .992, TLI = .988). See table 5:10 for item loadings for the one factor model. The composite reliability was good ( $\omega = .885$ ,  $\alpha = .882$ ).

**Table 5:10**  
*Item loadings the one-factor model for ISI*

| Item | Factor loadings              | Mean | SD    |
|------|------------------------------|------|-------|
| 1    | Difficulty falling asleep    | .782 | 1.929 |
| 2    | Difficulty staying asleep    | .738 | 1.898 |
| 3    | Problems waking up too early | .550 | 1.784 |

|   |                                                                                                             |      |       |       |
|---|-------------------------------------------------------------------------------------------------------------|------|-------|-------|
| 4 | How satisfied/dissatisfied are you with your current sleep pattern?                                         | .706 | 2.184 | 1.259 |
| 5 | How noticeable to others do you think your sleep problem is in terms of impairing the quality of your life? | .688 | 1.783 | 1.295 |
| 6 | How worried/distressed are you about your current sleep problems?                                           | .818 | 1.688 | 1.315 |
| 7 | To what extent do you consider your sleep problem to interfere with your daily functioning?                 | .759 | 1.867 | 1.327 |

#### 5.5.3.5 *The Dissociative Experiences Measure, Oxford (DEMO, Černis et al., 2018).*

Cernis et al. (2018) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A five-factor CFA model was fitted to evaluate the items, and the result showed excellent model fit (robust  $\chi^2$  (395) = 508.828,  $p < .001$ , RMSEA = .017, SRMR = .035, CFI = .999, TLI = .999). See table 5:11 for item loadings for the five-factor model. The composite reliability ranged from good to excellent. See table 5:12.

**Table 5:11**

*Item loadings for five factor model for DEMO*

| Item |                                                                                                                       | Factor loading | Mean  | SD    |
|------|-----------------------------------------------------------------------------------------------------------------------|----------------|-------|-------|
| 1    | I have the feeling that other people, other things and the world surrounding me are not real.                         | .773           | 2.566 | 1.298 |
| 2    | I have the feeling that everything is unreal.                                                                         | .820           | 2.469 | 1.349 |
| 3    | I feel as if I don't exist, am not real.                                                                              | .810           | 2.311 | 1.334 |
| 4    | I feel like I am in a parallel world.                                                                                 | .756           | 2.402 | 1.319 |
| 5    | The world around me feels detached or unreal, as if there were an invisible barrier between me and the outside world. | .801           | 2.409 | 1.323 |

|    |                                                                                                                                             |      |       |       |
|----|---------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|
| 6  | I feel like the external world is not real, a joke, a lie.                                                                                  | .804 | 2.274 | 1.309 |
| 7  | I feel emotionally numb.                                                                                                                    | .801 | 2.712 | 1.359 |
| 8  | I just feel numb and empty inside.                                                                                                          | .851 | 2.704 | 1.358 |
| 9  | I feel I can't make a proper connection with anyone around me.                                                                              | .780 | 2.689 | 1.351 |
| 10 | I do not seem to feel anything at all.                                                                                                      | .809 | 2.495 | 1.338 |
| 11 | I feel like I'm 'just existing'                                                                                                             | .756 | 2.896 | 1.420 |
| 12 | I turn inwards, trying to work out why I feel so disconnected.                                                                              | .776 | 2.628 | 1.349 |
| 13 | I find myself in situations or places with no memory of how I got there.                                                                    | .779 | 2.365 | 1.328 |
| 14 | I suddenly notice that I find myself in a place what is unknown to me without knowing how I got there.                                      | .783 | 2.156 | 1.267 |
| 15 | I find evidence of something I've done recently (e.g. through finding notes or drawings) but I don't remember doing it.                     | .740 | 2.245 | 1.236 |
| 16 | I find new articles among my things without being able to remember ever having purchased them.                                              | .728 | 2.061 | 1.236 |
| 17 | I find myself somewhere and do not remember how I got there.                                                                                | .785 | 2.166 | 1.282 |
| 18 | I have big gaps in my memory for recent things in my life.                                                                                  | .805 | 2.588 | 1.386 |
| 19 | I stare aimlessly without thinking about anything.                                                                                          | .825 | 2.808 | 1.367 |
| 20 | I 'zone out' and don't see or hear what's going on around me.                                                                               | .803 | 2.851 | 1.321 |
| 21 | I sometimes sit staring off into space, thinking of nothing, and am not aware of the passage of time (other people tell me that I do this). | .820 | 2.717 | 1.335 |
| 22 | I often think about nothing.                                                                                                                | .767 | 2.675 | 1.312 |
| 23 | Sometimes my mind is absolutely blank.                                                                                                      | .783 | 2.704 | 1.300 |
| 24 | My mind just goes empty.                                                                                                                    | .828 | 2.630 | 1.296 |
| 25 | I can remember something that happened before so vividly that                                                                               | .599 | 2.891 | 1.338 |

|    |                                                                                                                                                                  |      |       |       |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-------|
|    | it's like a video is playing in my head.                                                                                                                         |      |       |       |
| 26 | Unwanted images from the past come into my head.                                                                                                                 | .728 | 2.978 | 1.356 |
| 27 | I am surprised by or don't expect some of the thoughts of images that happen in my head.                                                                         | .704 | 2.764 | 1.297 |
| 28 | I experience past memories as if they are happening here and now.                                                                                                | .734 | 2.718 | 1.326 |
| 29 | I can get so involved in fantasies or daydreaming that it seems to be really happening and I lose touch with what is happening in the real world at that moment. | .768 | 2.577 | 1.322 |
| 30 | I hear someone talking when no-one nearby had actually said anything.                                                                                            | .704 | 2.869 | 1.376 |

**Table 5:12**  
*Composite reliability of the DEMO factors*

| Factor               | Coefficient $\omega$ | Coefficient $\alpha$ |
|----------------------|----------------------|----------------------|
| Unreality            | .912                 | .911                 |
| Numb & disconnected  | .913                 | .911                 |
| Memory blanks        | .896                 | .898                 |
| Zoned out            | .917                 | .917                 |
| Vivid internal world | .855                 | .857                 |
| Total                | .974                 | .965                 |

#### 5.5.3.6 The Plymouth Sensory Imagery Questionnaire (Psi-Q; Andrade et al., 2014)

Andrade et al. (2014) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A 7-factor CFA model was fitted to evaluate the items, and the result showed excellent model fit (robust  $\chi^2(168) = 132.925$ ,  $p = .979$ , RMSEA = .000, SRMR = .026, CFI = 1, TLI = 1.001). See table 5:13 for the item loadings for each factor of the Psi-Q. The composite reliability ranged from good to excellent (see table 5:14).

**Table 5:13***Item loadings for the seven-factor model of Psi-Q*

| Item |                              | Factor loading | Mean  | SD    |
|------|------------------------------|----------------|-------|-------|
| 1    | A bonfire                    | .803           | 5.845 | 3.051 |
| 2    | A sunset                     | .850           | 6.418 | 2.900 |
| 3    | A cat climbing a tree        | .820           | 5.916 | 2.993 |
| 4    | A car horn                   | .839           | 5.879 | 3.080 |
| 5    | Hands clapping in applause   | .853           | 6.242 | 2.991 |
| 6    | Am ambulance siren           | .850           | 6.319 | 3.049 |
| 7    | Newly cut grass              | .871           | 5.279 | 3.120 |
| 8    | Burning wood                 | .829           | 5.677 | 3.089 |
| 9    | A rose                       | .783           | 5.259 | 3.109 |
| 10   | Black pepper                 | .821           | 4.898 | 3.109 |
| 11   | Lemon                        | .897           | 5.664 | 3.064 |
| 12   | Mustard                      | .763           | 4.969 | 3.235 |
| 13   | Fur                          | .823           | 5.813 | 3.079 |
| 14   | Warm                         | .853           | 5.766 | 3.048 |
| 15   | A soft towel                 | .841           | 6.052 | 2.983 |
| 16   | Relaxing in a warm bath      | .805           | 5.726 | 3.100 |
| 17   | Walking briskly in the cold  | .833           | 6.046 | 3.023 |
| 18   | Jumping into a swimming pool | .804           | 5.638 | 3.086 |
| 19   | Excited                      | .800           | 5.604 | 3.111 |
| 20   | Relieved                     | .794           | 5.839 | 3.022 |
| 21   | Scared                       | .697           | 6.365 | 3.033 |

**Table 5:14***Composite reliability for the seven factors of PSIQ*

| Factor              | Coefficient<br>$\omega$ | Coefficient<br>$\alpha$ |
|---------------------|-------------------------|-------------------------|
| Visual              | .864                    | .863                    |
| Auditory            | .884                    | .884                    |
| Olfactory           | .869                    | .866                    |
| Gustatory           | .864                    | .866                    |
| Tactile             | .877                    | .877                    |
| Bodily<br>Sensation | .856                    | .854                    |
| Feel                | .829                    | .790                    |
| Total               | .972                    | .959                    |

#### 5.5.3.7 *Disturbing Dreams and Nightmares Severity Index (DDNSI; Krakow et al., 2002).*

Bolstad et al. (2021) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A one-factor CFA model was fitted to evaluate the items and found that items 1 and 2 had high modification indices. Therefore, the residuals of those items were correlated into the model. The result showed excellent model fit (robust  $\chi^2 (4) = 1.551$ ,  $p = 0.818$ , RMSEA = 0, SRMR = .011, CFI = 1, TLI = 1.002). See table 5:15 for item loadings for the one factor model. The composite reliability was good ( $\omega = .803$ ,  $\alpha = .864$ ).

**Table 5:15**

*Item loadings for one factor model for DDNSI*

| Item |                                                                                     | Factor loadings | Mean  | SD    |
|------|-------------------------------------------------------------------------------------|-----------------|-------|-------|
| 1    | How many nights in a week do you have disturbing dreams and nightmares?             | .716            | 2.817 | 2.225 |
| 2    | How many disturbing dreams and/or nightmares do you have in a week?                 | .643            | 2.949 | 3.126 |
| 3    | On average, do your nightmares what you up?                                         | .704            | 1.737 | 1.307 |
| 4    | How would you rate the severity of your disturbing dreams and/or nightmare problem? | .897            | 2.379 | 1.803 |
| 5    | How would you rate the intensity of your disturbing dreams and/or nightmares?       | .873            | 2.580 | 1.823 |

#### 5.5.3.8 *The Specific Psychotic Experiences Questionnaire – Hallucinations scale (SPEQ; Ronald et al., 2014).*

Ronald et al. (2013) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A one-factor CFA model was fitted to evaluate the items, and the result showed good to excellent model fit (robust  $\chi^2 (27) = 193.059$ ,  $p < .001$ , RMSEA = .08, SRMR = .066, CFI = .979, TLI = .971). See table 5:16 for item loadings for the one factor model. The composite reliability was good ( $\omega = .890$ ,  $\alpha = .865$ ).

**Table 5:16***Item loadings for one factor model for SPEQ*

| Item |                                                                                                             | Factor loadings | Mean  | SD    |
|------|-------------------------------------------------------------------------------------------------------------|-----------------|-------|-------|
| 1    | Hear noises or sounds when there is nothing to explain?                                                     | .723            | 2.486 | 1.772 |
| 2    | Feel that someone is touching you, but when you look nobody is there?                                       | .706            | 1.963 | 1.679 |
| 3    | Hear sounds or music that people near you don't hear?                                                       | .777            | 2.098 | 1.783 |
| 4    | Detect smells which don't seem to come from your surroundings?                                              | .667            | 1.879 | 1.697 |
| 5    | See things that other people cannot?                                                                        | .673            | 2.743 | 1.767 |
| 6    | Experience unusual burning sensations or other strange feelings in or on your body that can't be explained? | .647            | 1.827 | 1.760 |
| 7    | See shapes, lights, or colours even though there is nothing really there?                                   | .645            | 2.205 | 1.740 |
| 8    | Hear voices commenting on what you're thinking or doing?                                                    | .655            | 2.376 | 1.946 |
| 9    | Notice smells or odours that people next to you seem unaware of                                             | .649            | 1.885 | 1.677 |

#### 5.5.3.9 Revised-Green Paranoid Thoughts Scale Part B (RGPTS; Freeman et al., 2019)

Freeman et al. (2021b) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A one-factor CFA model was fitted to evaluate the items, and the result showed excellent model fit (robust  $\chi^2(35) = 41.951$ ,  $p = .195$ , RMSEA = .015, SRMR = .027, CFI = 1, TFI = .999). See table 5:17 for item loadings onto the one-factor model. The composite reliability was excellent ( $\omega = .943$ ,  $\alpha = .941$ ).

**Table 5:17***Item loadings for one-factor model for R-GPTS*

| Item |                                                                             | Factor loadings | Mean  | SD    |
|------|-----------------------------------------------------------------------------|-----------------|-------|-------|
| 1    | Certain individuals have had it in for me.                                  | .748            | 2.128 | 1.371 |
| 2    | People wanted me to feel threatened, so they stared at me.                  | .783            | 1.838 | 1.438 |
| 3    | I was certain people did things in order to annoy me.                       | .742            | 2.123 | 1.421 |
| 4    | I was convinced there was a conspiracy against me.                          | .793            | 1.890 | 1.508 |
| 5    | I was sure someone wanted to hurt me.                                       | .805            | 1.967 | 1.501 |
| 6    | I couldn't stop thinking about people wanting to confuse me.                | .799            | 1.854 | 1.456 |
| 7    | I was distressed by being persecuted.                                       | .796            | 1.765 | 1.484 |
| 8    | It was difficult to stop thinking about people wanting to make me feel bad. | .825            | 1.853 | 1.461 |
| 9    | People have been hostile towards me on purpose.                             | .789            | 1.938 | 1.466 |
| 10   | I was angry that someone wanted to hurt me.                                 | .771            | 1.906 | 1.506 |

*5.5.3.10 Emotion Reactivity Scale (ERS; Nock et al., 2008)*

Nock et al. (2008) previously conducted EFA and CFA. Thus, we only conducted a CFA to evaluate factor loadings and model goodness-of-fit in this study. A three-factor CFA model was fitted to evaluate the items, and the result showed an excellent model fit (robust  $\chi^2(186) = 645.799$ ,  $p < .001$ , RMSEA = .052, SRMR = .058, CFI = .989, TLI = .988). See table 5:18 for item loadings for the three-factor model. The composite reliability was good to excellent (See table 5:19).

**Table 5:18***Item loadings for three-factor model for ERS*

| Item |                                             | Factor loadings | Mean  | SD    |
|------|---------------------------------------------|-----------------|-------|-------|
| 2    | My feelings get hurt easily.                | .696            | 2.462 | 1.299 |
| 5    | I tend to get very emotional very easily.   | .741            | 2.349 | 1.338 |
| 7    | I often feel extremely anxious.             | .709            | 2.503 | 1.297 |
| 9    | Even the littlest things make me emotional. | .751            | 2.118 | 1.362 |

|    |                                                                                                    |      |       |       |
|----|----------------------------------------------------------------------------------------------------|------|-------|-------|
| 12 | I get angry at people very easily.                                                                 | .666 | 1.923 | 1.374 |
| 13 | I am often bothered by things that other people don't react to.                                    | .699 | 2.232 | 1.346 |
| 14 | I am easily agitated.                                                                              | .722 | 2.239 | 1.339 |
| 15 | My emotions go from neutral to extreme in an instant.                                              | .754 | 2.186 | 1.392 |
| 16 | When something bad happens, my mood changes very quickly. People tell me I have a very short fuse. | .713 | 2.020 | 1.399 |
| 18 | I am a very sensitive person.                                                                      | .601 | 2.552 | 1.288 |
| 3  | When I experience emotions, I feel them very strongly/intensely.                                   | .684 | 2.678 | 1.234 |
| 4  | When I'm emotionally upset, my whole body gets physically upset as well.                           | .680 | 2.422 | 1.351 |
| 6  | I experience emotions very strongly.                                                               | .722 | 2.616 | 1.261 |
| 17 | People tell me that my emotions are often too intense for the situation.                           | .734 | 1.974 | 1.377 |
| 19 | My moods are very strong and powerful.                                                             | .658 | 2.488 | 1.294 |
| 20 | I often get so upset it's hard for me to think straight.                                           | .781 | 2.215 | 1.340 |
| 21 | Other people tell me I'm overreacting.                                                             | .740 | 2.062 | 1.382 |
| 1  | When something happens that upsets me, it's all I can think about it for a long time.              | .699 | 2.607 | 1.262 |
| 8  | When I feel emotional, it's hard for me to imagine feeling any other way.                          | .766 | 2.350 | 1.336 |
| 10 | If I have a disagreement with someone, it takes a long time for me to get over it.                 | .700 | 2.403 | 1.336 |
| 11 | When I am angry/upset, it takes me much longer than most people to calm down.                      | .763 | 2.274 | 1.342 |

**Table 5:19**  
*Composite reliability for the three factors in ERS*

| Factor            | Coefficient $\omega$ | Coefficient $\alpha$ |
|-------------------|----------------------|----------------------|
| Sensitivity       | .911                 | .908                 |
| Arousal/Intensity | .878                 | .880                 |
| Persistence       | .823                 | .822                 |
| Total             | .956                 | .954                 |

### 5.5.4 Individual SEMs

Individual SEMs demonstrated that most factors significantly predicted visions (*see Table 5:20*), apart from the following mental imagery factors: visual, gustatory, bodily sensation, and emotional feeling. Although, it was when calculated as a total score.

**Table 5:20**  
*Individual SEMs for each factor*

| Contributory factor                      | <i>B</i> | SE <i>B</i> | Adjusted p-value | <i>B</i> (std est) | R square |
|------------------------------------------|----------|-------------|------------------|--------------------|----------|
| Hallucinations                           | 3.433    | .138        | <.001            | .524               | .274     |
| Insomnia                                 | 3.363    | .173        | <.001            | .416               | .175     |
| Nightmares                               | 2.668    | .147        | <.001            | .510               | .261     |
| Dissociation – Unreality                 | 2.989    | .167        | <.001            | .354               | .126     |
| Dissociation - Numb & Disconnected       | 2.745    | .147        | <.001            | .364               | .132     |
| Dissociation - Memory Blanks             | 2.944    | .169        | <.001            | .357               | .127     |
| Dissociation - Zoned Out                 | 2.798    | .150        | <.001            | .365               | .133     |
| Dissociation - Vivid internal world      | 4.376    | .237        | <.001            | .471               | .222     |
| Dissociation                             | 4.387    | .111        | <.001            | .437               | .191     |
| Worry                                    | 3.635    | .132        | <.001            | .414               | .172     |
| Perseverative thinking                   | 4.061    | .149        | <.001            | .443               | .197     |
| Emotional reactivity – Sensitivity       | 2.594    | .165        | <.001            | .267               | .071     |
| Emotional reactivity - Arousal/Intensity | 3.080    | .204        | <.001            | .312               | .097     |
| Emotional reactivity – Persistence       | 3.085    | .259        | <.001            | .332               | .110     |
| Emotional Regulation - Total             | 2.689    | .116        | <.001            | .301               | .090     |
| Self-esteem                              | 4.120    | .249        | <.001            | .424               | .180     |
| Negative Self-esteem                     | 0.972    | .145        | <.001            | .120               | .014     |
| Positive                                 |          |             |                  |                    |          |

|                                    |        |      |       |       |            |
|------------------------------------|--------|------|-------|-------|------------|
| Self-esteem - Total                | 3.481  | .215 | <.001 | .289  | .084       |
| Paranoia                           | 2.664  | .126 | <.001 | .321  | .103       |
| Mental imagery – Visual            | 0.146  | .082 | .073  | .043  | .002       |
| Mental imagery – Auditory          | 0.330  | .078 | <.001 | .099  | .010       |
| Mental imagery – Olfactory         | 0.256  | .076 | <.001 | .083  | .007       |
| Mental imagery – Gustatory         | 0.133  | .081 | .101  | .040  | .002       |
| Mental imagery – Tactile           | 0.384  | .081 | <.001 | .116  | .014       |
| Mental imagery – Bodily sensation  | 0.147  | .086 | .087  | .043  | .002       |
| Mental imagery – Emotional feeling | -0.071 | .087 | .415  | -.021 | 4.545x10-4 |
| Mental Imagery - Total             | 0.314  | .045 | <.001 | .075  | .006       |

### 5.5.5 Combined SEM

To identify the integrated effect of these factors, a combined SEM was conducted.

Multidimensional measures were combined into higher order factors in the combined SEM.

The initial model demonstrated an excellent model of fit with the data (robust

$\chi^2(24730.147) = 10951, p < 0.001$ , RMSEA = 0.038, SRMR = 0.051, CFI = 0.984, TFI = 0.984.

See Table 5:21 for correlations between factors input into the SEM. See Table 5:22 for item loadings onto each factor in the combined SEM.

**Table 5:21**

*Factor correlations in combined SEM*

|        | Halls | Ins  | Night | Diss | Worry | Persev | ER | SE | Para | MI |
|--------|-------|------|-------|------|-------|--------|----|----|------|----|
| Halls  |       |      |       |      |       |        |    |    |      |    |
| Ins    | .465  |      |       |      |       |        |    |    |      |    |
| Night  | .512  | .634 |       |      |       |        |    |    |      |    |
| Diss   | .733  | .550 | .552  |      |       |        |    |    |      |    |
| Worry  | .492  | .664 | .560  | .651 |       |        |    |    |      |    |
| Persev | .569  | .582 | .552  | .732 | .816  |        |    |    |      |    |
| ER     | .451  | .484 | .463  | .646 | .704  | .779   |    |    |      |    |

|      |      |      |      |      |      |      |      |       |      |
|------|------|------|------|------|------|------|------|-------|------|
| SE   | .378 | .483 | .399 | .504 | .564 | .582 | .428 |       |      |
| Para | .534 | .371 | .366 | .650 | .534 | .530 | .591 | .343  |      |
| MI   | .188 | .149 | .162 | .164 | .188 | .189 | .209 | -.086 | .138 |

*Note.* Halls = Hallucinations, Ins = Insomnia, Night = Nightmares, Diss = Dissociation, Persev = Perseverative Thinking, ER = Emotion Regulation, SE = Self-esteem, Para = Paranoia, MI = Mental Imagery

**Table 5:22**

*Factor loadings for all items in the combined SEM*

| ID | Latent factor                      | Item | Question                                                      | Std factor loading |
|----|------------------------------------|------|---------------------------------------------------------------|--------------------|
| 1  | Self-esteem<br>Negative<br>(BCSS)  | 1    | I am unloved                                                  | .676               |
| 2  |                                    | 2    | I am worthless                                                | .887               |
| 3  |                                    | 3    | I am weak                                                     | 0.838              |
| 4  |                                    | 4    | I am vulnerable                                               | 0.778              |
| 5  |                                    | 5    | I am bad                                                      | 0.731              |
| 6  |                                    | 6    | I am a failure                                                | 0.862              |
| 7  | Self-esteem<br>Positive*<br>(BCSS) | 7    | I am respected                                                | 0.459              |
| 8  |                                    | 8    | I am valuable                                                 | 0.526              |
| 9  |                                    | 9    | I am talented                                                 | 0.374              |
| 10 |                                    | 10   | I am successful                                               | 0.412              |
| 11 |                                    | 11   | I am good                                                     | 0.493              |
| 12 |                                    | 12   | I am interesting                                              | 0.379              |
| 13 | Worry<br>(DWQ)                     | 1    | I've been worrying a lot.                                     | .809               |
| 14 |                                    | 2    | In my mind I have been going over problems again and again.   | .827               |
| 15 |                                    | 3    | There was little I could do to stop worrying.                 | .767               |
| 16 |                                    | 4    | I have been worrying even though I didn't want to.            | .834               |
| 17 |                                    | 5    | Worry has stopped me focussing on important things in my day. | .833               |
| 18 |                                    | 6    | Worry has stopped me sleeping.                                | .765               |
| 19 |                                    | 7    | Worry has caused me to feel upset                             | .775               |
| 20 |                                    | 8    | Worry has made me feel stressed.                              | 0.810              |
| 21 |                                    | 9    | Worry has made me feel anxious                                | 0.831              |
| 22 |                                    | 10   | Worry has made me feel hopeless.                              | 0.843              |
| 23 | Perseverative thinking             | 1    | The same thoughts keep going through my mind again and again. | 0.784              |

| (PTQ) |                                 |    |                                                                                                             |       |
|-------|---------------------------------|----|-------------------------------------------------------------------------------------------------------------|-------|
| 24    |                                 | 2  | Thoughts intrude into my mind.                                                                              | 0.791 |
| 25    |                                 | 3  | I can't stop dwelling on them.                                                                              | 0.805 |
| 26    |                                 | 4  | I think about my problems without solving any of them.                                                      | 0.749 |
| 27    |                                 | 5  | I can't do anything else while thinking about my problems.                                                  | 0.811 |
| 28    |                                 | 6  | My thoughts repeat themselves.                                                                              | 0.770 |
| 29    |                                 | 7  | Thoughts come to my mind without me wanting them to.                                                        | 0.738 |
| 30    |                                 | 8  | I get stuck on certain issues and can't move on.                                                            | 0.772 |
| 31    |                                 | 9  | I keep asking myself questions without finding an answer.                                                   | 0.771 |
| 32    |                                 | 10 | My thoughts prevent me from focusing on other things.                                                       | 0.791 |
| 33    |                                 | 11 | I keep thinking about the same issue all the time.                                                          | 0.784 |
| 34    |                                 | 12 | Thoughts just pop into my mind.                                                                             | 0.716 |
| 35    |                                 | 13 | I feel driven to continue dwelling on the same issue.                                                       | 0.760 |
| 36    |                                 | 14 | My thoughts are not much help to me.                                                                        | 0.726 |
| 37    |                                 | 15 | My thoughts take up all my attention.                                                                       | 0.774 |
| 38    | Sleep (ISI)                     | 1  | Difficulty falling asleep                                                                                   | .772  |
| 39    |                                 | 2  | Difficulty staying asleep                                                                                   | .740  |
| 40    |                                 | 3  | Problems waking up too early                                                                                | .587  |
| 41    |                                 | 4  | How satisfied/dissatisfied are you with your current sleep pattern?                                         | .607  |
| 42    |                                 | 5  | How noticeable to others do you think your sleep problem is in terms of impairing the quality of your life? | .749  |
| 43    |                                 | 6  | How worried/distressed are you about your current sleep problems?                                           | .775  |
| 44    |                                 | 7  | To what extent do you consider your sleep problem to interfere with your daily functioning?                 | .812  |
| 45    |                                 | 1  | I have the feeling that other people, other things and the world surrounding me are not real.               | .806  |
| 46    | Dissociation – Unreality (DEMO) | 2  | I have the feeling that everything is unreal.                                                               | .819  |

|    |                                           |    |                                                                                                                                             |      |
|----|-------------------------------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------|------|
| 47 |                                           | 3  | I feel as if I don't exist, am not real.                                                                                                    | .806 |
| 48 |                                           | 4  | I feel like I am in a parallel world.                                                                                                       | .753 |
| 49 |                                           | 5  | The world around me feels detached or unreal, as if there were an invisible barrier between me and the outside world.                       | .796 |
| 50 |                                           | 6  | I feel like the external world is not real, a joke, a lie.                                                                                  | .789 |
| 51 | Dissociation - Numb & Disconnected (DEMO) | 7  | I feel emotionally numb.                                                                                                                    | .790 |
| 52 |                                           | 8  | I just feel numb and empty inside.                                                                                                          | .844 |
| 53 |                                           | 9  | I feel I can't make a proper connection with anyone around me.                                                                              | .807 |
| 54 |                                           | 10 | I do not seem to feel anything at all.                                                                                                      | .753 |
| 55 |                                           | 11 | I feel like I'm 'just existing'                                                                                                             | .785 |
| 56 |                                           | 12 | I turn inwards, trying to work out why I feel so disconnected.                                                                              | .790 |
| 57 | Dissociation - Memory Blanks (DEMO)       | 13 | I find myself in situations or places with no memory of how I got there.                                                                    | .786 |
| 58 |                                           | 14 | I suddenly notice that I find myself in a place what is unknown to me without knowing how I got there.                                      | .754 |
| 59 |                                           | 15 | I find evidence of something I've done recently (e.g. through finding notes or drawings) but I don't remember doing it.                     | .744 |
| 60 |                                           | 16 | I find new articles among my things without being able to remember ever having purchased them.                                              | .715 |
| 61 |                                           | 17 | I find myself somewhere and do not remember how I got there.                                                                                | .785 |
| 62 |                                           | 18 | I have big gaps in my memory for recent things in my life.                                                                                  | .852 |
| 63 | Dissociation - Zoned Out (DEMO)           | 19 | I stare aimlessly without thinking about anything.                                                                                          | .852 |
| 64 |                                           | 20 | I 'zone out' and don't see or hear what's going on around me.                                                                               | .832 |
| 65 |                                           | 21 | I sometimes sit staring off into space, thinking of nothing, and am not aware of the passage of time (other people tell me that I do this). | .859 |
| 66 |                                           | 22 | I often think about nothing.                                                                                                                | .725 |

|    |                                            |    |                                                                                                                                                                  |       |
|----|--------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 67 |                                            | 23 | Sometimes my mind is absolutely blank.                                                                                                                           | .746  |
| 68 |                                            | 24 | My mind just goes empty.                                                                                                                                         | .784  |
| 69 | Dissociation - Vivid internal world (DEMO) | 25 | I can remember something that happened before so vividly that it's like a video is playing in my head.                                                           | .610  |
| 70 |                                            | 26 | Unwanted images from the past come into my head.                                                                                                                 | .751  |
| 71 |                                            | 27 | I am surprised by or don't expect some of the thoughts of images that happen in my head.                                                                         | .720  |
| 72 |                                            | 28 | I experience past memories as if they are happening here and now.                                                                                                | .717  |
| 73 |                                            | 29 | I can get so involved in fantasies or daydreaming that it seems to be really happening and I lose touch with what is happening in the real world at that moment. | .741  |
| 74 |                                            | 30 | I hear someone talking when no-one nearby had actually said anything.                                                                                            | .726  |
| 75 | Mental imagery – Visual (Psi-Q)            | 1  | A bonfire                                                                                                                                                        | 0.813 |
| 76 |                                            | 2  | A sunset                                                                                                                                                         | 0.845 |
| 77 |                                            | 3  | A cat climbing a tree                                                                                                                                            | 0.832 |
| 78 | Mental imagery – Auditory (Psi-Q)          | 4  | A car horn                                                                                                                                                       | 0.820 |
| 79 |                                            | 5  | Hands clapping in applause                                                                                                                                       | .841  |
| 80 |                                            | 6  | Am ambulance siren                                                                                                                                               | .880  |
| 81 | Mental imagery – Olfactory (Psi-Q)         | 7  | Newly cut grass                                                                                                                                                  | .866  |
| 82 |                                            | 8  | Burning wood                                                                                                                                                     | .861  |
| 83 |                                            | 9  | A rose                                                                                                                                                           | .763  |
| 84 | Mental imagery – Gustatory (Psi-Q)         | 10 | Black pepper                                                                                                                                                     | .821  |
| 85 |                                            | 11 | Lemon                                                                                                                                                            | .922  |
| 86 |                                            | 12 | Mustard                                                                                                                                                          | .740  |
| 87 | Mental imagery – Tactile (Psi-Q)           | 13 | Fur                                                                                                                                                              | .841  |
| 88 |                                            | 14 | Warm                                                                                                                                                             | .816  |
| 89 |                                            | 15 | A soft towel                                                                                                                                                     | .885  |
| 90 | Mental imagery – Bodily sensation          | 16 | Relaxing in a warm bath                                                                                                                                          | .799  |

|     |                                                  |    |                                                                                                                      |       |
|-----|--------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------|-------|
|     | (Psi-Q)                                          |    |                                                                                                                      |       |
| 91  |                                                  | 17 | Walking briskly in the cold                                                                                          | .848  |
| 92  |                                                  | 18 | Jumping into a swimming pool                                                                                         | .794  |
| 93  | Mental imagery –<br>Emotional Feeling<br>(Psi-Q) | 19 | Excited                                                                                                              | .650  |
| 94  |                                                  | 20 | Relieved                                                                                                             | .674  |
| 95  |                                                  | 21 | Scared                                                                                                               | .943  |
| 96  | Nightmares<br>(DDNSI)                            | 1  | How many nights in a week do you<br>have disturbing dreams and<br>nightmares?                                        | .764  |
| 97  |                                                  | 2  | How many disturbing dreams and/or<br>nightmares do you have in a week?                                               | .663  |
| 98  |                                                  | 3  | On average, do your nightmares<br>what you up?                                                                       | .682  |
| 99  |                                                  | 4  | How would you rate the severity of<br>your disturbing dreams and/or<br>nightmare problem?                            | .887  |
| 100 |                                                  | 5  | How would you rate the intensity of<br>your disturbing dreams and/or<br>nightmares?                                  | .870  |
| 101 | Hallucinations<br>(SPEQ)                         | 1  | Hear noises or sounds when there is<br>nothing to explain?                                                           | .739  |
| 102 |                                                  | 2  | Feel that someone is touching you,<br>but when you look nobody is there?                                             | .700  |
| 103 |                                                  | 3  | Hear sounds or music that people<br>near you don't hear?                                                             | .778  |
| 104 |                                                  | 4  | Detect smells which don't seem to<br>come from your surroundings?                                                    | .619  |
| 105 |                                                  | 5  | See things that other people<br>cannot?                                                                              | .666  |
| 106 |                                                  | 6  | Experience unusual burning<br>sensations or other strange feelings<br>in or on your body that can't be<br>explained? | .686  |
| 107 |                                                  | 7  | See shapes, lights, or colours even<br>though there is nothing really there?                                         | .650  |
| 108 |                                                  | 8  | Hear voices commenting on what<br>you're thinking or doing?                                                          | .739  |
| 109 |                                                  | 9  | Notice smells or odours that people<br>next to you seem unaware of                                                   | .613  |
| 110 | Paranoia<br>(R-GPTS)                             | 1  | Certain individuals have had it in for<br>me.                                                                        | 0.756 |
| 111 |                                                  | 2  | People wanted me to feel<br>threatened, so they stared at me.                                                        | 0.771 |
| 112 |                                                  | 3  | I was certain people did things in<br>order to annoy me.                                                             | 0.738 |

|     |                                                |    |                                                                                                    |       |
|-----|------------------------------------------------|----|----------------------------------------------------------------------------------------------------|-------|
| 113 |                                                | 4  | I was convinced there was a conspiracy against me.                                                 | 0.774 |
| 114 |                                                | 5  | I was sure someone wanted to hurt me.                                                              | 0.819 |
| 115 |                                                | 6  | I couldn't stop thinking about people wanting to confuse me.                                       | 0.822 |
| 116 |                                                | 7  | I was distressed by being persecuted.                                                              | 0.788 |
| 117 |                                                | 8  | It was difficult to stop thinking about people wanting to make me feel bad.                        | 0.849 |
| 118 |                                                | 9  | People have been hostile towards me on purpose.                                                    | 0.772 |
| 119 |                                                | 10 | I was angry that someone wanted to hurt me.                                                        | 0.773 |
| 120 | Emotional reactivity – Sensitivity (ERS)       | 2  | My feelings get hurt easily.                                                                       | 0.669 |
| 121 |                                                | 5  | I tend to get very emotional very easily.                                                          | 0.702 |
| 122 |                                                | 7  | I often feel extremely anxious.                                                                    | 0.840 |
| 123 |                                                | 9  | Even the littlest things make me emotional.                                                        | 0.707 |
| 124 |                                                | 12 | I get angry at people very easily.                                                                 | .635  |
| 125 |                                                | 13 | I am often bothered by things that other people don't react to.                                    | .741  |
| 126 |                                                | 14 | I am easily agitated.                                                                              | .748  |
| 127 |                                                | 15 | My emotions go from neutral to extreme in an instant.                                              | .771  |
| 128 |                                                | 16 | When something bad happens, my mood changes very quickly. People tell me I have a very short fuse. | .703  |
| 129 |                                                | 18 | I am a very sensitive person.                                                                      | .528  |
| 130 | Emotional reactivity - Arousal/Intensity (ERS) | 3  | When I experience emotions, I feel them very strongly/intensely.                                   | .704  |
| 131 |                                                | 4  | When I'm emotionally upset, my whole body gets physically upset as well.                           | .701  |
| 132 |                                                | 6  | I experience emotions very strongly.                                                               | .703  |
| 133 |                                                | 17 | People tell me that my emotions are often too intense for the situation.                           | .697  |
| 134 |                                                | 19 | My moods are very strong and powerful.                                                             | .671  |

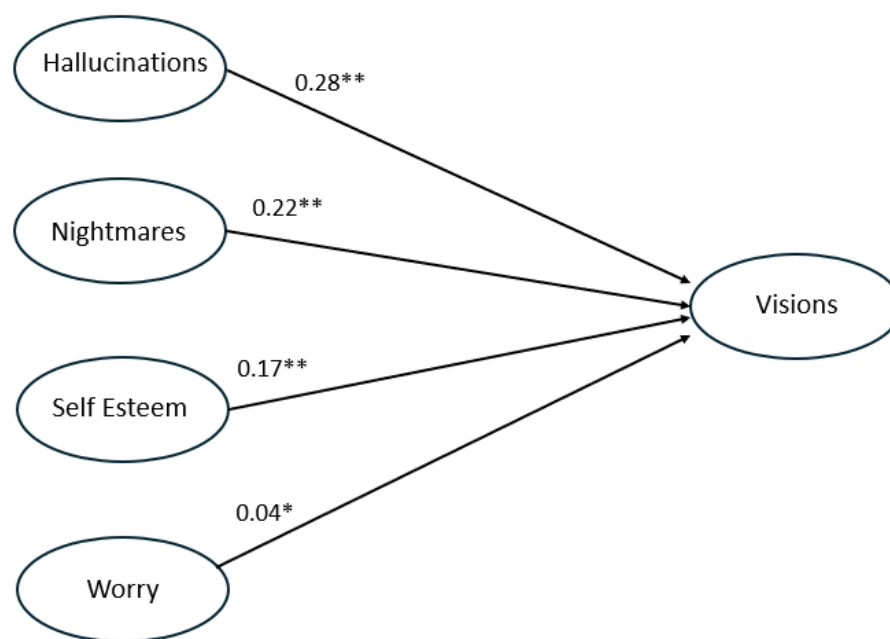
|     |                                          |    |                                                                                       |      |
|-----|------------------------------------------|----|---------------------------------------------------------------------------------------|------|
| 135 |                                          | 20 | I often get so upset it's hard for me to think straight.                              | .789 |
| 136 |                                          | 21 | Other people tell me I'm overreacting.                                                | .750 |
| 137 | Emotional reactivity – Persistence (ERS) | 1  | When something happens that upsets me, it's all I can think about it for a long time. | .737 |
| 138 |                                          | 8  | When I feel emotional, it's hard for me to imagine feeling any other way.             | .770 |
| 139 |                                          | 10 | If I have a disagreement with someone, it takes a long time for me to get over it.    | .686 |
| 140 |                                          | 11 | When I am angry/upset, it takes me much longer than most people to calm down.         | .741 |

*Note.* SPEQ = Specific Psychotic Experiences Questionnaire, ISI = Insomnia Sleep Index, DDNSI = Disturbing Dreams and Nightmares Severity Index, DEMO = Dissociative Experiences Measure, Oxford, DWQ = Dunn Worry Questionnaire, PTQ = Perseverative Thinking Questionnaire, ERS = Emotional Regulation Scale, BCSS = Brief Core Self Schema – Self Scale, R-GPTS = Revised Green Paranoid Thoughts Scale, Psi-Q = Plymouth Sensory Imagery Questionnaire. \*BCSS Self -esteem Positive reversed as combined into a higher order factor of 'Self-esteem'.

Then stepwise method was then applied to identify key contributory factors in the model. First, backwards elimination removed insomnia, perseverative thinking, and paranoia as they were non-significant predictors. Then emotional regulation, dissociation, mental imagery were identified as suppressors and therefore removed from the model. The final model demonstrated an excellent model of fit with the data (robust  $\chi^2(24818.885) = 10957$ ,  $p < 0.001$ , RMSEA = 0.038, SRMR = 0.051, CFI = 0.984, TFI = 0.984. The variance explained by the model was 43%. Four contributory factors were significantly associated with visions. Nightmares had the highest association with visions and worry had the lowest. See Table 5:23 for final parameter estimates for the SEM model. See Figure 5-1 for path diagram.

**Table 5:23***Parameter estimates for final SEM model*

| Contributory factor | B     | SE B  | <i>p</i> | $\beta$ |
|---------------------|-------|-------|----------|---------|
| Hallucinations      | 0.282 | 0.012 | <.001    | 0.318   |
| Nightmares          | 0.222 | 0.014 | <.001    | 0.325   |
| Self Esteem         | 0.166 | 0.015 | <.001    | 0.137   |
| Worry               | 0.042 | 0.018 | .020     | 0.035   |

**Figure 5-1***Path diagram of final combined SEM for visions*

Note. \* $p = 0.02$ , \*\*  $p < .001$

### 5.5.6 Treatment preferences

Having established key contributory factors of visions, the next step was to identify if there was clinical demand for vision treatments to be developed. For this reason, only the clinical group were asked if they wanted a treatment for their visions. 75.9% (n=309) of people indicated they wanted a treatment for their visions. Those who did not want a treatment

typically thought the visions were positive and therefore did not want them to leave or reported a hopelessness that no treatment would work. Of those wanting a treatment, most (77.4%,  $n = 243$ ) would like a psychological treatment. Other treatment responses mainly included a preference for medication. Given that some people viewed their visions as positive the next step was to focus on only participants who rated their visions as causing distress, the amount of people wanting treatment increased to 83% (247 out of 330) with similar rates wanting a psychological therapy (77.5%).

## 5.6 Discussion

This study recruited a large sample of both clinical people with psychosis and a non-clinical group of individuals across the UK that reported experiencing visions in the last month. This enabled examination of the three aims of study: i) exploring the phenomenological similarities and differences of visions across these two groups, ii) test a novel theoretical model of visions to identify key contributory factors and future treatment targets, and iii) establish if people with psychosis wanted a treatment for visions.

### 5.6.1 Phenomenology of visions

In terms of the first aim to explore the phenomenological experiences, it was found that across the two groups, people tended to report seeing similar content such as people, figures/shadows, and faces. This is consistent with previous research that found that there were similarities in the hallucinations experienced in people with psychosis and the general population (Aynsworth et al., 2023; Peters et al., 2017). However, there were important differences in the quantity and quality of the experiences between the two groups. The clinical participants reported a greater number of visions. Also, those in the non-clinical group, typically only experienced seeing a vision whereas people with psychosis rarely saw a vision on their own. Instead, they were significantly more likely to see visions with multiple other hallucinatory modalities associated with their visions, it was rarely just a vision.

Past research has rarely considered the relationship between the different hallucinatory experiences in visions (Dudley et al., 2019; 2023). In this study, it was found that people with psychosis were significantly more likely to report the presence of visions that either talked to, touched them, or was associated with a smell than those in the non-clinical group. Second, when present the visions also spoke to the observer, people with psychosis were significantly more frequently experiencing visions that talked to them. Third, in terms of the emotional content of the additional hallucinatory modalities e.g. “When the vision talks to you, what is the content of what it says?”, people with psychosis were significantly

more likely to report negative emotional content of all such multimodal experiences compared to the non-clinical group.

These findings support the notion of a continuum of visions (Aynsworth et al., 2023; Rogers et al., 2024), whereby the presence of visions alone does not signify a mental health disorder in and of themselves, but instead these experiences that can occur to anyone. However, there is a change along the continuum in terms of frequency and complexity of these experiences. Whilst there is similar content reported across the clinical and non-clinical groups, people with psychosis are more likely to experience multimodal experiences, and in greater combination, with more negative content when they do so. Thus, it is not the presence of visions themselves that warrant people to seek treatment in clinical services but instead could be other factors such as the number of visions, their multimodal nature, and their emotional distress (Peters et al., 2017). Given these changes across the continuum, it could be harder for people with psychosis to explain these experiences as a ‘trick of the eye’ or ‘being tired’, as those experienced in non-clinical people (Aynsworth et al., 2023). As a result, people with psychosis find it harder to find ‘convincing and acceptable’ explanations for their experiences, which therefore drives an ongoing search for meaning (Chapter 3).

Whilst not directly testing the predictive processing framework (Fletcher & Frith, 2009; Friston, 2009; Lyndon & Corlett, 2020, Teufel et al., 2015) what is apparent is that visions in clinical groups especially seem to be multimodal, which would seem to be consistent with the people with psychosis being affected by top down predictions or over weighted priors that help to create the sense of a vision that talks to and touches you.

### 5.6.2 Contributory factors of visions

Second, this study tested a multifactorial model of psychological factors contributing towards visions. When explored individually, ten factors were significantly associated with visions (low self-esteem, worry, perseverative thinking, dissociation, poor sleep, mental imagery, nightmares, other hallucinatory experiences, paranoia, and emotional regulation).

In a subsequent combined SEM analysis, the contributions of the factors were tested simultaneously. Four key psychological factors (nightmares, other hallucinatory experiences, low self-esteem, and worry) were found to significantly predict visions. Thus, clarifying that these four factors provide unique contributions to visions when accounting for all of the shared variance between the other contributory factors. These are potentially tractable and changeable processes and so, if endorsed as suitable by people with lived experience, could be candidates for future development of treatments that target these processes.

Unlike previous research (Reeve et al., 2015; 2018; 2019; Sheaves et al., 2016), insomnia was not found to predict visions when included within a combined model. Whilst insomnia is an important type of sleep problem, people with psychosis report a wide range of sleep difficulties (Freeman & Waite, 2025), which were not assessed in this study. This includes difficulties such as hypersomnia (excessive sleeping), or delayed sleep (often because of factors such as high anxiety, paranoia, or hallucinations), or inconsistent circadian rhythms (Freeman & Waite, 2025). This is important to consider because different factors could be related to different underlying mechanisms (Freeman & Waite, 2025) and hence could impact visions differently. Therefore, it is important to note that the impact of poor sleep is wider than insomnia, and hence it could be that other sleep difficulties may be more relevant in visions, as Brederoo et al. (2021) found.

Alternatively, it could be that sleep disruption could be a result of nightmares, which were found to be the key main predictor of visions. It could be that sleep is a mediating factor in this relationship between reports of nightmares and visions, rather than the poor sleep directly causing visions (Chapter 3; McCall, 2013). The association between nightmares and visions could support the findings that visions can be related to past trauma (Chapters 1, 2 and 3; Dudley et al., 2024; Hardy et al., 2017). Nightmares are a key diagnostic criterion for post-traumatic stress disorder, and hence trauma could be an important link in understanding the relationship between nightmares and visions. However, this study did not specifically explore the experience of past trauma, so this relationship at this stage is

speculative. Instead, it assessed core cognitive mechanisms that are instead associated with trauma such as insomnia, emotional dysregulation, dissociation, nightmares, paranoia, and vivid mental imagery.

Nightmares also speak to the role of mental imagery in visions, given that nightmares are vivid, immersive, and distressing mental images which the brain perceives as happening in real time (Sheaves et al., 2023). Whilst associated with visions individually, when in a combined model, mental imagery was not a significant predictor. The measure used to assess mental imagery, Psi-Q (Andrade et al., 2014), is a measure of general mental imagery across different sensory modalities, which asked about someone's ability to voluntarily create mental images. This measure was chosen because we took the view that mental imagery is a general broad ability that people have to varying degrees. Less focus was paid on the specific emotional content or perceived control of mental imagery. However, it could be that what people were describing better matched a focus on involuntary negative uncontrollable mental imagery e.g. vividness when worrying, ruminating on the image of a vision, nightmares, and unwanted intrusive thoughts. Therefore, it may not be mental imagery abilities in general but instead a specific negative mental imagery that is related to visions. For example, emotional content and appraisals of mental imagery have been found to be related to the development and maintenance of distress (Kelly et al., 2017; Reimer & Moscovitch, 2015), therefore it could be that a measure such as the Negative Mental Imagery Questionnaire, that assesses negative mental imagery and associated appraisals (Oaie et al., 2025), could have better matched the experiences of mental imagery reported in the qualitative interviews (Chapter 3).

The exact nature between visions, nightmares, and mental imagery cannot be determined within this study, but their important role in visions has been recognised. A key beneficial treatment for nightmares is imagery rescripting (Albanese et al., 2022; Hicks et al., 2024; Kunze et al., 2017), techniques that specifically work with imagery to change its content and reduce associated distress (Hackman, 2011). This approach has been found to be beneficial with intrusive mental images associated with visions (Paulik & Taylor, 2024). Therefore,

applying this technique to nightmares in people with visions could also be a potential future treatment approach.

In the combined model, worry was found to be a significant predictor of visions, whereas perseverative thinking was not. It seems plausible that there could have been a large amount of shared variance between these two factors given that they both assessed processes of repetitive negative thinking. An obvious question could therefore be why was worry significant and not perseverative thinking? Worry focuses on processes that are important for problem-solving perceived threat of a potential future events that are unknown (Borkovec et al., 1983), whereas, rumination or perseverative thinking is defined more as a stuckness or rumination on a specific past event or feeling (Nolen-Hoeksema et al., 2008). It could be that worry better captures processes that are at play in people with psychosis and visions. Hypervigilance (the state of being on high alert), is a safety behaviour in people with psychosis (Tully et al., 2017), and often leads to people avoiding any potential threat (Chapter 3), which then confirms peoples' misinterpretations of events (Lambe et al., 2025) as it prevents any new learning of dis-confirmatory information (Freeman, 2016). Hence worry could be viewed as a positive process as it could help people to preparatory actions to feel safer from the visions. Other psychosis symptoms such as paranoia are similarly driven by worry and the associated positive beliefs that worrying will keep them safe (Freeman, 2016) In comparison, there may be fewer positive beliefs associated with perseverative thinking as it focused more on the past rather reducing future threat and hence played less a role in predicting visions.

Interestingly, whilst associated with visions in their own right, when in the combined model, emotional regulation, dissociation, and mental imagery were all identified as suppressor factors; defined as a variable that increased the predictive validity of another variable (Conger, 1974). However, in reality, it is difficult to establish if such factors recognised in SEM are suppressing factors or instead confounding variables (reduces the relationship between factors) or mediating factors (explains the relationship between factors). Therefore, it relies on prior knowledge or theory to explain these suppressor effects

(MacKinnon et al., 2000). Given the complexity of the model, and the occurrence of all these factors individually predicting visions, it could be that emotional regulation, dissociation, and mental imagery are mediating factors in the relationships between the key factors in the combined model (other hallucinatory experiences, nightmares, worry, and low self-esteem). For example, it could be that increased mental imagery could affect the likelihood of other hallucinatory experiences through causing a greater confusion between what are internal images compared to external. Mental imagery could increase the likelihood of nightmares and worry through creating more vivid and complex mental images. Dissociation has been found to increase the likelihood of nightmares through reduced emotional processing prior to sleep (Sheaves et al., 2023). Dissociation could also lead to more types of hallucinatory experiences due to feelings of being disconnected from the external world. This could create an over reliance on top-down processing, which could make it difficult to decipher what is a 'true' perception or not. Feelings of dissociation could also be a way of disconnecting from feelings of low self-worth. Worry, low self-esteem, other hallucinatory experiences, and nightmares have all been found to increase emotional dysregulation, which could therefore increase the likelihood of experiencing visions. Such complex relationships however were not explored in this model and would require future testing to more confidently consider causal, mediating, and confounding effects.

### 5.6.3 Treatment preference

Having established potential future treatment targets, the final aim was then to see if there was a clinical preference for a treatment for visions by asking people with psychosis if they wanted a treatment for these. 75.9% of participants said yes, that they did want a treatment for these. Of those, 77.4% would like a psychological treatment. Of those with distressing visions in particular, this increased to 83% of people wanting a treatment visions. Thus, demonstrating that there is a clinical desire to develop treatments for people with visions in psychosis, particularly for those with distressing experiences.

## 5.7 Limitations

Firstly, the cross-sectional methodology used in this study means that causality cannot be determined. Whilst nightmares, worry, low self-esteem, and other hallucinatory symptoms were found to predict visions, the direction of this cannot be established. For example, it could be that visions instead cause such difficulties or could merely be confounding factors in the relationships. Therefore, further studies are required to establish causality. There are two possible routes to addressing the direction of causality in future research. The first is to use experimental studies which could purposefully manipulate the potential maintenance mechanisms (e.g. worry, low self-esteem) and then see their impact on visions.

Experimental tasks known to induce visions are rare, but the Ganzflicker (a salient eye open visual flicker) and the Ganzfeld (visual and auditory perceptual deprivations) tasks are known to trigger simple and complex visions (Shenyan et al., 2024). This could therefore be used after manipulating people's experience of worry or low self-esteem, for example, to explore their causal impact on visions. Alternatively, interventionist-causal randomised controlled trials could be used (Kendler & Campbell, 2009), where a specific intervention focusing on the potential maintenance mechanisms (e.g. worry) is provided, then evaluate the change in the clinical outcome (e.g. visions). A causal factor can be determined if reduction in the mechanism through treatment subsequently reduces visions. Such an approach will help to address the clinical need for treatment as well as test causal mechanisms as it allows testing the theoretical model and treatments simultaneously.

Secondly, whilst a robust model of visions was found, it accounted for 43% of the variance, indicating that there were other key factors that predict distressing visions which were not included in the model. Some of these that have been noted within this thesis but were not included in the model, included appraisals, the multimodal nature of visions, and safety behaviours (Chapter 2 and 3). Thus, there is a need to further extend and refine this model. Trauma is an obvious consideration for the future given the speculation about this throughout the thesis. Instead, this study focused on tenable and measurable psychological mechanisms that could be targeted in treatments. All of which have all been found to be

associated with trauma, such as dissociation, worry, and low self-esteem (Gathier et al., 2024; Kuzminskaite et al., 2022; Li & Liang, 2023; Pilton et al., 2015). But further exploration of the role of trauma on visions would allow us to refine the model further.

It was noted that there was also a relatively small proportion of young people in the sample in comparison to the other ages, with approximately than 10% of the clinical sample and less than 20% of the non-clinical sample aged below 25 years old. This may be surprising given the high proportion of people that experience their first episode of psychosis between 14 and 30 years of age (Shiers & Lester, 2004). Such lower rates of younger people in the sample could have influenced the results. Brain development is understood to continue until approximately 30 years of age (Abbott & Birkett, 2023). This means that young people's prefrontal cortex are not yet fully matured. This is an area of the brain associated with executive functioning, which is "the ability to coordinate thought and action and direct it towards obtaining goals" (Miller & Wallis, 2009, p. 99). This is of relevance to this study because many of the contributory factors included are related to executive functioning abilities and the prefrontal cortex. For example, Turnball et al. (2013) found that the delay in prefrontal cortex maturation is associated with sleep difficulties. Dixon et al. (2017) found that the prefrontal cortex is essential in the generation and regulation of emotions. Therefore, it could be that the executive functioning difficulties present in younger people could lead to a wider range of contributory factors leading to visions but given the low representation of the in the sample, these were not found to be significant in the combined model.

Visions are likely a result of biopsychosocial influences (Teeple et al., 2009; Waters et al., 2014), whereas this thesis focused on psychological factors and hence wider attention should also be paid to other social factors, such as culture. Culture (which includes a variety of different factors such as ethnic background, religion, region, and political influences) impact hallucinations in a variety of different ways such as the identification, content, appraisals, frequency, distress, and societies interpretations and responses of hallucinations (Knight et al., 2008; Larøi et al., 2014). For example, in certain communities, visions are seen as positive, spiritual experiences and not 'a sign of madness' which is a typically more widely held view of white western societies (Larøi et al., 2014). This is important because,

compared to the census, the sample included a greater representation of people from ethnic minority backgrounds. It is also important to consider the role of biological factors, such as substance use, which has also been associated with the occurrence of visions (Gaillard & Bourrat, 2003; Mauri et al., 2018; Teeple et al., 2009; Voce et al., 2019). Therefore, taking a broader biopsychosocial approach to understanding the complex roles of different factors on visions could be valuable in understanding these further.

A wider approach could also include racial diversity and culture to a greater extent than within this thesis. All but one of the individuals in the qualitative interviews (Chapter 2 and 3) and the LEAP were White British. Their involvement helped to form the VISION-QUEST study, as they shaped the questions asked, measures used, and the contributory factors identified (Chapter 4 and 5). Whilst this is representative of the North East region, where 93.4% of people are White British (ONS, 2022), this is not representative of the wider UK general population, where 81.7% of people are White British (ONS, 2022).

However, in VISION-QUEST (Chapter 4 and 5), there was much greater ethnic diversity in the sample. For the clinical participants, 72% of those were White British, and in the non-clinical sample, 65.8% of participants were. Thus, suggesting that a larger representation of people from ethnic minority backgrounds reported visions, than in the general population. Therefore, there could be wider issues relating to phenomenology, appraisals, measurement, and contributory factors that may have been underrepresented in this work, if the original questions were limited by representing the experiences of those participants in the qualitative interviews. This is important to consider because different cultures approach unusual sensory experiences differently. For example, a Euro-American view is often more negative, stigmatised and view such experiences as a 'psychotic disorder' (Luhmann et al., 2015). Whereas Bourguignon (1970) studied 488 societies worldwide and found that 62% of cultures viewed hallucinations as part of their ordinary ritual practices, and hence they were viewed more positively. Some cultures even induce hallucinatory experiences as spiritual guides or to provide access to alternative realities (Larøi et al., 2014). A more positive view of such experiences in different cultures could help to explain why there was a higher representation of ethnic minorities in this sample. Similarly, Johns et

al. (2002) consistently found higher rates of hallucinations in people from Caribbean, Indian, African, Asian, Pakistani, Bangladeshi, and Chinese backgrounds, than those who were White British. However, not all cultures view hallucinatory experiences in a positive light. For example, West African cultures often believe such as experiences are due to bewitchment or evil eye magic, whereas other cultures such as Asian, Latin, Maori and Polish can view this as a Jinn (Ghanem et al. 2023). Such beliefs can impact people's likelihood to seek help, such as from mental health services, as they may feel they would be better supported by spiritual or religious figures. Therefore, we need to better account for spiritual and religious explanations or wider cultural influences that could help to better explain or support people with visions. Therefore, in future research, it would be helpful to engage more so with a wider range of people lived experience across a breadth of different cultures to help inform the development of studies.

It is also helpful to acknowledge that culture is influenced by various factors, beyond that of race, which were also captured in VISION-QUEST sample. There was a breadth of diversity in the sample in relation to sexual orientation, region, employment, educational achievements, and marital status demonstrating that the participants covered a wide range of cultures that are beneficial for the generalisability of these results.

Another limitation is that we cannot be fully confident in the validity of the visions (according to definition used for visions) reported by the non-clinical sample as they were recruited via an online marketing company. Whilst participants read a Participant Information Sheet before consenting, which highlighted the inclusion/exclusion criteria, as well as the definition of visions, some people may have misunderstood this or misinterpreted their experiences. Unlike the clinical participants who were all screened for the presence of visions in the last month by a research clinician prior, the same level was not possible for the non-clinical recruitment method. It could be that people with dementia or substance use may have also completed the questionnaire. However, given the large number of endorsements and the additional quality checks, it is hoped that if any participants did not fully understand visions as we intended, would be in the minority. Further confidence could be gained in the validity of the sample as participants

without visions were also given the option to complete the survey, and hence it is most likely that those without visions will have simply not endorsed the presence of visions and still participated, rather than falsely endorse the presence of visions.

Furthermore, it could be that the mechanisms explored are simply common experiences in people's lives and may not directly relate to visions specifically. Thus, to improve our confidence in the mechanisms directly contributing towards visions, it would also be important test models between those with and without visions.

## 5.8 Future directions

The next step of the translational pathway is developing and testing treatments (Freeman, 2024; Kendler & Campbell, 2009) for the mechanisms of nightmares, other hallucinatory experiences, high levels of worry, and low self-esteem. By taking a single focus on one specific mechanism at a time, targeting this, and testing the outcome on visions will allow greater exploration and precision of causal factors on visions (Freeman, 2011). This work recognises the complex relationships between visions and a wide range of other factors. Therefore, developing and testing treatments for the wide variety of factors identified in this chapter could help to address the complexity and individual nature of visions, whereby not all mechanisms are necessary for all people, but in combination different factors could lead to visions (Mackie, 1965). Doing so will allow people in the future to be offered a variety of effective treatments e.g. one targeting worry, one targeting self-esteem etc and then through an assessment with a clinician and outcome measures, they could identify which are the most relevant and important for them and in what order. This could offer people a sense of ownership, control, and responsibility over their treatment, which is related to increased engagement and treatment success (Carlise et al., 2022).

It is essential that development of such future treatments is done in collaboration with people with lived experience. Whilst the four key factors are important, working with people with lived experience could help to identify priority mechanisms to target earlier in

treatment development e.g. there may be a stronger preference to develop a treatment for worry, compared to the other factors. Collaborating with those affected by visions will ensure that treatments are meaningful, engaging, and accessible to people. According to the Medical Research Council's (MRC; Skivington et al., 2024) framework for treatment development, the next steps will be to establish initial efficacy through methodologies such as case series or single case-experimental design. From this, feasibility and acceptability can be determined before conducting randomised clinical trials to establish effectiveness of the treatments.

Adequate measurement of visions is also a priority for future research. The similarities and differences in the phenomenological characteristics of visions across people with psychosis and the general population, further emphasise the need for nuanced measures to be able to identify these. When simply asking about visual content, people often reported similar experiences, which could lead to an inaccurate conclusion that visions are the same across the clinical and non-clinical groups. However, when asked about multimodality (the number of multimodal experiences, frequency, and emotional content of these), it became apparent that these are important areas that could differentiate the two groups. This could hint at why visions in psychosis may be so detrimental impactful of people's lives (Baethge et al., 2005; Kreis et al., 2023; Mueser et al., 1990; Oorschot et al., 2012) because of their more complex, multimodal, and negative nature which could have more negative impact on people's lives, requiring them to seek clinical care. Therefore, when developing a measure of the content of visions, it is important to identify not only what it is that people see and how often, but it's multimodal nature and emotional content. Such measures would better support people to assess visions and track such experiences through clinical work and research.

## 5.9 Conclusion

This study was the first to propose and test a theoretical psychological model of visions. Similarities were found in the content of people's visions across people with psychosis and those in the general population. However key differences identified were that those with

psychosis were more likely to experience a higher number of different visions, in a greater number of multimodal hallucinatory modalities associated with the vision, with more frequent and negative multimodal content than those in the general population. When exploring factors that predicted visions, ten psychological factors were associated with visions (low self-esteem, worry, perseverative thinking, sleep, dissociation, mental imagery, nightmares, other hallucinatory experiences, paranoia, and emotional regulation). When in a combined model, nightmares, other hallucinatory experiences, worry, and low self-esteem were identified as the key significant factors associated with visions. The next steps are to work with people with lived experience to simultaneously develop and test treatments and the underlying theoretical model of visions to establish causality of such mechanisms, as well as develop better measures for visions. This will also help to further refine the model and offer more precision of treatments to build the first effective treatments of visions in psychosis.

## 6 General Discussion

Despite at least one in three people with psychosis experiencing visions, there are currently no proven effective treatments for these. In fact, there has been a relative neglect of visions in psychiatric research and practice in relation to psychosis. The small number of studies that have explored visions often used assessments that lacked robust psychometric properties, used interview methods but understood the outcome through descriptive statistics which led to a lack of detailed understanding of these complex experiences, or were limited to only a small number of participants which reduced the generalisability of the findings. In this thesis, the aim was to address some of these limitations. In this chapter, the findings of the thesis will be summarised, and demonstrate how the application of a translational approach may help in the development of future psychological treatments for visions. It will discuss its clinical utility as well as the limitations of the work, before concluding with the next steps for this research.

### 6.1 Overview of thesis aims and findings

The work in this thesis followed a translational approach to treatment development (Clark, 2006; Freeman, 2024). The first step was to develop a detailed understanding of the visions by asking people with psychosis what they actually see when they experience visions.

Chapter 2 revealed that people with psychosis who reported visions described these as much more vivid, complex experiences than previously suggested in the literature. Three key themes were identified: content, coherence, and quality. 'Content' demonstrated that whilst people reported a range of visions, such as animals, figures, shadows, or objects, the most distressing or impactful experiences were when they saw visions of other people. 'Coherence' identified how when people saw visions of people, they also behaved like people, in that they were multimodal experiences that could also talk to or touch the observer, or even be accompanied by a smell. 'Quality' captured how the visions often looked exactly like real people, by sharing the same perceptual qualities as other external and veridical stimuli. Such clarity in their perceptual quality often led people to question

their ability to trust their own eyes, as it was so hard to distinguish what was 'real' from what was 'not'. The all-encompassing, complex, vividness of people's experiences therefore begins to offer insight into why these experiences have such detrimental impact on peoples' lives.

Having better described the phenomenology of visions, the next aim of the thesis was to develop our understanding of how people make sense of such complex experiences. Chapter 3 revealed that people's appraisals are important in understanding distress in visions, that it is not the mere presence of these alone that causes distress. When asked about how people made sense of their visions, there was often a notable absence of explanation in that people did not have adequate or compelling explanations for why they see things others do not. Given the compelling nature of these experiences, it drove people to search for a meaning which in turn led to two types of explanations, 'Unconvincing but acceptable' and 'Convincing but unacceptable'. Whilst people could sometimes accept a degree of potential truth in 'unconvincing but acceptable' explanations, such as that it was their eyes playing tricks on them or related to past trauma, participants did not feel that they could explain the complexity and vividness of their visions. Therefore, such explanations were held with little belief and easily dismissed as implausible. In contrast, 'Convincing but unacceptable' explanations, despite being unacceptable because they were typically more threat-based and distressing, often offered more plausible explanations for people's visions and hence were held with greater conviction.

This study also demonstrated that people's appraisals were dynamic, whereby people often cycled between the two competing explanations. However, there were factors identified that made participants more likely to hold 'convincing but unacceptable' explanations such as being in the presence of the vision, their multimodal nature, and use of safety-seeking behaviours. For example, when in the room with a vision, they would often look too real and vivid to dismiss or logically explain away as unreal. The vision's multimodal nature often made this even more difficult, as they appeared to have the capacity to verbally or physically abuse the participant, reinforcing their sense of threat and realness. Therefore,

participants often resorted to using safety seeking behaviours to help keep them safe from harm, such as escape or avoidance. As a result, participants were unable to learn that they may be safer than they feel or better able to cope with the visions than they thought. When not in the presence of a vision, people often felt calmer and more able to question the validity of such explanations and instead tentatively considered explanations such as that it was a result of past traumas or their mind playing tricks on them. However, such 'unconvincing but acceptable' explanations were quickly dismissed when in the presence of the vision again. Therefore, we need to develop 'convincing and acceptable' explanations, that hold true when in the presence of a vision, if we want to better support people to manage such experiences.

Having formed a much more detailed understanding of the phenomenology and sense making of visions, the next aim of the thesis was to construct a model of maintenance factors which explains why the difficulty does not correct itself (Clark, 2006; Freeman, 2024). Whilst the typical standard for managing distressing appraisals is through 16-24 sessions of Cognitive Behavioural Therapy, the Interventionist-Causal paradigm (Kendler & Campbell, 2009) instead encourages a focus on brief treatments that target specific causal mechanisms underpinning distressing experiences. This approach enables multi-level explanations, whereby there is an understanding that multiple factors will likely interact to cause such complex phenomena as visions. Chapter 1 and 3 also identified potential psychological factors that could maintain, or even cause, visions. For example, visions were more likely to occur when people experienced a combination of factors such as poor sleep, heightened negative emotional states (e.g. worry, anger), dissociation, intrusive mental imagery, and low self-esteem. Thus, a new theoretical model of visions was developed that could be tested further (Chapter 5).

However, in order to adequately test a treatment model, it is important to have good measures that are able to capture meaningful and real change. So prior to the treatment development it is important to have valid, reliable and useable measures, that can help explore associations with key factors, and reveal meaningful impact of treatment (Freeman,

2024). Chapter 4 reported how a commonly used outcome measure (Hamilton Program for Schizophrenia Voice Hearing) was adapted to assess visions (HViQ). Using EFA and CFA, the HViQ was demonstrated to have a robust 3-factor structure, capturing dimensions of 'emotional impact', 'intrusiveness', and 'perceptual quality'. These factors related well to important attributes highlighted in Chapters 2 and 3 for assessing visions, demonstrating it also has clinical utility. The HViQ also demonstrated sound psychometric properties, indicating validity and reliability to use in clinical and research practice. Given the sample size and representativeness of the participants, the HViQ is a robust self-report outcome measure for visions.

Having worked to progress the understanding of visions and to develop a measure that can be used in future theoretical and clinical studies, the final aim was to develop an empirically supported theoretical model of visions through a cross-sectional questionnaire study involving both clinical and non-clinical participants who have seen visions within the last month. Using SEM, Chapter 5 developed a robust model of psychological contributory maintenance factors of visions. All initial ten factors (including low self-esteem, high levels of worry, perseverative thinking, dissociation, poor sleep, mental imagery, nightmares, paranoia, other hallucinatory experiences, and poor emotional regulation) in the model significantly regressed onto visions when tested with individual SEMs. When performing a combined SEM accounting for shared variance, nightmares, other hallucinatory experiences, low self-esteem, and high levels of worry remained significant predictors within the model, indicating that these could be the key factors to target in next steps of treatment development.

In summary, this thesis demonstrated that the visions are complex, vivid experiences that people want treatment for, but lack credible and acceptable explanations. A theoretical model of visions identified key factors that could form the basis of the next steps of treatment development, which can be aided by a novel measure for visions (the HViQ).

## 6.2 Clinical implications

This thesis has helped improve our understanding of the experience of visions in psychosis and provides a tool to measure change in treatment. It presents a framework for clinicians and researchers to ask about the phenomenology of visions, as well as their associated appraisals. It also presents a theoretical model of maintenance factors that contribute towards visions. These findings offer insight into why visions are associated with poorer treatment outcomes (Baegthe et al., 2015; Kreis et al., 2023; Meuser et al., 1990; Oorschot et al., 2012), given such complex, vivid, compelling nature of these, which force a search for understanding and meaning that we do not yet currently have. Despite participants expressing a need for intervention and wanting to talk about their visions, they explained how these were rarely asked about. Given the ease of use of the HViQ, it could be employed as a screening tool to identify people with visions in clinical practice. Once people have identified the presence of visions, clinicians could use the frameworks and model presented to support their confidence and ability to explore visions in more detail. Being able to discuss visions more openly in clinical practice could lead to an increase in shared understanding of what it is like to see things that others do not and so could help to reduce internalised stigma (Chapter 3; Renouf et al., 2018) and increase therapeutic alliance (Goldsmith et al., 2015).

Given the focus of this thesis on recruiting a large sample of people with non-affective psychosis and visions, it is hoped that this work will reaffirm the need to remain curious and open to exploring visions within this group of people, rather than focus on visions as a sign of another psychiatric disorder, such as post-traumatic stress disorder, bipolar, eye disease, or neurodegenerative diseases, such as Lewy Body Dementia or Parkinson's Disease, where research and subsequently clinicians have typically focused when it comes to visions (Bleuler et al., 1924; Waters et al., 2014). This is influenced by traditional psychiatric teaching, formed by the work of Kraepelin (1893) and Schneider (1959), who emphasised the predominant role of voice hearing in the diagnosis of psychosis, which is still a widely held view (Bentall, 2006). Whilst there is no dispute that voice hearing is the most common symptom in people with psychosis (McCarthy-Jones et al., 2017), this does not deem them

to be the only symptom of psychosis that warrants exploration. Instead, this work hopes to encourage the recognition and acceptance that visions are a crucial experience for people with non-affective psychosis, that people want treatment for. We also hope this work emphasises the need to look beyond visions alone, to consider a greater variety of hallucinatory modalities in combination, and in their own right.

To the authors' knowledge, there are currently very few psychoeducation resources for people with visions. Yet psychoeducation is often a vital part in helping people to normalise and manage their experiences (Dudley et al., 2011; Turkington & Kingdon, 2019). The results show that whilst the content of visions appear relatively similar across both clinical and non-clinical participants, there were key differences in the quantity and quality of the visions across the spectrum. People with psychosis reported more hallucinations and they were more likely to be multimodal. It could be helpful to incorporate these findings into psychoeducation packages that can help normalise people's experiences of visions, but also equip them with skills to be able to manage their visions and access these convincing and acceptable explanations when they are in the presence of the vision and so help reduce associated distress (Dodgson et al., 2025; Dudley et al., 2024; Dudley et al., in press).

Furthermore, given the contents of visions in both clinical and non-clinical groups were similar, it suggests that it is not the mere presence or content of visions alone that determine distress. Changes in the quantity and quality of the visions may help explain the appraisals of visions held by the clinical groups that are key in understanding the distress associated with visions (Beck, 1976) that may not have been adequately addressed in the previous CBT model of visions (Collerton & Dudley, 2004). Previous studies found some beneficial impact of CBT for visions, but this was not evidenced on the standardised measures used. It could have been that the model used was not adequate to capture people's appraisals or the measures used were not appropriate to detect change. Therefore, the new framework as well as the HViQ could now offer a more tailored approach to visions.

## 6.3 Strengths and limitations

Overall, there were several strengths to this thesis. It was the first application of an interventionist-causal framework to begin to develop treatments for visions. It conducted one of the first qualitative interviews and analysis with people with psychosis and visions to develop a much more detailed understanding of these, in order to develop a new measure and test a theoretical model of visions.

To date, research recruiting people with visions (especially those in psychosis) has typically drawn on relatively small sample sizes, whereas this study obtained the largest ever sample of clinical and non-clinical participants who were recruited specifically because they reported visions in the last month. Whilst qualitative research allows a detailed exploration of people's experiences (Braun & Clarke, 2021a), theories also need to be tested on larger samples in order to confidently understand and explore people's experiences and to develop psychometrically sound outcome measures.

The use of SEM also adds strength as it allowed us to simultaneously study complex multivariate relationships and test a theoretical model. This approach reduces measurement error and finds the true variance within the data (Kline, 2005). This enabled us to identify unique contributory paths that look like important factors in understanding distressing visions, allowing the next steps to develop more targeted and effective treatments for these.

Another strength of the thesis was the combination of both qualitative and quantitative methodologies that are well matched to the specific questions addressed that aimed to listen to and learn from people's lived experience, and then build and test a theoretical model with complex statistical analyses. The use of qualitative approaches enabled a better understanding of the complex, vivid nature of these experiences, the lack of explanation and their importance, and the need to develop treatments for visions. The interviews allowed people to open up about their experiences in a non-judgemental space, allowing

participants to talk about their visions in ways they admitted they would not have done in their clinical services, predominantly because they are not asked or given the opportunity to explore these in detail. The use of RTA allowed curious discussions which could follow what was important for each participant, rather than pre-determined set questions that would be required in quantitative approaches. Such intricate details of people's experiences and dynamic nature of different factors would not have been captured, or only to a limited extent, if we relied on quantitative methods alone. However, quantitative methods were then required to test this new learning on a larger scale in a more robust way. Thus, the combined approach demonstrated how these two approaches can be used to compliment and extend our learning about visions.

And finally, all of the work conducted in this thesis was underpinned by the collaboration with people with lived experience of visions, including a peer researcher, to ensure that it is meaningful and appropriate for those who have such distressing experiences (Biggane et al., 2019; Corstens et al., 2014). Such collaboration enhanced the ability to match our research closely to the needs of people with these experiences, to stay focused on what we are doing and why, as well as anticipate, identify and overcome potential problems within our research to increase the likelihood of its success.

Despite these strengths, there were also important limitations that cover three main areas: assessments, methodology, and theory. Firstly, in terms of assessments, this thesis was limited by the understanding of visions that is demonstrated in the current measurements available to visions (Aynsworth et al., 2017a). For example, visions in people with psychosis are very often multimodal experiences, but they were predominantly measured as a unimodal experiences and even within this thesis, e.g. the HViQ, explored the emotional impact, intrusiveness and perceptual quality of visions, rather than incorporating multimodality into the assessment. It could be that certain other hallucinatory aspects associated with the vision is the main cause of distress e.g. what it says, or how it touches the observer. Hence including such additional aspects into models of visions may offer more detailed understanding of factors relating to visions.

Another limitation with assessments is that this thesis focused on people with 'current' visions, defined as those having experienced visions within the last month. We did not include people with a history of visions beyond that. Therefore, it is unclear whether the contributory factors identified within the model of visions are trait-like static risk factors for visions, or whether they are dynamic factors that reflect temporary vulnerabilities to experience visions.

Secondly, in terms of methodological limitations, a key issue is the use of cross-sectional methodology to explore maintenance factors of visions, which means that the direction of causality cannot be concluded. To understand this relationship more, further exploration is required. There are two ways to test causality more directly. One way is to use experimental tests, whereby maintenance factors, such as worry and low self-esteem, are manipulated to see their impact on visions. However, given the need for clinical treatments, a more timely and appropriate approach would be instead to use interventionist-causal (Kendler & Campbell, 2009) randomised controlled trials, where treatments targeting the key maintenance factors are evaluated for their impact on visions. If they are found to reduce visions, it would establish their causal relationship on such experiences.

Furthermore, as demonstrated, maintenance factors of visions are multifaceted as nightmares, low self-esteem, high levels of worry, and other hallucinatory experiences were all found to predict their occurrence. However, this model accounted for 43% of the total variance. Therefore, there are likely multiple other contributing factors that were not accounted for in the model but identified in the qualitative interviews, such as appraisals, the multimodal nature of visions, and safety behaviours. There could even be a role of factors such as substance use and alcohol, trauma etc, which were not included in this model. Hence, there needs to be further exploration of other contributory factors to visions to develop more comprehensive treatment packages.

Another methodological issue is that key to understanding distress associated with visions was appraisals. The SEM model used the HViQ that looks at the factors in relation to visions on three factors: emotional impact, intrusiveness, and perceptual quality. Whilst there was one question on appraisals, Chapter 3 demonstrated that appraisals are much more complex than what was captured in the HViQ. Therefore, it could be that modelling these factors onto appraisals could also be key in determining their contribution to distressing visions and give greater consideration for future treatment targets (work not reported in this thesis but undertaken at the same time of the contributory factors SEM study will address this in the future).

Thirdly, in relation to theoretical limitations, there is caution to be paid to the model presented. Whilst the model contributes a helpful understanding of maintenance factors that could increase the likelihood of seeing visions, we cannot say that these are the 'cause' of visions. Despite such explanations e.g. poor sleep, high levels of worry, often being used as 'normalising explanations' in psychological therapy (Turkington et al., 2019), feedback from people with lived experience has emphasised that explaining to people that their visions are simply due to these factors can feel dismissive because in and of themselves they do not provide comprehensive explanations as to why or how these experiences can lead to such vivid, life-like experiences that can last for long periods of time. As a result, this tends to drive people to hold more threat-based and distressing explanations of the visions. What remains lacking from the theory is the evidence and rationale of the actual processes which lead certain people to see visions. There are some hypotheses such as the predictive processing model (Fletcher & Frith, 2009; Friston, 2009; Lyndon & Corlett, 2020, Teufel et al., 2015) or Collerton's (2023) model, which argue that perception is an unconscious process driven by the combination of sensory data from the external world, and prior expectations (or beliefs) about the world. Based on this, hallucinations could occur from an overemphasis on the observers' prior beliefs of the world, in comparison to the external sensory perceptions (Kafadar, 2020). However, to people with these experiences, this cannot adequately explain their visions. Whilst it could explain a trick of the eye, or a brief experience of a vision in the periphery of one's eye, in itself such theories cannot comprehend the complexity and duration of these experiences. People do not feel this is

adequately explain why some people can see a person that looks like a person, talking to them, at times for hours on end. Therefore, whilst we can recognise the impact of such maintenance factors on visions, we need to be able to offer 'convincing and acceptable' explanations that comprehensively explain the processes involved in leading to people's complex experiences, if we want to be able to better support people with visions.

A further theoretical limitation is that the focus of this thesis was on those with psychosis and visions. However, visions are common in other disorders such as bipolar disorder, emotionally unstable personality disorder, and are particularly common in neurodegenerative disorders such as dementia, eye disease and Parkinson's Disease (Teeple et al., 2009; Waters et al., 2014). Whilst complex multimodal visions are most common in those with psychosis, those with neurodegenerative conditions tend to report unimodal visions (Dudley et al., 2018). It has been suggested that there are different mechanisms involved in the two types of visions. Unimodal visions may be more of a result of bottom-up processing in the visual system, whereas multimodal visions in psychosis may be more related to a bias in top-down processing, such as prior expectations and mental imagery (Collerton et al., 2023; Shenyan et al., 2024). Therefore, we cannot assume that visions in psychosis share the same mechanisms as those in other conditions, such as dementia and eye disease. Instead, these should be explored in their own right.

## 6.4 Future directions

In alignment with the Medical Research Council's guidelines (Skivington et al., 2021) for the development of complex interventions, the next step is to develop treatments that target these contributory factors (nightmares, other hallucinatory symptoms, low self-esteem, and high levels of worry) with the aim to reduce the occurrence of visions, through reducing the maintenance factors (Kendler & Campbell, 2009). It is imperative that these are developed alongside people with psychosis and visions to ensure that they are appropriate, accessible, and meaningful (Biggane et al., 2019). Initial efficacy can then be established through such work as a case series or single-case design methodologies. Whilst these are limited by the lack of a control group, they offer an indication of potential benefits of such treatments or

whether adaptations are needed. Once initial efficacy has been established, feasibility and acceptability must be determined to ensure that the treatment is deliverable and outcome measure collectable, before progressing to a randomised control trial to establish effectiveness of the treatment.

Further work also needs to focus on other factors that were important in understanding distress of visions. For example, appraisals and the multimodal nature of visions were also key to this. However, there are yet to be any psychometrically robust self-report measures assessing these. Whilst the Appraisals and Reactions to Visual Hallucinations Interview (Dudley et al., 2012) explores appraisals in visions, this is an interview schedule based on our previous understanding of appraisals and subjective to clinician's rating and bias. Similarly, there are measures that capture multi-sensory hallucinations such as MUSEQ (Mitchell et al., 2017) and QPE (Rossell et al., 2019), however, they only capture the presence and frequency of different hallucinatory modalities, not the unique relationships and dynamics between hallucinations such as whether the visions talk to or touch the observer, or the emotional content of such experiences e.g. whether they are positive or negative. This is key to further understanding distressing experiences of visions. Therefore, psychometrically robust measures must be developed. These could then be explored in relation to maintenance factors of visions to help the development of future treatments.

## 6.5 Conclusions

Many people with psychosis see visions (Allen et al., 2023). When present, they are associated with poorer treatment outcomes and a greater likelihood of suicidality (Baegthe et al., 2015; Chouinard et al., 2019; Kreis et al., 2023; Mueser et al., 1990; Oorschot et al., 2012). There is a lack of effective help for people with visions. The work presented in this thesis provides the foundations on which future treatments can be built. Based on patients' accounts, new frameworks for the phenomenology and appraisals of visions have been presented, the first psychometrically robust outcome measure for visions developed, and a theoretical model of visions was presented and tested, which identified future treatment

targets. The next steps are therefore to develop these treatments, alongside people with lived experience, to begin to establish treatment efficacy.

## 7 References

- Albanese, M., Liotti, M., Cornacchia, L., & Mancini, F. (2022). Nightmare rescripting: using imagery techniques to treat sleep disturbances in post-traumatic stress disorder. *Frontiers in Psychiatry, 13*, 866144.  
<https://doi.org/10.3389/fpsy.2022.866144>
- Allen, S., Goodall, T., Jones, C., James, R., & Surtees, A. (2023). What Is the Prevalence of Visual Hallucinations in a First-Episode Psychosis Population? A Systematic Review and Meta-analysis of the Literature. *Schizophrenia Bulletin Open, 4*(1), sgad002.  
<https://doi.org/10.1093/schizbullopen/sgad002>
- American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author
- American Psychological Association. (2018). *Psychosis*. In *APA Dictionary of Psychology*. Retrieved 5<sup>th</sup> January 2026 from <https://dictionary.apa.org/psychosis>
- Andrade, J., May, J., Deeprose, C., Baugh, S.-J., & Ganis, G. (2014). Assessing vividness of mental imagery: The Plymouth Sensory Imagery Questionnaire. *British Journal of Psychology, 105*(4), 547-563. <https://doi.org/10.1111/bjop.12050>
- Armstrong, L. V., Hogg, L., & Jacobsen, P. (2022). Do voice-hearing assessment measures capture the positive experiences of individuals, and to what extent? A systematic review of published assessment measures. *Psychosis, 14*(2), 176-189. <https://doi.org/10.1080/17522439.2021.1924242>
- Aynsworth, C., Collerton, D., & Dudley, R. (2017a). Measures of visual hallucinations: Review and recommendations. *Clinical Psychology Review, 57*, 164-182.  
<https://doi.org/10.1016/j.cpr.2017.05.001>
- Aynsworth, C., Dudley, r., Sargeant, S., Humpston, C., & Waite, F. (2026). "I just want an explanation": A qualitative investigation of how people with psychosis attempt to make sense of visual hallucinations. [Manuscript submitted for publication]. School of Psychology, University of York.
- Aynsworth, C., Nemat, N., Collerton, D., Smailes, D., & Dudley, R. (2017b). Reality

- monitoring performance and the role of visual imagery in visual hallucinations. *Behaviour Research and Therapy*, 97, 115-122.  
<https://doi.org/10.1016/j.brat.2017.07.012>
- Aynsworth, C., Rolinson, J., Pervez, M., Collerton, D., & Dudley, R. (2023). What is the frequency and nature of visual hallucinations in non-clinical participants? *Psychology and Psychotherapy: Theory, Research and Practice*, 96(2), 281-295.  
<https://doi.org/10.1111/papt.12440>
- Aynsworth, C., Waite, F., Sargeant, S., Humpston, C., & Dudley, R. (2025). Visual hallucinations in psychosis: What do people actually see? *Psychology and Psychotherapy*, 98(1), 58-73. <https://doi.org/10.1111/papt.12553>
- Badcock, J. C., Brand Rachel, Thomas, N., Hayward, M., & Paulik, G. (2021). Multimodal versus unimodal auditory hallucinations in clinical practice: Clinical characteristics and treatment outcomes. *Psychiatry Research*, 297, 113754.
- Baethge, C., Baldessarini, R.J., Freudenthal, K., Streeruwitz, A., Bauer, M., & Bschor, T. (2005). Hallucinations in bipolar disorder: characteristics and comparison to unipolar depression and schizophrenia. *Bipolar Disorder*, 7(2), 136-45.  
<https://doi.org/10.1111/j.1399-5618.2004.00175.x>
- Bailey 2nd, J. A. (2003). The foundation of self-esteem. *Journal of the National Medical Association*, 95(5), 388.
- Baker, S. J., Jackson, M., Jongsma, H., & Saville, C. W. N. (2021). The ethnic density effect in psychosis: a systematic review and multilevel meta-analysis. *British Journal of Psychiatry*, 219(6), 632-643. <https://doi.org/10.1192/bjp.2021.96>
- Bartlett, M. S. (1954). A Note on the Multiplying Factors for Various  $\chi^2$  Approximations. *Journal of the Royal Statistical Society. Series B, Methodological*, 16(2), 296-298.  
<https://doi.org/10.1111/j.2517-6161.1954.tb00174.x>
- Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Medicine*, 2(4), 297-307.  
[https://doi.org/10.1016/S1389-9457\(00\)00065-4](https://doi.org/10.1016/S1389-9457(00)00065-4)
- Baumeister, D., Sedgwick, O., Howes, O., & Peters, E. (2017). Auditory verbal hallucinations and continuum models of psychosis: A systematic review of the healthy voice-hearer literature. *Clinical Psychology Review*, 51, 125-141.  
<https://doi.org/10.1016/j.cpr.2016.10.010>

- Beck, A. T. (1976). Cognitive therapy and the emotional disorders. International Universities Press.
- Bell, V., Halligan, P. W., & Ellis, H. D. (2006). The Cardiff Anomalous Perceptions Scale (CAPS): A New Validated Measure of Anomalous Perceptual Experience. *Schizophrenia Bulletin*, 32(2), 366-377. <https://doi.org/10.1093/schbul/sbj014>
- Bentall, R. P. (1990). The Illusion of Reality: A Review and Integration of Psychological Research on Hallucinations. *Psychology Bulletin*, 107(1), 82-95.
- Bentall, R. P. (2006). Madness explained: why we must reject the Kraepelinian paradigm and replace it with a 'complaint-orientated' approach to understanding mental illness. *Medical Hypotheses*, 66(2), 220-233. <https://doi.org/10.1016/j.mehy.2005.09.026>
- Berry, C., Newcombe, H., Strauss, C., Rammou, R., Schlier, B., Lincoln, T., & Hayward, M. (2021) Validation of the Hamilton Program for Schizophrenia Voices Questionnaire: associations with emotional distress and wellbeing, and invariance across diagnosis and sex. *Schizophrenia Research*, 228, 336-343. <https://doi.org/10.1016/j.schres.2020.12.032>
- Biggane, A. M., Olsen, M., & Williamson, P. R. (2019). PPI in research: a reflection from early stage researchers. *Research Involvement and Engagement*, 5(1), 35-39. <https://doi.org/10.1186/s40900-019-0170-2>
- Bighelli, I., Salanti, G., Huhn, M., Schneider-Thoma, J., Krause, M., Reitmeir, C., Wallis, S., Schwermann, F., Pitschel-Walz, G., Barbui, C., Furukawa, T. A., & Leucht, S. (2018). Psychological interventions to reduce positive symptoms in schizophrenia: Systematic review and network meta-analysis. *World Psychiatry*, 17, 316–329. <https://doi.org/10.1002/wps.20577>
- Birchwood, M., & Chadwick, P. (1997). The omnipotence of voices: testing the validity of a cognitive model. *Psychological Medicine*, 27(6), 1345-1353. <https://doi.org/10.1192/bjp.164.2.190>
- Bleuler, E. (1924). *Textbook of psychiatry*. Macmillan.
- Blom, J. D. (2010). *A Dictionary of Hallucinations*. Springer Science+Business Media: New York, NY.
- Bloomfield, M. A. P., Chang, T., Woodl, M. J., Lyons, L. M., Cheng, Z., Bauer-Staeb, C., Hobbs, C., Bracke, S., Kennerley, H., Isham, L., Brewin, C., Billings, J., Greene, T., & Lewis, G.

- (2021). Psychological processes mediating the association between developmental trauma and specific psychotic symptoms in adults: a systematic review and meta-analysis. *World Psychiatry*, 20(1), 107-123. <https://doi.org/10.1002/wps.20841>
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best Practices for Developing and Validating Scales for Health, Social, and Behavioral Research: A Primer. *Frontiers in Public Health*, 6, 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Bollen, K. A. (1989). *Structural equations with latent variables*. John Wiley & Sons
- Borkovec, T. D., Robinson, E., Pruzinsky, T., & DePree, J. A. (1983). Preliminary exploration of worry: Some characteristics and processes. *Behaviour and Research Therapy*, 21(1), 9-16. [https://doi.org/10.1016/0005-7967\(83\)90121-3](https://doi.org/10.1016/0005-7967(83)90121-3)
- Bowen, N. K., & Masa, R. D. (2015). Conducting Measurement Invariance Tests with Ordinal Data: A Guide for Social Work Researchers. *Journal of the Society for Social Work and Research*, 6(2), 229-249. <https://doi.org/10.1086/681607>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021a). *Thematic analysis: A practical guide*. SAGE Publications Ltd.
- Braun, V., & Clarke, V. (2021b). To Saturate or Not to Saturate? Questioning Data Saturation as a Useful Concept for Thematic Analysis and Sample-Size Rationales. *Qualitative Research in Sport, Exercise and Health*, 13, 201-216. <https://doi.org/10.1080/2159676X.2019.1704846>
- Brand, R. M., Badcock, J. C., & Paulik, G. (2021). Multimodal versus unimodal auditory hallucinations in clinical practice: Treatment outcomes following cognitive-behavioural therapy. *Psychiatry Research*, 298. <https://doi.org/10.1016/j.psychres.2021.113791>
- Brew, B., Shannon, C., Storey, L., Boyd, A., & Mulholland, C. (2017). A qualitative phenomenological analysis of the subjective experience and understanding of the at risk mental state. *International journal of qualitative studies on health and well-being*, 12(1), <https://doi.org/10.1080/17482631.2017.1342504>

- Brébion, G., Ohlsen, R. I., Pilowsky, L. S., & David, A. S. (2008). Visual Hallucinations in Schizophrenia: Confusion Between Imagination and Perception. *Neuropsychology*, 22(3), 383-389. <https://doi.org/10.1037/0894-4105.22.3.383>
- Brederoo, S. G., de Boer, J. N., de Vries, J., Linszen, M. M. J., & Sommer, I. E. C. (2021). Fragmented sleep relates to hallucinations across perceptual modalities in the general population. *Scientific Reports*, 11(1), 7735-7739. <https://doi.org/10.1038/s41598-021-87318-4>
- Brett, C. M. C., Peters, E. P., Johns, L. C., Tabraham, P., Valmaggia, L. R., & McGuire, P. K. (2007). Appraisals of Anomalous Experiences Interview (AANEX): a multidimensional measure of psychological responses to anomalies associated with psychosis. *British journal of psychiatry*, 191(S51), s23-s30. <https://doi.org/10.1192/bjp.191.51.s23>
- Brookwell, M. L., Bentall, R. P., & Varese, F. (2013). Externalizing biases and hallucinations in source-monitoring, self-monitoring and signal detection studies: a meta-analytic review. *Psychological Medicine*, 43(12), 2465-2475. <https://doi.org/10.1017/S0033291712002760>
- Brown, T. (2006). Confirmatory Factor Analysis for Applied Research. Guildford.
- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review*, 26(1), 17-31. <https://doi.org/10.1016/j.cpr.2005.07.003>
- Callcott, P., Dudley, R., Standart, S., Freeston, M., & Turkington, D. (2011). Treating trauma in people with first-episode psychosis with cognitive behavioural therapy. 1. In R. Hagen, D. Turkington, T. Berge., & R. Grawe. (Eds.), *CBT for Psychosis*. Routledge.
- Cambridge University Press. (n.d.). Clairvoyance. In *Cambridge dictionary*. Retrieved March 30<sup>th</sup> 2026 from <https://dictionary.cambridge.org/dictionary/english/clairvoyance>
- Campbell-Lee, D., & Cohen-Tovee, E. (2023). Ethnic groups equity of access population data analysis. <https://doi.org/10.13140/RG.2.2.15860.32641>
- Carlisle, S., Ayling, K., Jia, R., Buchanan, H., & Vedhara, K. (2022). The effect of choice interventions on retention-related, behavioural and mood outcomes: a systematic review with meta-analysis. *Health Psychology Review*, 16(2), 220-256. <https://doi.org/10.1080/17437199.2021.1962386>
- Carlson, E.B. & Putnam, F.W. (1993). An update on the Dissociative Experience Scale.

- Dissociation*, 6(1), 16-27. E., Beierl, E., Molodynski, A., Ehlers, A., & Freeman, D. (2021a). A new perspective and assessment measure for common dissociative experiences: 'Felt Sense of Anomaly'. *PLoS One*, 16(2), e0247037.
- Černis, E., Cooper, M., & Chan, C. (2018). Developing a new measure of dissociation: the dissociative experiences measure, Oxford. *Psychiatry Research*, 269, 229-236. <https://doi.org/10.1016/j.psychres.2018.08.060>
- Černis, E., Beierl, E., Molodynski, A., Ehlers, A., & Freeman, D. (2021). A new perspective and assessment measure for common dissociative experiences: 'Felt Sense of Anomaly'. *PLoS One* 16, no. 2 (2021): e0247037. <https://doi.org/10.1371/journal.pone.0247037>
- Černis, E., Evans, R., Ehlers, A., & Freeman, D. (2021b). Dissociation in relation to other mental health conditions: An exploration using network analysis. *Journal of Psychiatric Research*, 136, 470-467. <https://doi.org/10.1016/j.jpsychires.2020.08.023>
- Chadwick, P., & Birchwood, M. (1994). The omnipotence of voices: A cognitive approach to auditory hallucinations. *British Journal of Psychiatry*, 164, 190–201. <https://doi.org/10.1192/bjp.164.2.190>
- Chesterman, P., & Boast, N. (1994). Multi-modal Hallucinations. *Psychopathology*, 27(6), 273-280. <https://doi.org/10.1159/000284883>
- Chouinard, G., & Miller, R. (1999). A Rating Scale for Psychotic Symptoms (RSPS) Part 1: Theoretical principles and subscale 2: Perception symptoms (illusions and hallucinations). *Schizophrenia Research*, 38(2-3), 101–122. [https://doi.org/10.1016/S0920-9964\(99\)00012-2](https://doi.org/10.1016/S0920-9964(99)00012-2)
- Chouinard, V. A., Shinn, A. K., Valeri, L., Chouinard, P. A., Gardner, M. E., Asan, A. E., Cohen, B. C., & Öngür, D. (2019). Visual hallucinations associated with multimodal hallucinations, suicide attempts and morbidity of illness in psychotic disorders. *Schizophrenia Research*, 208, 196-201. <https://doi.org/10.1016/j.schres.2019.02.022>
- Cicchetti, D. V. (1994). Guidelines, Criteria, and Rules of Thumb for Evaluating Normed and Standardized Assessment Instruments in Psychology. *Psychological Assessment*, 6(4), 284-290. <https://doi.org/10.1037/1040-3590.6.4.284>
- Clark, D. M. (2004). Developing new treatments: on the interplay between theories, experimental science and clinical innovation: Interfacing basic science with clinical

- practice. A Festschrift Special Issue for John Teasdale. *Behaviour Research and Therapy*, 42(9), 1089-1104.
- Clarke, C. (2021). Foundations of qualitative research 2. Part 3: key (theoretical and philosophical concepts in qualitative research [Webinar]. YouTube.  
<https://www.youtube.com/watch?v=bgZuPmO9130&t=5s>
- Clarke, M. L., Waters, F., Vatskalis, T. M., & Jablensky, A. (2017). On the interconnectedness and prognostic value of visual and auditory hallucinations in first-episode psychosis. *European Psychiatry*, 41(1), 122-128  
<https://doi.org/10.1016/j.eurpsy.2016.10.011>
- Collerton, D., Barnes, J., Diederich, N. J., Dudley, R., ffytche, D., Friston, K., Goetz, C. G., Goldman, J. G., Jardri, R., Kulisevsky, J., Lewis, S. J. G., Nara, S., O'Callaghan, C., Onofrj, M., Pagonabarraga, J., Parr, T., Shine, J. M., Stebbins, G., Taylor, J. P., ... Weil, R. S. (2023). Understanding visual hallucinations: A new synthesis. In *Neuroscience and Biobehavioral Reviews* (Vol. 150). Elsevier Ltd.  
<https://doi.org/10.1016/j.neubiorev.2023.105208>
- Collerton, D., & Dudley, R. (2004). A Cognitive Behavioural Framework for the treatment of distressing visual hallucinations in older people. *Behavioural Cognitive Psychotherapy*, 32(4), 443-445. <https://doi.org/10.1017/S1352465804001626>
- Collerton, D., Perry, E., & McKeith, I. (2005). Why people see things that are not there: A novel Perception and Attention Deficit model for recurrent complex visual hallucinations. *Behavioral and Brain Sciences*, 28(6), 737-757.  
<https://doi.org/10.1017/S0140525X05000130>
- Collins Advanced Learners Dictionary. (2025).  
<https://www.collinsdictionary.com/dictionary/english/vision> Date accessed 28.08.2025
- Colori, S. (2020). My Experience With Hallucinations. *Schizophrenia Bulletin*, 46(2), 227-228.  
<https://doi.org/10.1093/schbul/sby159>
- Conger, A. J. (1974). A Revised Definition for Suppressor Variables: a Guide To Their Identification and Interpretation. *Educational and psychological measurement*, 34(1), 35-46. <https://doi.org/10.1177/001316447403400105>
- Corstens, D., Longden, E., McCarthy-Jones, S., Waddingham, R., & Thomas, N. (2014). Emerging Perspectives From the Hearing Voices Movement: Implications for

- Research and Practice. *Schizophrenia Bulletin*, 40(4), S285–S294.  
<https://doi.org/10.1093/schbul/sbu007>
- Coster, W. J. (2013). Making the best match: selecting outcome measures for clinical trials and outcome studies. *The American Journal of Occupational Therapy*, 67(2), 162-170. <https://doi.org/10.5014/ajot.2013.006015>
- Cuijpers, P., Sijbrandij, M., Koole, S., Huibers, M., Berking, M., & Andersson, G. (2014). Psychological treatment of generalized anxiety disorder: a meta-analysis. *Clinical Psychology Review*, 34(2), 130-140.  
<https://doi.org/10.1016/j.cpr.2014.01.002>
- D'Urso, E. D., De Roover, K., Vermunt, J. K., & Tijnstra, J. (2022). Scale length does matter: Recommendations for measurement invariance testing with categorical factor analysis and item response theory approaches. *Behavior Research Methods*, 54(5), 2114-2145. <https://doi.org/10.3758/s13428-021-01690-7>
- Daemen, M., van Amelsvoort, T., Reininghaus, U., & Group Investigators. (2022). Self-esteem and psychosis in daily life: An experience sampling study. *Journal of Psychopathology and Clinical Science*, 131(2), 182.  
<https://psycnet.apa.org/doi/10.1037/abn0000722>
- DeRosse, P., & Karlsgodt, K. H. (2015). Examining the psychosis continuum. *Current Behavioral Neuroscience Reports*, 2(2), 80-89.  
<https://doi.org/10.1007/s40473-015-0040-7>
- Dodgson, G., & Gordon, S. (2009). Avoiding false negatives: are some auditory hallucinations an evolved design flaw?. *Behavioural and Cognitive Psychotherapy*, 37(3), 325-334.  
<https://doi.org/10.1017/S1352465809005244>
- Dudley, R., Aynsworth, C., Cheetham, R., McCarthy-Jones, S., & Collerton, D. (2018). Prevalence and characteristics of multi-modal hallucinations in people with psychosis who experience visual hallucinations. *Psychiatry Research*, 269, 25-30.  
<https://doi.org/10.1016/j.psychres.2018.08.032>
- Dudley, R., Aynsworth, C., Mosimann, U., Taylor, J. P., Smailes, D., Taylor, J-P., Smailes, D., Collerton, D., & Urwyler, P. (2019). A comparison of visual hallucinations across disorders. *Psychiatry Research*, 272, 86-92.  
<https://doi.org/10.1016/j.psychres.2018.12.052>
- Dudley, R., Collerton, D., Nicholson, M., & Mosimann, U. (2013). Clinical

- characteristics of disclosed visual hallucinations in users of an Early Intervention in Psychosis Service. *Psychosis*, 5(2), 127-133.
- Dudley, R., Denton, S., Mathewson, J., Pervez, S., Aynsworth, C., Dodgson, G., & Barclay, N. (2023a). Prevalence of multisensory hallucinations in people at risk of transition to psychosis. *Psychiatry Research*, 322, 115091.  
<https://doi.org/10.1016/j.psychres.2023.115091>
- Dudley, R., Dodgson, G., Common, S., O'Grady, L., Watson, F., Gibbs, C., Arnott, B., Fernyhough, C., Alderson-Day, B., Ogundimu, E., Kharatikoopaei, E., Patton, V., & Aynsworth, C. (2022). Managing Unusual Sensory Experiences in People with First-Episode Psychosis (MUSE FEP): a study protocol for a single-blind parallel-group randomised controlled feasibility trial. *BMJ Open*, 12(5).  
<https://doi.org/10.1136/bmjopen-2022-061827>
- Dudley, R., Kuyken, W., & Padesky, C. A. (2011). Disorder specific and trans-diagnostic case conceptualisation. *Clinical Psychology Review*, 31(2).  
<https://doi.org/10.1016/j.cpr.2010.07.005>
- Dudley, D., Sargeant, S., Gibbs, C., Prentice, L., McCartney, L., Aynsworth, C., Maskey, M., & Skeggs, A. (in press). Virtual Reality for Visions (VRV): A proof-of-concept study examining the development of a new treatment for distressing visual hallucinations in people with psychosis. *BMJ Open*.
- new treatment for distressing visual hallucinations in people with psychosis.
- Dudley, R., Turkington, D., Coulthard, N., Pyle, M., Gumley, A., Schwannauer, M., Kingdon, D., & Morrison, A. P. (2023b). Childhood Trauma in Clozapine-Resistant Schizophrenia: Prevalence, and Relationship With Symptoms. *Schizophrenia Bulletin Open*, 4(1). <https://doi.org/10.1093/schizbullopen/sgad030>
- Dudley, R., Watson, F., O'Grady, L., Aynsworth, C., Dodgson, G., Common, S., Day, B. A., & Fernyhough, C. (2023c). Prevalence and nature of multi-sensory and multi-modal hallucinations in people with first episode psychosis. *Psychiatry Research*, 319, 114988. <https://doi.org/10.1016/j.psychres.2022.114988>
- Dudley, R., White, S., Miskin, R., Oakes, L., Longden, E., Steel, C., Swann, S., Underwood, R., & Peters, E. (2024). Hallucinations across sensory domains in people with post-traumatic stress disorder and psychosis. *Psychiatry Research*, 342, 116229. <https://doi.org/10.1016/j.psychres.2024.116229>

- Dudley, R., Wood, M., Spencer, H., Brabban, A., Mosimann, U. P., & Collerton, D. (2012). Identifying Specific Interpretations and Use of Safety Behaviours in People with Distressing Visual Hallucinations: An Exploratory Study. *Behavioural and Cognitive Psychotherapy*, 40(3), 367-375. <https://doi.org/10.1017/S1352465811000750>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38(4), 319-345. [https://doi.org/10.1016/S0005-7967\(99\)00123-0](https://doi.org/10.1016/S0005-7967(99)00123-0)
- Ehring, T., Zetsche, U., Weidacker, K., Wahl, K., Schönfeld, S., & Ehlers, A. (2011). The Perseverative Thinking Questionnaire (PTQ). *Journal of Behavior Therapy and Experimental Psychiatry*. <https://doi.org/10.1016/j.jbtep.2010.12.003>
- Equality and Human Rights Commission. (2016). Healing a divided Britain: The need for a comprehensive race equality strategy. Equality and Human Rights Commission. ([https://www.equalityandhumanrights.com/sites/default/files/healing\\_a\\_divided\\_britain\\_-\\_the\\_need\\_for\\_a\\_comprehensive\\_race\\_equality\\_strategy\\_final.pdf](https://www.equalityandhumanrights.com/sites/default/files/healing_a_divided_britain_-_the_need_for_a_comprehensive_race_equality_strategy_final.pdf))
- Esquirol, E., & Hunt, E. K. (1845). *Mental maladies; a treatise on insanity Tr. from the French, with additions, by E.K. Hunt*. Lea and Blanchard.
- Evans JD. (1996) Straightforward Statistics for the Behavioral Sciences. Brooks/Cole Publishing; Pacific Grove, Calif.
- Fletcher, P. C., & Frith, C. D. (2009). Perceiving is believing: a Bayesian approach to explaining the positive symptoms of schizophrenia. *Nature Reviews Neuroscience*, 10(1), 48-58. <https://doi.org/10.1038/nrn2536>
- Foulkes, D., & Vogel, G. (1965). Mental activity at sleep onset. *Journal of abnormal Psychology*, 70(4), 231-243. <https://doi.org/10.1037/h0022217>
- Fowler, D., Freeman, D., Smith, B. E. N., Kuipers, E., Bebbington, P., Bashforth, H., Coker, S., Hodgekins, J., Gracie, A., Dunn, G., & Garety, P. (2006). The Brief Core Schema Scales (BCSS): psychometric properties and associations with paranoia and grandiosity in non-clinical and psychosis samples. *Psychological Medicine*, 36(6), 749-759. <https://doi.org/10.1017/S0033291706007355>
- Freeman, D. (2011). Improving cognitive treatments for delusions. *Schizophrenia research*, 132(2-3), 135-139. <https://doi.org/10.1016/j.schres.2011.08.012>

- Freeman, D. (2016). Persecutory delusions: a cognitive perspective on understanding and treatment. *Lancet Psychiatry*, 3(7), 685-692. [https://doi.org/10.1016/S2215-0366\(16\)00066-3](https://doi.org/10.1016/S2215-0366(16)00066-3)
- Freeman, D. (2024). Developing psychological treatments for psychosis. *The British Journal of Psychiatry*, 224(5), 147-149. <https://doi.org/10.1192/bjp.2024.5>
- Freeman, D., Bird, J. C., Loe, B. S., Kingdon, D., Startup, H., Clark, D. M., Ehlers, A., Černis, E., Wingham, G., Evans, N., Lister, R., Pugh, K., Cordwell, J., & Dunn, G. (2020). The Dunn Worry Questionnaire and the Paranoia Worries Questionnaire: new assessments of worry. *Psychological Medicine*, 50(5), 771-780. <https://doi.org/10.1017/S0033291719000588>
- Freeman, D., Dunn, G., Startup, H., Pugh, K., Cordwell, J., Mander, H., Černis, E., Wingham, G., Shirvell, K., & Kingdon, D. (2015). Effects of cognitive behaviour therapy for worry on persecutory delusions in patients with psychosis (WIT): a parallel, single-blind, randomised controlled trial with a mediation analysis. *Lancet Psychiatry*, 2(4), 305-313. [https://doi.org/10.1016/S2215-0366\(15\)00039-5](https://doi.org/10.1016/S2215-0366(15)00039-5)
- Freeman, D., Emsley, R., Diamond, R., Collett, N., Bold, E., Chadwick, E., Isham, L., Bird, J. C., Edwards, D., Kingdon, D., Fitzpatrick, R., Kabir, T., Waite, F., Carr, L., Causier, C., Černis, E., Kirkham, M., Lambe, S., Lister, R., . . . Twivy, E. (2021a). Comparison of a theoretically driven cognitive therapy (the Feeling Safe Programme) with befriending for the treatment of persistent persecutory delusions: a parallel, single-blind, randomised controlled trial. *Lancet Psychiatry*, 8(8), 696-707. [https://doi.org/10.1016/S2215-0366\(21\)00158-9](https://doi.org/10.1016/S2215-0366(21)00158-9)
- Freeman, D., & Loe, B. S. (2023). Explaining paranoia: cognitive and social processes in the occurrence of extreme mistrust. *BMJ Mental Health*, 26(1), e300880. <https://doi.org/10.1136/bmjment-2023-300880>
- Freeman, D., Loe, B. S., Kingdon, D., Startup, H., Molodynski, A., Rosebrock, L., Brown, P., Sheaves, B., Waite, F., & Bird, J. C. (2021b). The revised Green et al., Paranoid Thoughts Scale (R-GPTS): psychometric properties, severity ranges, and clinical cut-offs. *Psychological Medicine*, 51(2), 244-253. <https://doi.org/10.1017/S0033291719003155>
- Freeman, D., Pugh, K., Dunn, G., Evans, N., Sheaves, B., Waite, F., ... & Fowler, D. (2014). An early Phase II randomised controlled trial testing the effect on persecutory delusions

- of using CBT to reduce negative cognitions about the self: the potential benefits of enhancing self confidence. *Schizophrenia research*, 160(1-3), 186-192.  
<https://doi.org/10.1016/j.schres.2014.10.038>
- Freeman D, Pugh K, Vorontsova N, Southgate L. (2009). Insomnia and paranoia. *Schizophrenia Research*, 108(1-3), 280-284.  
<https://doi.org/10.1016/j.schres.2008.12.001>.
- Freeman, D., Sheaves, B., Goodwin, G. M., Yu, L.-M., Nickless, A., Harrison, P. J., Emsley, R., Luik, A. I., Foster, R. G., Wadekar, V., Hinds, C., Gumley, A., Jones, R., Lightman, S., Jones, S., Bentall, R., Kinderman, P., Rowse, G., Brugha, T., . . . Espie, C. A. (2017). The effects of improving sleep on mental health (OASIS): a randomised controlled trial with mediation analysis. *Lancet Psychiatry*, 4(10), 749-758.  
[https://doi.org/10.1016/S2215-0366\(17\)30328-0](https://doi.org/10.1016/S2215-0366(17)30328-0)
- Freeman, D., Taylor, K., M, Molodynski, A., & Waite, F. (2019). Treatable clinical intervention targets for patients with schizophrenia. *Schizophrenia Research*, 211, 44-50.  
<https://doi.org/10.1016/j.schres.2019.07.016>
- Freeman, D., & Waite, F. (2025). Sleep and circadian difficulties in schizophrenia: presentations, understanding, and treatment. *Psychological Medicine*, 55, e47.  
<https://doi.org/10.1017/S0033291725000297>
- Friston, K. (2009). The free-energy principle: a rough guide to the brain? *Trends in Cognitive Sciences*, 13(7), 293-301. <https://doi.org/10.1016/j.tics.2009.04.005>
- Gadermann, A. M., Guhn, M., & Zumbo, B. D. (2012). Estimating ordinal reliability for Likert-type and ordinal item response data: A conceptual, empirical, and practical guide. *Practical assessment, research & evaluation*, 17(3), 3.
- Gaillard, M. C., & Borruat, F. X. (2003). Persisting visual hallucinations and illusions in previously drug-addicted patients. *Klinische Monatsblätter Augenheilkunde*, 220(03), 176-178. <https://doi.org/10.1055/s-2003-38173>
- Garety, P. A., Freeman, D., Jolley, S., Dunn, G., Bebbington, P. E., Fowler, D. G., ... & Dudley, R. (2005). Reasoning, emotions, and delusional conviction in psychosis. *Journal of Abnormal Psychology*, 114(3), 373. <https://doi.org/10.1037/0021-843X.114.3.373373>
- Garety, P. A., & Hardy, A. (2017). The clinical relevance of appraisals of psychotic experiences. *World psychiatry*, 16(2), 140-141. <https://doi.org/10.1002/wps.20408>

- Gathier, A. W., van Tuijl, L. A., Penninx, B. W., de Jong, P. J., van Oppen, P. C., Vinkers, C. H., & Verhoeven, J. E. (2024). The role of explicit and implicit self-esteem in the relationship between childhood trauma and adult depression and anxiety. *Journal of affective disorders*, 354, 443-450. <https://doi.org/10.1016/j.jad.2024.03.036>
- Gauntlett-Gilbert, J., & Kuipers, E. (2003). Phenomenology of visual hallucinations in psychiatric conditions. *The Journal of Nervous and Mental Disease*, 191(3), 203-205. <https://doi.org/10.1097/01.Nmd.0000055084.01402.02>
- Gauntlett-Gilbert, J., & Kuipers, E. (2005). Visual hallucinations in psychiatric conditions: Appraisals and their relationship to distress. *British Journal of Clinical Psychology*, 44(1), 77-87. <https://doi.org/10.1348/014466504x19451>
- Ghanem, M., Evangelaki-Dawson, C., & Georgiades, A. (2023). The role of culture on the phenomenology of hallucinations and delusions, explanatory models, and help-seeking attitudes: A narrative review. *Early Intervention in Psychiatry*, 17(9), 843–863. <https://doi.org/10.1111/eip.13449>
- Giannopoulou, I., Georgiades, S., Stefanou, M.-I., Spandidos, D. A., & Rizos, E. (2023). Links between trauma and psychosis (Review). *Experimental and Therapeutic Medicine*, 26(2). <https://doi.org/10.3892/etm.2023.12085>
- Goghari, V. M., & Harrow, M. (2016). Twenty year multi-follow-up of different types of hallucinations in schizophrenia, schizoaffective disorder, bipolar disorder, and depression. *Schizophrenia Research*, 176(2-3), 371-377.
- Goldsmith, L. P., Lewis, S. W., Dunn, G., & Bentall, R. P. (2015). Psychological treatments for early psychosis can be beneficial or harmful, depending on the therapeutic alliance: an instrumental variable analysis. *Psychological Medicine*, 45(11), 2365-2373. <https://doi.org/10.1017/S003329171500032X>
- Gould, R. A., Ott, M. W., & Pollack, M. H. (1995). A meta-analysis of treatment outcome for panic disorder. *Clinical Psychology Review*, 15(8), 819-844. [https://doi.org/10.1016/0272-7358\(95\)00048-8](https://doi.org/10.1016/0272-7358(95)00048-8)
- Gumley, A., Karatzias, A., Power, K., Reilly, J., McNay, L., & O'Grady, M. (2006). Early intervention for relapse in schizophrenia: Impact of cognitive behavioural therapy on negative beliefs about psychosis and self-esteem. *British Journal of Clinical Psychology*, 45(2), 247-260. <https://doi.org/10.1348/014466505X49925>

- Haddock, G., McCarron, J., Terrier, N., & Faragher, E. B. (1999). Scales to measure dimensions of hallucinations and delusions: the psychotic symptom rating scales (PSYRATS). *Psychological Medicine*, 29(4), 879-889. <https://doi.org/10.1017/s0033291799008661>
- Hamilton, J., Singh, A., Gibbs, C., Barclay, N. A., Birkett, L., Boyle, C., ... & Fernyhough, C. (2025). Preferences for psychological therapy or support within an ARMS psychological therapies trial: the importance of targeted intervention for unusual sensory experiences. *Early Intervention in Psychiatry*, 19(4), e70035. <https://doi.org/10.1111/eip.70035>
- Hanrahan, F., Field, A. P., Jones, F. W., & Davey, G. C. (2013). A meta-analysis of cognitive therapy for worry in generalized anxiety disorder. *Clinical Psychology Review*, 33(1), 120-132. <https://doi.org/10.1016/j.cpr.2012.10.008>
- Hardy, A. (2017). Pathways from trauma to psychotic experiences: A theoretically informed model of posttraumatic stress in psychosis. *Frontiers in Psychology*, 8, 697. <https://doi.org/10.3389/fpsyg.2017.00697>
- Hardy, A., Fowler, D., Freeman, D., Smith, B., Steel, C., Evans, J., Garety, P., Kuipers, E., Bebbington, P., & Dunn, G. (2005). Trauma and Hallucinatory Experience in Psychosis. *The Journal of Nervous and Mental Disease*, 193(8), 501-507. <https://doi.org/10.1097/01.nmd.0000172480.56308.21>
- Harrington, M. O., & Cairney, S. A. (2021). Sleep loss gives rise to intrusive thoughts. *Trends in Cognitive Science*, 25(6), 434-436. <https://doi.org/10.1016/j.tics.2021.03.001>
- Hartley, S., Haddock, G., Vasconcelos e Sa, D., Emsley, R., & Barrowclough, C. (2014). An experience sampling study of worry and rumination in psychosis. *Psychological Medicine*, 44(8), 1605-1614. <https://doi.org/10.1017/S0033291713002080>
- Haselton, M. G. (2007). Error management theory. In *Encyclopedia of Social Psychology*, Edited by: Baumeister, R.F. and Vohs, K.D. 311 – 312. Thousand Oaks, CA : Sage
- Haselton, M. G., & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology*, 78(1), 81–91. <https://doi.org/10.1037/0022-3514.78.1.81>
- Hayward, M., Berry, K., Bremner, S., Jones, A. M., Robertson, S., Cavanagh, K., ... & Strauss, C. (2021). Increasing access to cognitive–behavioural therapy for patients with

- psychosis by evaluating the feasibility of a randomised controlled trial of brief, targeted cognitive–behavioural therapy for distressing voices delivered by assistant psychologists: the GiVE2 trial. *BJPsych Open*, 7(5), e152.  
<https://doi.org/10.1192/bjo.2021.983>
- Hayward, M., Bibby-Jones, A.-M., Thomas, N., Paulik, G., Mutanda, D., & Berry, C. (2024). Multi-modal hallucinations across diagnoses: What relationships do they have with voice-related distress? *Schizophrenia Research*, 265, 58-65.  
<https://doi.org/10.1016/j.schres.2023.04.005>
- Hicks, M., Simonds, L. M., & Morison, L. (2024). The Effectiveness of Imagery Rescripting Interventions for Military Veterans With Nightmares and Sleep Disturbances: A Systematic Review and Meta-Analysis. *Clinical Psychology & Psychotherapy*, 31(4), e3025. <https://doi.org/10.1002/cpp.3025>
- Hoffman, R. E., & Varanko, M. (2006). ‘Seeing voices’: fused visual/auditory verbal hallucinations reported by three persons with schizophrenia-spectrum disorder. *Acta Psychiatrica Scandinavica*, 114(4), 290-292.  
<https://doi.org/10.1111/j.1600-0447.2006.00791.x>
- Holmes, E. A., Brown, R. J., Mansell, W., Fearon, R. P., Hunter, E. C. M., Frasquilho, F., & Oakley, D. A. (2005). Are there two qualitatively distinct forms of dissociation? A review and some clinical implications. *Clinical Psychology Review*, 25(1), 1-23.  
<https://doi.org/10.1016/j.cpr.2004.08.006>
- Horn, J. L. (1965). A Rationale and Test for the Number of Factors in Factor Analysis. *Psychometrika*, 30(2), 179-185. <https://doi.org/10.1007/BF02289447>
- Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modelling*, 6, 1-55. <https://doi.org/10.1080/10705519909540118>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modelling*, 6, 1-55. <https://doi.org/10.1080/10705519909540118>
- IBM Corp. (2020). *IBM SPSS Statistics for Windows* (Version 27.0) [Computer software]. IBM Corp.
- Isaacson, M., Hazell, C. M., Cape, J., Hickson, E., Islam, F., Gill, A., Simon, K., Patel, R., Souray, J., & Raune, D. (2022). The cognitive–phenomenological assessment of delusions and hallucinations at the early intervention in psychosis service stage: The results of a

- quality improvement project. *Early Intervention in Psychiatry*, 16(12), 1345-1352.  
<https://doi.org/10.1111/eip.13283>
- Isham, L. (2023). Harmful Grandiose Delusions: Developing a Cognitive Model. [DPhil in Psychiatry, University of Oxford]. Oxford University Research Archive.
- Ison, R., Medoro, L., Keen, N., & Kuipers, E. (2014). The Use of Rescripting Imagery for People with Psychosis Who Hear Voices. *Behavioural and Cognitive Psychotherapy*, 42(2), 129-142. <https://doi.org/10.1017/S135246581300057X>
- JASP Team (2024). JASP (Version 0.19.3) [Computer software]
- Johns, L. C., & Van Os, J. (2001). The continuity of psychotic experiences in the general population. *Clinical psychology review*, 21(8), 1125-1141.  
[https://doi.org/10.1016/S0272-7358\(01\)00103-9](https://doi.org/10.1016/S0272-7358(01)00103-9)
- Johnson, M. K., & Raye, C. L. (1981). Reality monitoring. *Psychological Review*, 88(1), 67.  
<https://psycnet.apa.org/doi/10.1037/0033-295X.88.1.67>
- Kafadar, E., Mittal, V. A., Strauss, G. P., Chapman, H. C., Ellman, L. M., Bansal, S., Gold, J. M., Alderson-Day, B., Evans, S., Moffatt, J., Silverstein, S. I., Walker, E. F., Woods, S.W., Corlett, P. R., & Powers, A. R. (2020). Modeling perception and behavior in individuals at clinical high risk for psychosis: Support for the predictive processing framework. *Schizophrenia Research*, 226, 167-275.  
<https://doi.org/10.1016/j.schres.2020.04.017>
- Kaiser, H. F. (1974). An Index of Factorial Simplicity. *Psychometrika*, 39(1), 31-36.  
<https://doi.org/10.1007/BF02291575>
- Kammerer, M. K., Bub, K., & Lincoln, T. M. (2021). The relationship between nightmares and psychotic experiences in young adults. *Sleep Medicine*, 77, 315-322.  
<https://doi.org/10.1016/j.sleep.2020.08.014>
- Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophrenia Bulletin*, 13(2), 261-276.  
<https://doi.org/10.1093/schbul/13.2.261>
- Kelly, R. E., Dodd, A. L., & Mansell, W. (2017). "When my Moods Drive Upward There Is Nothing I Can Do about It": A Review of Extreme Appraisals of Internal States and the Bipolar Spectrum. *Frontiers in Psychology*, 8, 1235.  
<https://doi.org/10.3389/fpsyg.2017.01235>

- Kendler, K. S., & Campbell, J. (2009). Interventionist causal models in psychiatry: repositioning the mind–body problem. *Psychological Medicine*, 39(6), 881-887.  
<https://doi.org/10.1017/S0033291708004467>
- Kessler, R. C., Birnbaum, H., Demler, O., Falloon, I. R., Gagnon, E., Guyer, M., ... & Wu, E. Q. (2005). The prevalence and correlates of nonaffective psychosis in the National Comorbidity Survey Replication (NCS-R). *Biological psychiatry*, 58(8), 668-676.  
<https://doi.org/10.1016/j.biopsych.2005.04.034>
- Kidder, L. H., & Fine, M. (1987). Qualitative and quantitative methods: When stories converge. *New direction from program evaluation*, 35, 57-75.  
<https://doi.org/10.1002.ev.1459>
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed ed.). The Guilford Press.
- Knight, W. D., Fox, N. C., Rossor, M. N., & Warren, J. D. (2008). The cultural context of visual hallucinations. *Postgraduate Medical journal*, 84(988), 103-105.  
<https://doi.org/10.1136/pgmj.2007.063727>
- Kraepelin E. *Psychiatrie: Ein Lehrbuch fur Studirende und Aerzte*, 4th edn. Barth, Leipzig, 1893
- Kreis, I., Fjelnseth Wold, K., Åsbø, G., Simonsen, C., & Melle, I. (2023). The relationship between visual hallucinations, functioning and suicidality over the course illness: a 10-year follow-up study in first-episode psychosis. *European Psychiatry*, 66(S1), S441-S441. <https://doi.org/10.1192/j.eurpsy.2023.949>
- Kunze, A. E., Arntz, A., Morina, N., Kindt, M., & Lancee, J. (2017). Efficacy of imagery rescripting and imaginal exposure for nightmares: A randomized wait-list controlled trial. *Behaviour Research and Therapy*, 97, 14-25.  
<https://doi.org/10.1016/j.brat.2017.06.005>
- Kuzminskaite, E., Vinkers, C. H., Milaneschi, Y., Giltay, E. J., & Penninx, B. W. (2022). Childhood trauma and its impact on depressive and anxiety symptomatology in adulthood: A 6-year longitudinal study. *Journal of affective disorders*, 312, 322-330.  
<https://doi.org/10.1016/j.jad.2022.06.057>
- Lai, S., Bruce, V., & Collerton, D. (2016). Visual Hallucinations in Older People: Appraisals but not Content or Phenomenology Influence Distress. *Behavioural and Cognitive Psychotherapy*, 44(6), 705-710. <https://doi.org/10.1017/S1352465815000727>

- Lambe, S., Mulhall, S., Bird, J., Williams, K., Mitchell, J., Roddan, M., Sokunle, G., Rosebrock, L., Freeman, D., & Waite, F. (2025). The Oxford Paranoia Defence Behaviours Questionnaire (O-PDQ): assessing paranoia-related safety-seeking behaviours. *Behavioural and Cognitive Psychotherapy*, 1-14.  
<https://doi.org/10.1017/S1352465825100994>
- Larøi, F., Luhrmann, T. M., Bell, V., Christian, W. A., Deshpande, S., Fernyhough, C., Jenkins, J., & Woods, A. (2014). Culture and Hallucinations: Overview and Future Directions. *Schizophrenia Bulletin*, 40(Suppl\_4), S213-S220.  
<https://doi.org/10.1093/schbul/sbu012>
- Larøi, F., & Van Der Linden, M. (2005). Nonclinical Participants' Reports of Hallucinatory Experiences. *Canadian Journal of Behavioural Science*, 37(1), 33-43.  
<https://doi.org/10.1037/h0087243>
- Launay, G., & Slade, P. (1981). The measurement of hallucinatory predisposition in male and female prisoners. *Personality and individual differences*, 2(3), 221-234.  
[https://doi.org/10.1016/0191-8869\(81\)90027-1](https://doi.org/10.1016/0191-8869(81)90027-1)
- Lee, R., Krakow, B., & Suh, S. (2021). Psychometric properties of the Disturbing Dream and Nightmare Severity Index–Korean version. *Journal of Clinical Sleep Medicine*, 17(3), 471-477. <https://doi.org/10.5664/jcsm.8974>
- Lemyre, A., Bastien, C., & Vallières, A. (2019). Nightmares in mental disorders: A review. *Dreaming*, 29(2), 144–166. <https://doi.org/10.1037/drm0000103>
- Li, Y., & Liang, Y. (2023). The effect of childhood trauma on complex posttraumatic stress disorder: the role of self-esteem. *European journal of psychotraumatology*, 14(2), 2272478. <https://doi.org/10.1080/20008066.2023.2272478>
- Lim, A., Hoek, H.W., & Blom, J.D. (2026). Multimodal hallucinations in Muslim patients with severe psychotic disorders: The entity experience revisited. *Psychopathology*. 59, 12-22. <https://doi:10.1159/000548607>
- Lim, A., Hoek, H. W., Deen, M. L., Blom, J. D., & GROUP Investigators. (2016). Prevalence and classification of hallucinations in multiple sensory modalities in schizophrenia spectrum disorders. *Schizophrenia Research*, 176(2-3), 493-499.  
<https://doi.org/10.1016/j.schres.2016.06.010>
- Linszen, M. M. J., de Boer, J. N., Schutte, M. J. L., Begemann, M. J. H., de Vries, J., Koops, S., Blom, R. E., Bohlken, M. M., Heringa, S. M., Blom, J. D., & Sommer, I. E. C.

- (2022). Occurrence and phenomenology of hallucinations in the general population: A large online survey. *Schizophrenia*, 8(1), 41.  
<https://doi.org/10.1038/s41537-022-00229-9>
- Longden, E., Corstens, D., Bowe, S., Pyle, M., Emsley, R., Peters, S., ... & Morrison, A. P. (2022). A psychological intervention for engaging dialogically with auditory hallucinations (Talking With Voices): A single-site, randomised controlled feasibility trial. *Schizophrenia Research*, 250, 172-179.  
<https://doi.org/10.1016/j.schres.2022.11.007>
- Longden, E., Corstens, D., Morrison, A. P., Larkin, A., Murphy, E., Holden, N., ... & Bowe, S. (2021). A treatment protocol to guide the delivery of dialogical engagement with auditory hallucinations: Experience from the talking with voices pilot trial. *Psychology and Psychotherapy: Theory, Research and Practice*, 94(3), 558-572. <https://doi.org/10.1016/j.schres.2022.11.007>  
<https://doi.org/10.1016/j.schres.2022.11.007>
- Luhrmann, T. M., Alderson-Day, B., Bell, V., Bless, J. J., Corlett, P., Hugdahl, K., Jones, N., Larøi, F., Mosley, P., Padmavati, R., Peters, E., Powers, A. R., & Waters, F. (2019). Beyond trauma: A multiple pathways approach to auditory hallucinations in clinical and nonclinical populations. *Schizophrenia Bulletin*, 45(Supplement\_1), 24-31.
- Lyndon, S., & Corlett, P. R. (2020). Hallucinations in Posttraumatic Stress Disorder: Insights From Predictive Coding. *Journal of Abnormal Psychology*, 129(6), 534-543.  
<https://doi.org/10.1037/abn0000531>
- Mackie, J. L. (1965). Causes and Conditions. *American philosophical quarterly (Oxford)*, 2(4), 245-264.
- MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, 1, 173-181.  
<https://doi.org/10.1023/a:1026595011371>
- Marks, D. F. (1995). New directions for mental imagery research. *Journal of Mental Imagery*, 19(3-4), 153-167.
- Main, M., and Hesse, E. (1990). "Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened or frightening parental behavior the linking mechanism?," in *Attachment in the Preschool Years*, eds M. Greenberg, D. Cicchetti, and E. M. Cummings (Chicago, IL: University of Chicago

- Press), 161–182.
- Mandford, M., & Andermann, F. (1998). Complex visual hallucinations. Clinical and neurobiological insights. *Brain*, 121(10), 1819-1840.  
<https://doi.org/10.1093/brain/121.10.1819>
- Mason, O., Claridge, G., & Jackson, M. (1995). New scales for the assessment of schizotypy. *Personality and Individual Differences*, 18(1), 7-13. [https://doi.org/10.1016/0191-8869\(94\)00132-C](https://doi.org/10.1016/0191-8869(94)00132-C)
- Mauri, M.C., Paletta, S., Di Pace, C. (2018). Hallucinations in the Substance-Induced Psychosis. In: Brambilla, P., Mauri, M., Altamura, A. (eds) Hallucinations in Psychoses and Affective Disorders. Springer, Cham.
- Mawson, A., Cohen, K., & Berry, K. (2010). Reviewing evidence for the cognitive model of auditory hallucinations: The relationship between cognitive voice appraisals and distress during psychosis. *Clinical Psychology Review*, 30(2), 248-258.  
<https://doi.org/10.1016/j.cpr.2009.11.006>
- McCall, W. V., Batson, N., Webster, M., Case, L. D., Joshi, I., Derreberry, T., ... & Farris, S. R. (2013). Nightmares and dysfunctional beliefs about sleep mediate the effect of insomnia symptoms on suicidal ideation. *Journal of Clinical Sleep Medicine*, 9(2), 135-140. <https://doi.org/10.5664/jcsm.2408>
- McCarthy-Jones, S., Smailes, D., Corvin, A., Gill, M., Morris, D. W., Dinan, T. G., Murphy, K. C., Anthony O'Neill, F., Waddington, J. L., Australian Schizophrenia Research, B., Donohoe, G., & Dudley, R. (2017). Occurrence and co-occurrence of hallucinations by modality in schizophrenia-spectrum disorders. *Psychiatry Research*.  
<https://doi.org/10.1016/j.psychres.2017.01.102>
- McIntosh, W. D., Harlow, T. F., & Martin, L. L. (1995). Linkers and nonlinkers: Goal beliefs as a moderator of the effects of everyday hassles on rumination, depression, and physical complaints 1. *Journal of Applied Social Psychology*, 25(14), 1231-1244.  
<https://doi.org/10.1111/j.1559-1816.1995.tb02616.x>
- Minarikova, K. B., Prasko, J., Holubova, M., Vanek, J., Kantor, K., Slepecky, M., ... & Ociskova, M. (2022). Hallucinations and other psychotic symptoms in patients with borderline personality disorder. *Neuropsychiatric disease and treatment*, 18, 787-799.  
<https://doi.org/10.2147/NDT.S360013>

- Mitchell, C. A. A., Maybery, M. T., Russell-Smith, S. N., Collerton, D., Gignac, G. E., & Waters, F. (2017). The Structure and Measurement of Unusual Sensory Experiences in Different Modalities: The Multi-Modality Unusual Sensory Experiences Questionnaire (MUSEQ). *Frontiers in Psychology*, 8, 1363.  
<https://doi.org/10.3389/fpsyg.2017.01363>
- Montagnese, M., Leptourgos, P., Fernyhough, C., Waters, F., Larøi, F., Jardri, R., McCarthy-Jones, S., Thomas, N., Dudley, R., Taylor, J.-P., Collerton, D., & Urwyler, P. (2021). A Review of Multimodal Hallucinations: Categorization, Assessment, Theoretical Perspectives, and Clinical Recommendations. *Schizophrenia Bulletin*, 47(1), 237-248. <https://doi.org/10.1093/schbul/sbaa101>
- Mori, M. (1970). The uncanny valley. *Energy*, 7, 33-35.
- Morrison, A. (1998). A cognitive analysis of the maintenance of auditory hallucinations: Are voices to schizophrenia what bodily sensations are to panic? *Behavioural and Cognitive Psychotherapy*, 26, 289–302.  
<https://doi.org/10.1017/S1352465898264010>
- Morrison, A. P. (2001). The interpretation of intrusions in psychosis: An integrative cognitive approach to hallucinations and delusions. *Behavioural and Cognitive Psychotherapy*, 29(3), 257-276. <https://doi.org/10.1017/S1352465801003010>
- Morrison, A. P., Frame, L., & Larkin, W. (2003). Relationships between trauma and psychosis: A review and integration. *British Journal of Clinical Psychology*, 42(4), 331-353.  
<https://doi.org/10.1348/014466503322528892>
- Morrison, A. P., Wells, A., & Nothard, S. (2000). Cognitive factors in predisposition to auditory and visual hallucinations. *British Journal of Clinical Psychology*, 39(1), 67-78.  
<https://doi.org/10.1348/014466500163112>
- Mosimann, U. P., Collerton, D., Dudley, R., Meyer, T. D., Graham, G., Dean, J. L., Bearn, D., Killen, A., Dickinson, L., Clarke, M. P., & McKeith, I. G. (2008). A semi-structured interview to assess visual hallucinations in older people. *International Journal of Geriatric Psychiatry*, 23(7), 712-718. <https://doi.org/10.1002/gps.1965>
- Mueser, K. T., Bellack, A. S., & Brady, E. U. (1990). Hallucinations in schizophrenia. *Acta Psychiatrica Scandinavica*, 82(1), 26-29. <https://doi.org/10.1111/j.1600-0447.1990.tb01350.x>
- National Institute for Health and Care Excellence. (2014). Psychosis and Schizophrenia

- in adults: prevention and management. Clinical Guideline CG178.
- National Institute of Mental Health. (2023). *Understanding Psychosis* (NIH Publication No. 23-MH-8110). U.S. Department of Health and Human Services, National Institutes of Health.  
<https://www.nimh.nih.gov/sites/default/files/documents/health/publications/understanding-psychosis/23-MH-8110-Understanding-Psychosis.pdf>
- Nock, M. K., Wedig, M. M., Holmberg, E. B., & Hooley, J. M. (2008). The Emotion Reactivity Scale: Development, Evaluation, and Relation to Self-Injurious Thoughts and Behaviors. *Behaviour Therapy*, 39(2), 107-116.  
<https://doi.org/10.1016/j.beth.2007.05.005>
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking Rumination. *Perspectives on psychological science*, 3(5), 400-424. <https://doi.org/10.1111/j.1745-6924.2008.00088.x>
- O'Brien, P., & Johns, L. (2013). A Graded Exposure Intervention for Distressing Visual Hallucinations in Schizophrenia. *Behavioural and Cognitive Psychotherapy*, 41(4), 495-499. <https://doi.org/10.1017/S1352465812001130>
- Oaie, F. E., Bower, J. L., & Steel, C. (2025). The development of the Negative Mental Imagery Questionnaire (MIQ-N). *Behavioural and Cognitive Psychotherapy*, 53(1), 17-29.  
<https://doi.org/10.1017/S1352465824000304>
- Office for National Statistics. (2022). *Population and household estimates, England and Wales: Census: Mid-2021*. <https://census.gov.uk/census-2021-results>
- Oorschot, M., Lataster, T., Thewissen, V., Lardinois, M., van Os, J., Delespaul, P. A. E. G., & Myin-Germeys, I. (2012). Symptomatic remission in psychosis and real-life functioning. *British Journal of Psychiatry*, 201(3), 215-220.  
<https://doi.org/10.1192/bjp.bp.111.104414>
- Palinkas, L. A., Horwitz, S., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and policy in mental health and mental health services research*, 42, 533-544. <https://doi.org/10.1007/s10488-013-0528-y>
- Panayi, P., Peters, E., Bentall, R., Hardy, A., Berry, K., Sellwood, W., Dudley, R., Longden, E., Underwood, R., Steel, C., Jafari, H., Emsley, R., Mason, L., Elliott, R., & Varese, F.

- (2024). Complex PTSD symptoms predict positive symptoms of psychosis in the flow of daily life. *Psychological Medicine*, 54(12), 3489-3500.  
<https://doi.org/10.1017/S0033291724001934>
- Pappert, E. J., Goetz, C. G., Niederman, F. G., Raman, R., & Leurgans, S. (1999). Hallucinations, sleep fragmentation, and altered dream phenomena in Parkinson's disease. *Movement disorders: official journal of the Movement Disorder Society*, 14(1), 117-121. [https://doi.org/10.1002/1531-8257\(199901\)14:1%3C117::AID-MDS1019%3E3.0.CO;2-0](https://doi.org/10.1002/1531-8257(199901)14:1%3C117::AID-MDS1019%3E3.0.CO;2-0)
- Pastore, A., de Girolamo, G., Tafuri, S., Tomasicchio, A., & Margari, F. (2022). Traumatic experiences in childhood and adolescence: a meta-analysis of prospective studies assessing risk for psychosis. *European Child and Adolescent Psychiatry*, 31(2), 215-228. <https://doi.org/10.1007/s00787-020-01574-9>
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Sage Publications
- Paulik, G., Steel, C., & Arntz, A. (2019). Imagery rescripting for the treatment of trauma in voice hearers: a case series. *Behavioural and cognitive psychotherapy*, 47(6), 709-725. <https://doi.org/10.1017/S1352465819000237>
- Paulik, G., & Taylor, C. D. J. (2024). Imagery-focused therapy for visual hallucinations: a case series. *Clinical Psychology and Psychotherapy*, 31(3), e2993. <https://doi.org/10.1002/cpp.2993>
- Peach, N., Alvarez-Jimenez, M., Cropper, S. J., Sun, P., Halpin, E., O'Connell, J., & Bendall, S. (2021). Trauma and the content of hallucinations and post-traumatic intrusions in first-episode psychosis. *Psychology and Psychotherapy: Theory, Research and Practice*, 94, 223-241. <https://doi.org/10.1111/papt.12273>
- Pearson, J., Naselaris, T., Holmes, E. A., & Kosslyn, S. M. (2015). Mental Imagery: Functional Mechanisms and Clinical Applications. *Trends in Cognitive Science*, 19(10), 590-602. <https://doi.org/10.1016/j.tics.2015.08.003>
- Pepin, G., Løevenbruck, H., Chauvin, A., Jacquet, C., Eichenlaub, J. B., & Bortolon, C. (2026). Comparing the characteristics of hallucinations and mental imagery: a large cross-sectional study in the general population. *Consciousness and Cognition*, 137, 103974. <https://doi.org/10.1016/j.concog.2025.103974>

- Peters, E., Ward, T., Jackson, M., Woodruff, P., Morgan, C., McGuire, P., & Garety, P. A. (2017). Clinical relevance of appraisals of persistent psychotic experiences in people with and without a need for care: an experimental study. *The Lancet Psychiatry*, 4(12), 927-936. [https://doi.org/10.1016/S2215-0366\(17\)30409-1](https://doi.org/10.1016/S2215-0366(17)30409-1)
- Phelps, A. J., Forbes, D., & Creamer, M. (2008). Understanding posttraumatic nightmares: An empirical and conceptual review. *Clinical Psychology Review*, 28(2), 338-355. <https://doi.org/10.1016/j.cpr.2007.06.001>
- Pilton, M., Varese, F., Berry, K., & Bucci, S. (2015). The relationship between dissociation and voices: A systematic literature review and meta-analysis. *Clinical Psychology Review*, 40, 138-155. <https://doi.org/10.1016/j.cpr.2015.06.004>
- Postma, M. R., van Amelsvoort, T., Myin-Germeys, I., Gayer-Anderson, C., Kempton, M. J., Valmaggia, L., ... & Reininghaus, U. (2021). Across the continuum: Associations between (fluctuations in) momentary self-esteem and psychotic experiences. *Schizophrenia Research*, 238, 188-198. <https://doi.org/10.1016/j.schres.2021.09.010>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, 41, 71-90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Quidé, Y. (2023). Dissociation, trauma and the experience of visual hallucinations in post-traumatic stress disorder and schizophrenia. *BJPsych Open*, 9(1), e23. <https://doi.org/10.1192/bjo.2023.3>
- Read, J., Perry, B. D., Moskowitz, A., & Connolly, J. (2001). The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. *Psychiatry*, 64(4), 319-345.
- Reeve, S., Emsley, R., Sheaves, B., & Freeman, D. (2018). Disrupting sleep: the effects of sleep loss on psychotic experiences tested in an experimental study with mediation analysis. *Schizophrenia Bulletin*, 44(3), 662-671. <https://doi.org/10.1093/schbul/sbx103>
- Reeve, S., Sheaves, B., & Freeman, D. (2015). The role of sleep dysfunction in the occurrence of delusions and hallucinations: a systematic review. *Clinical Psychology Review*, 42, 96-115. <https://doi.org/10.1016/j.cpr.2015.09.001>
- Reeve, S., Sheaves, B., & Freeman, D. (2019). Sleep disorders in early psychosis:

- incidence, severity, and association with clinical symptoms. *Schizophrenia Bulletin*, 45(2), 287-295. <https://doi.org/10.1093/schbul/sby129>
- Reimer, S. G., & Moscovitch, D. A. (2015). The impact of imagery rescripting on memory appraisals and core beliefs in social anxiety disorder. *Behaviour Research and Therapy*, 75, 48-59. <https://doi.org/10.1016/j.brat.2015.10.007>
- Renouf, S., ffytche, D., Pinto, R., Murray, J., & Lawrence, V. (2018). Visual hallucinations in dementia and Parkinson's disease: A qualitative exploration of patient and caregiver experiences. *International Journal of Geriatric Psychiatry*, 33(10), 1327-1334. <https://doi.org/10.1002/gps.4929>
- Robbins, K., Hodgekins, J., & Reeve, S. (2025). Understanding excessive sleep in people with psychotic disorders. *British Journal of Clinical Psychology*, 1– 15. <https://doi.org/10.1111/bjc.12538>
- Rodríguez-Sánchez, J. M., Crespo-Facorro, B., González-Blanch, C., Pérez-Iglesias, R., & Vázquez-Barquero, J. L. (2007). Cognitive dysfunction in first-episode psychosis: the processing speed hypothesis. *The British Journal of Psychiatry*, 191(S51), s107-s110. <https://doi.org/10.1192/bjp.191.51.s107>
- Rogers, L. W., Yeebo, M., Collerton, D., Moseley, P., & Dudley, R. (2024). Non-clinical hallucinations and mental imagery across sensory modalities. *Cognitive Neuropsychiatry*, 29(2), 87-102. <https://doi.org/10.1080/13546805.2024.2313467>
- Ronald, A., Sieradzka, D., Cardno, A. G., Haworth, C. M. A., McGuire, P., & Freeman, D. (2014). Characterization of psychotic experiences in adolescence using the Specific Psychotic Experiences Questionnaire (SPEQ): Findings from a study of 5000 16-year-old twins. *Schizophrenia Bulletin*, 40(4), 868-877. <https://doi.org/10.1093/schbul/sbt106>
- Rossell, S. L., Schutte, M. J. L., Toh, W. L., Thomas, N., Strauss, C., Linszen, M. M. J., van Dellen, E., Heringa, S. M., Teunisse, R., Slotema, C. W., & Sommer, I. E. C. (2019). The Questionnaire for Psychotic Experiences: An Examination of the Validity and Reliability. *Schizophrenia Bulletin*, 45(Supplement\_1), S78-S87. <https://doi.org/10.1093/schbul/sby148>
- Runnymede Trust. (2021). *England Civil Society Submission to the United Nations Committee on the Elimination of Racial Discrimination*. Runnymede Trust. <https://assets.website->

[files.com/61488f992b58e687f1108c7c/61bca661b8abd33d2f6f579c\\_Runnymede%20CERD%20report%20v3.pdf](https://files.com/61488f992b58e687f1108c7c/61bca661b8abd33d2f6f579c_Runnymede%20CERD%20report%20v3.pdf)

- Ruscio, J., & Roche, B. (2012). Determining the Number of Factors to Retain in an Exploratory Factor Analysis Using Comparison Data of Known Factorial Structure. *Psychological Assessment*, 24(2), 282-292. <https://doi.org/10.1037/a0025697>
- Santhouse, A. M., Howard, R. J., & Ffytche, D. H. (2000). Visual hallucinatory syndromes and the anatomy of the visual brain. *Brain*, 123(10), 2055-2064. <https://doi.org/10.1093/brain/123.10.2055>
- Schneider K. *Clinical Psychopathology*. New York: Grune & Stratton, 1959.
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting Structural Equation Modeling and Confirmatory Factor Analysis Results: A Review. *The Journal of Educational research*, 99(6), 323-338. <https://doi.org/10.3200/JOER.99.6.323-338>
- Selten, J.-P., van der Ven, E., & Termorshuizen, F. (2020). Migration and psychosis: a meta-analysis of incidence studies. *Psychological Medicine*, 50(2), 303-313. <https://doi.org/10.1017/S0033291719000035>
- Sheaves, B. (2023). Listening to and believing derogatory and threatening voices. [DPhil in Psychiatry, Univeristy of Oxford]. Oxford University Research Archive.
- Sheaves, B., Bebbington, P. E., Goodwin, G. M., Harrison, P. J., Espie, C. A., Foster, R. G., & Freeman, D. (2016). Insomnia and hallucinations in the general population: findings from the 2000 and 2007 British Psychiatric Morbidity Surveys. *Psychiatry Research*, 241, 141-146. <https://doi.org/10.1016/j.psychres.2016.03.055>
- Sheaves, B., Johns, L., Loe, B. S., Bold, E., Černis, E., McPin Hearing Voices Lived Experience Advisory Panel, ... & Freeman, D. (2023). Listening to and believing derogatory and threatening voices. *Schizophrenia Bulletin*, 49(1), 151-160. <https://doi.org/10.1093/schbul/sbac101>
- Sheaves, B., Onwumere, J., Keen, N., Stahl, D., & Kuipers, E. (2015). Nightmares in Patients with Psychosis: The Relation with Sleep, Psychotic, Affective, and Cognitive Symptoms. *Canadian Journal of Psychiatry*, 60(8), 354-361. <https://doi.org/10.1177/070674371506000804>
- Sheaves, B., Porcheret, K., Tsanas, A., Espie, C. A., Foster, R. G., Freeman, D., ... & Goodwin, G. M. (2016). Insomnia, nightmares, and chronotype as markers of risk

- for severe mental illness: results from a student population. *Sleep*, 39(1), 173-181.  
<https://doi.org/10.5665/sleep.5342>
- Sheaves, B., Rek, S., & Freeman, D. (2023). Nightmares and psychiatric symptoms: A systematic review of longitudinal, experimental, and clinical trial studies. *Clinical Psychology Review*, 100, 102241. <https://doi.org/10.1016/j.cpr.2022.102241>
- Shenyan, O., Lisi, M., Greenwood, J. A., Skipper, J. I., & Dekker, T. M. (2024). Visual hallucinations induced by Ganzflicker and Ganzfeld differ in frequency, complexity, and content. *Scientific Reports*, 14(1), 2353-2315. <https://doi.org/10.1038/s41598-024-52372-1>
- Shevlin, M., Houston, J. E., Dorahy, M. J., & Adamson, G. (2008). Cumulative Traumas and Psychosis: an Analysis of the National Comorbidity Survey and the British Psychiatric Morbidity Survey. *Schizophrenia Bulletin*, 34(1), 193-199.  
<https://doi.org/10.1093/schbul/sbm069>
- Shevlin, M., Murphy, J., Read, J., Mallett, J., Adamson, G., & Houston, J. E. (2011). Childhood adversity and hallucinations: a community-based study using the National Comorbidity Survey Replication. *Social Psychiatry and Psychiatry Epidemiology*, 46(12), 1203-1210. <https://doi.org/10.1007/s00127-010-0296-x>
- Sidgewick H, Johnson A, Myers FWH et al. (1894) Report on the census of hallucinations. *Proceedings of Society for Psychical Research*, 34, 25-394
- Skivington, K., Matthews, L., Simpson, S. A., Craig, P., Baird, J., Blazeby, J. M., Boyd, K. A., Craig, N., French, D. P., McIntosh, E., Petticrew, M., Rycroft-Malone, J., White, M., & Moore, L. (2021). A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*, 374, n2061.  
<https://doi.org/10.1136/bmj.n2061>
- Smailes, D., Alderson-Day, B., Fernyhough, C., McCarthy-Jones, S., & Dodgson, G. (2015). Tailoring cognitive behavioral therapy to subtypes of voice-hearing. *Frontiers in Psychology*, 6, 1933. <https://doi.org/10.3389/fpsyg.2015.01933>
- Smith, B., Fowler, D., G, Freeman, D., Bebbington, P., Bashforth, H., Garety, P., Dunn, G., & Kuipers, E. (2006). Emotion and psychosis: Links between depression, self-esteem, negative schematic beliefs and delusions and hallucinations. *Schizophrenia Research*, 86(1-3), 181-188. <https://doi.org/10.1016/j.schres.2006.06.018>

- Smith, R. L., Ager, J. W., & Williams, D. L. (1992). Suppressor Variables in Multiple Regression/Correlation. *Educational and Psychological Measurement*, 52(1), 17-29. <https://doi.org/10.1177/001316449205200102>
- Solesvik, M., Joa, I., Larsen, T. K., Langeveld, J., Johannessen, J. O., Bjørnstad, J., Anda, L. G., Gisselgård, J., Hegelstad, W. t. V., & Brønnick, K. (2016). Visual Hallucinations in First-Episode Psychosis: Association with Childhood Trauma. *PLOS ONE*, 11(5), e0153458-e0153458. <https://doi.org/10.1371/journal.pone.0153458>
- Steenkamp, L. R., Parrish, E. M., Chalker, S. A., Badal, V. D., Pinkham, A. E., Harvey, P. D., & Depp, C. A. (2023). Childhood trauma and real-world social experiences in psychosis. *Schizophrenia Research*, 252, 279-286. <https://doi.org/10.1016/j.schres.2022.12.039>
- Strestha, N. (2021). Factor Analysis as a Tool for Survey Analysis. *American Journal of Applied Mathematics and Statistics*, 9, 4-11. <https://doi.org/10.12691/ajams-9-1-2>
- Sulfaro, A. A., Robinson, A. K., & Carlson, T. A. (2023). Comparing mental imagery experiences across visual, auditory, and other sensory modalities. In (1.1 ed.): Cold Spring Harbor Laboratory.
- Taylor, C. D. J., Bee, P. E., Kelly, J., Emsley, R., & Haddock, G. (2020). iMAgery focused psychological therapy for persecutory delusions in PSychosis (iMAPS): a multiple baseline experimental case series. *Behavioural and Cognitive Psychotherapy* 48(5), 530-545. <https://doi.org/10.1017/S1352465820000168>
- Teeple, R. C., Caplan, J. P., & Stern, T. A. (2009). Visual Hallucinations: Differential Diagnosis and Treatment. *Primary Care Companion to the Journal of Clinical Psychiatry*, 11(1), 26-32. <https://doi.org/10.4088/PCC.08r00673>
- Temmingh, H., Stein, D. J., Seedat, S., & Williams, D. R. (2011). The prevalence and correlates of hallucinations in a general population sample: findings from the South African Stress and Health Study. *African Journal of Psychiatry*, 14(3), 211-217. <https://doi.org/10.4314/ajpsy.v14i3.4>
- Teufel, C., Subramaniam, N., Dobler, V., Perez, J., Finnemann, J., Mehta, P. R., ... & Fletcher, P. C. (2015). Shift toward prior knowledge confers a perceptual advantage in early psychosis and psychosis-prone healthy individuals. *Proceedings of the National Academy of Sciences*, 112(43), 13401-13406. <https://doi.org/10.1073/pnas.1503916112>

- Thomson, C., Wilson, R., Collerton, D., Freestone, M., & Dudley (2017). Cognitive Therapy for visual hallucinations: an investigation using a single-case experimental design. *The Cognitive Behaviour Therapist*, 10, E10. <https://doi.org/10.1017/S1754470X1700017>
- Tien, A. Y. (1991). Distribution of hallucinations in the population. *Social psychiatry and psychiatric epidemiology*, 26(6), 287-292. <https://doi.org/10.1007/BF00789221>
- Toh, W. L., Bere, M., & Rossell, S. L. (2022). Distinguishing multimodal versus multisensory hallucinations in psychosis: Key definitions and a way forward. *Australian and New Zealand Journal of Psychiatry*, 56(5), 445-450. <https://doi.org/10.1177/00048674211031455>
- Toh, W. L., McCarthy-Jones, S., Copolov, D., & Rossell, S. L. (2019). Have we overlooked the significance of multinodal hallucinations in schizophrenia? *Psychiatry Research*, 279, 358-360. <https://doi.org/10.1016/j.psychres.2019.06.018>
- Toh, W. L., Thomas, N., Robertson, M., & Rossell, S. L. (2020). Characteristics of non-clinical hallucinations: A mixed-methods analysis of auditory, visual, tactile and olfactory hallucinations in a primary voice-hearing cohort. *Psychiatry Research*, 289, 112987. <https://doi.org/10.1016/j.psychres.2020.112987>
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Healthcare*, 19(6), 349-357. <https://doi.org/10.1093/intqhc/mzm042>
- Tully, S., Wells, A., & Morrison, A. P. (2017). An exploration of the relationship between use of safety-seeking behaviours and psychosis: A systematic review and meta-analysis. *Clinical Psychology and Psychotherapy*, 24(6), 1384-1405. <https://doi.org/10.1002/cpp.2099>
- Turner, G., Aiyegbusi, O. L., Price, G., Skrybant, M., & Calvert, M. (2020). Moving beyond project-specific patient and public involvement in research. *Journal of the Royal Society of Medicine*, 113(1), 16-23. <https://doi.org/10.1177/0141076819890551>
- Turkington, D., & Kingdon, D. (2019). Using a normalising rationale in the treatment of schizophrenic patients. In *Cognitive-behavioural interventions with psychotic disorders* (pp. 103-115). Routledge.
- Turner, D. T., van der Gaag, M., Karyotaki, E., & Cuipers, P. (2014). Psychological

- interventions for psychosis: A meta-analysis of comparative outcome studies. *American Journal of Psychiatry*, 171, 523–538.  
<https://doi.org/10.1176/appi.ajp.2013.13081159>
- ÜCok, A., & Bıkmaz, S. (2007). The effects of childhood trauma in patients with first-episode schizophrenia. *Acta Psychiatrica Scandinavica*, 116(5), 371-377.  
<https://doi.org/10.1111/j.1600-0447.2007.01079.x>
- van den Berg, D. P. G., de Bont, P. A. J. M., van der Vleugel, B. M., de Roos, C., de Jongh, A., Van Minnen, A., & van der Gaag, M. (2015). Prolonged Exposure vs Eye Movement Desensitization and Reprocessing vs Waiting List for Posttraumatic Stress Disorder in Patients With a Psychotic Disorder: A Randomized Clinical Trial. *JAMA Psychiatry*, 72(3), 259. <https://doi.org/10.1001/jamapsychiatry.2014.2637>
- van der Helm, E., & Walker, M. P. (2012). Sleep and Affective Brain Regulation. *Social and Personality Psychology Compass*, 6(11), 773-791. <https://doi.org/10.1111/j.1751-9004.2012.00464.x>
- Van Liempt, S., van Zuiden, M., Westenberg, H., Super, A., & Vermetten, E. (2013). Impact of impaired sleep on the development of PTSD symptoms in combat veterans: a prospective longitudinal cohort study. *Depression and Anxiety*, 30(5), 469-474.  
<https://doi.org/10.1002/da.22054>
- Van Lieshout, R. J., & Goldberg, J. O. (2007). Quantifying Self-Reports of Auditory Verbal Hallucinations in Persons With Psychosis. *Canadian Journal of Behavioural Science*, 39(1), 73-77. <https://doi.org/10.1037/cjbs2007006>
- Van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. J. P. M. (2009). A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness–persistence–impairment model of psychotic disorder. *Psychological Medicine*, 39(2), 179-195.  
<https://doi.org/10.1017/S0033291708003814>
- Varese, F., Douglas, M., Dudley, R., Bowe, S., Christodoulides, T., Common, S., ... & Turkington, D. (2021). Targeting dissociation using cognitive behavioural therapy in voice hearers with psychosis and a history of interpersonal trauma: A case series. *Psychology and Psychotherapy: Theory, Research and Practice*, 94(2), 247-265. <https://doi.org/10.1111/papt.12304>

- Varese, F., Sellwood, W., Pulford, D., Awenat, Y., Bird, L., Bhutani, G., Carter, L.-A., Davies, L., Aseem, S., Davis, C., Hefferman-Clarke, R., Hilton, C., Horne, G., Keane, D., Logie, R., Malkin, D., Potter, F., van den Berg, D., Zia, S., & Bentall, R. P. (2024). Trauma-focused therapy in early psychosis: results of a feasibility randomized controlled trial of EMDR for psychosis (EMDRp) in early intervention settings. *Psychological Medicine*, 54(5), 874-885. <https://doi.org/10.1017/S0033291723002532>
- Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., Read, J., van Os, J., & Bentall, R. P. (2012). Childhood Adversities Increase the Risk of Psychosis: A Meta-analysis of Patient-Control, Prospective- and Cross-sectional Cohort Studies. *Schizophrenia Bulletin* 38(4), 661-671. <https://doi.org/10.1093/schbul/sbs050>
- Voce, A., Calabria, B., Burns, R., Castle, D., & McKetin, R. (2019). A Systematic Review of the Symptom Profile and Course of Methamphetamine-Associated Psychosis: Substance Use and Misuse. *Substance Use & Misuse*, 54(4), 549–559. <https://doi.org/10.1080/10826084.2018.1521430>
- Waite, F., Černis, E., Kabir, T., Iredale, E., Johns, L., Maughan, D., Diamond, R., Seddon, R., Williams, N., Yu, L.-M., & Freeman, D. (2023). A targeted psychological treatment for sleep problems in young people at ultra-high risk of psychosis in England (SleepWell): a parallel group, single-blind, randomised controlled feasibility trial. *Lancet Psychiatry*, 10(9), 706-718. [https://doi.org/10.1016/S2215-0366\(23\)00203-1](https://doi.org/10.1016/S2215-0366(23)00203-1)
- Waite, F., Kabir, T., Johns, L., Mollison, J., Tsiachristas, A., Petit, A., Černis, E., Maughan, D., & Freeman, D. (2020). Treating sleep problems in young people at ultra-high-risk of psychosis: study protocol for a single-blind parallel group randomised controlled feasibility trial (SleepWell). *BMJ Open*, 10(11), e045235. <https://doi.org/10.1136/bmjopen-2020-045235>
- Waters, F., Blom, J. D., Dang-Vu, T. T., Cheyne, A. J., Alderson-Day, B., Woodruff, P., & Collerton, D. (2016). What Is the Link Between Hallucinations, Dreams, and Hypnagogic–Hypnopompic Experiences? *Schizophrenia Bulletin*, 42(5), 1098-1109. <https://doi.org/10.1093/schbul/sbw076>
- Waters, F., Chiu, V., Atkinson, A., & Blom, J. D. (2018). Severe Sleep Deprivation Causes Hallucinations and a Gradual Progression Toward Psychosis With Increasing Time Awake. *Frontiers in Psychiatry*, 9, 303. <https://doi.org/10.3389/fpsy.2018.00303>
- Waters, F., Collerton, D., ffytche, D. H., Jardri, R., Pins, D., Dudley, R., Blom, J. D.,

- Mosimann, U. P., Eperjesi, F., Ford, S., & Larøi, F. (2014). Visual Hallucinations in the Psychosis Spectrum and Comparative Information From Neurodegenerative Disorders and Eye Disease. *Schizophrenia Bulletin*, 40(Suppl\_4), S233-S245. <https://doi.org/10.1093/schbul/sbu036>
- Wearne, D., Ayalde, J., Curtis, G., Gopisetty, A., Banerjee, A., Melvill-Smith, P., Orr, K., Rajanthiran, L., & Waters, F. (2022). Visual phenomenology in schizophrenia and post-traumatic stress disorder: an exploratory study. *BJPsych open*, 8(4), e143. <https://doi.org/10.1192/bjo.2022.544>
- Wells, A., & Butler, G. (1997). Generalized anxiety disorder. In D. M. Clark & C. G. Fairburn (Eds.), *Science and Practice of Cognitive Behaviour Therapy* (pp. 155–178). Oxford University Press.
- Wilkinson, S. (2014). Accounting for the phenomenology and varieties of auditory verbal hallucination within a predictive processing framework. *Consciousness and cognition*, 30, 142-155. <https://doi.org/10.1016/j.concog.2014.09.002>
- Wilson, R., Collerton, D., Freeston, M., Christodoulides, T., & Dudley, R. (2016). Is Seeing Believing? The Process of Change During Cognitive-behavioural Therapy for Distressing Visual Hallucinations. *Clinical Psychology and Psychotherapy*, 23(4), 285-297. <https://doi.org/10.1002/cpp.1962>
- Wood, N., D, Akloubou Gnonhosu, D. D., & Bowling, J. (2015). Combining Parallel and Exploratory Factor Analysis in Identifying Relationship Scales in Secondary Data. *Marriage and Family Review*, 51(5), 385-395. <https://doi.org/10.1080/01494929.2015.1059785>
- World Health Organization (WHO). (1993). The ICD-10 classification of mental and behavioural disorders. World Health Organization
- Young Minds. (2024). *Learning to cope with hallucinations and hearing voices*. <https://www.youngminds.org.uk/young-person/blog/learning-to-cope-with-hallucinations-and-hearing-voices/> Date accessed 18<sup>th</sup> December 2025.
- Zammit, S., Owen, M. J., Evans, J., Heron, J., & Lewis, G. (2011). Cannabis, COMT and psychotic experiences. *British Journal of Psychiatry*, 199(5), 380-385. <https://doi.org/10.1192/bjp.bp.111.091421>
- Zimmerman, M., Walsh, E., Friedman, M., Boerescu, D. A., & Attiullah, N. (2018). Are self-report scales as effective as clinician rating scales in measuring treatment response

in routine clinical practice? *Journal of Affective Disorders*, 225, 449-452.

<https://doi.org/10.1016/j.jad.2017.08.024>

Zumbo, B. D., Gadermann, A. M., & Zeisser, C. (2007). Ordinal Versions of Coefficients Alpha and Theta for Likert Rating Scales. *Journal of Modern Applied Statistical Methods*, 6(1), 21-29. <https://doi.org/10.22237/jmasm/1177992180>

## 8 Appendices

### Appendix 1: Published phenomenology of visions paper

Received: 6 June 2024 | Accepted: 29 September 2024

DOI: 10.1111/paps.12553

#### RESEARCH ARTICLE



## Visual hallucinations in psychosis: What do people actually see?

Charlotte Aynsworth<sup>1,2</sup>  | Felicity Waite<sup>3,4</sup> | Samuel Sargeant<sup>5</sup>  |  
Clara Humpston<sup>2</sup> | Robert Dudley<sup>1,2</sup>

<sup>1</sup>Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust, Newcastle upon Tyne, UK

<sup>2</sup>Department of Psychology, University of York, York, UK

<sup>3</sup>Department of Experimental Psychology, University of Oxford, Oxford, UK

<sup>4</sup>Oxford Health NHS Foundation Trust, Oxford, UK

<sup>5</sup>Department of English Literature and Creative Writing, The Open University, Milton Keynes, UK

#### Correspondence

Charlotte Aynsworth, Research and Development, Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust, St Nicholas Hospital, Gosforth, Jubilee Road, NE3 5XT, Newcastle upon Tyne, UK.  
Email: [charlotte.aynsworth@cnrw.nhs.uk](mailto:charlotte.aynsworth@cnrw.nhs.uk)

#### Funding information

National Institute for Health and Care Research; National Institute Health and Care Research (NIHR), Grant/Award Number: NIHR302871; NIHR Applied Research Collaboration (ARC) North East and North Cumbria, Grant/Award Number: NIHR200173; Wellcome Trust, Grant/Award Number: 102176/B/15/Z

#### Abstract

**Background:** One in three people with psychosis experience visions. However, little is known about what people see, and current treatments have limited benefits.

**Objectives:** To improve the understanding and treatment of visions, this study explored the phenomenology of visions in people with psychosis.

**Methods:** Twelve people with psychosis participated in semi-structured interviews. Reflective thematic analysis was used.

**Results:** Three main themes were generated covering important aspects of phenomenology: 'Content', 'Coherence' and 'Quality'. The first theme 'Content: People see people', demonstrated that the most distressing visions were of people. The second theme 'Coherence: Visions of people who behave like people', captured how visions were coherent with real human behaviour, often by being multimodal experiences that spoke to and touched the observer. The third theme, 'Quality: They look too real' highlighted the compelling sense of authenticity of the visions, making them indistinguishable from reality.

**Conclusion:** Visions represent what we expect to see in everyday life: people, who act and look real. This powerful combination provides insight into the absorbing and all-encompassing nature of visions and their impact on participant's lives. The framework of 'Content', 'Coherence' and 'Quality' provides guidance to support clinicians and researchers to better explore the phenomenology of visions in psychosis.

#### KEYWORDS

psychosis, qualitative analysis, reflexive thematic analysis, visions, visual hallucinations

This is an open access article under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Author(s). *Psychology and Psychotherapy: Theory, Research and Practice* published by John Wiley & Sons Ltd on behalf of The British Psychological Society.

## INTRODUCTION

Visual hallucinations, also known as visions, are the experience of seeing something in the absence of external stimuli (Waters et al., 2014). They are common in people with psychosis; the experience when people lose some contact with reality (National Institute of Mental Health, 2023). Approximately one in three people with first episode psychosis experience visions (Allen et al., 2023) and may be even more common in those who also report auditory hallucinations (Dudley, Watson et al., 2023). When present, visions are associated with significant clinical consequences, including more frequent and prolonged hospital admissions, greater likelihood of suicide (Baethge et al., 2005; Mueser et al., 1990; Oorschot et al., 2012), impaired functioning and greater symptom severity (Kreis et al., 2024). Yet currently, there is a lack of effective treatment for visions (Collerton et al., 2005; Thomson et al., 2017; Wilson et al., 2015). One route to produce more helpful psychological therapies is to first ensure a close and detailed understanding of the unique features and mechanisms that contribute to a specific problem (Clark, 2004). This approach has been successfully applied to other experiences reported by people with psychosis, for example persecutory delusions (Freeman, 2016; Freeman et al., 2021). However, such an approach is yet to be applied to visions.

To date, there has only been a limited number of studies exploring the phenomenology of visions, which have largely used quantitative measures. These found that typically people reported seeing humans, faces or figures with fewer seeing animals and objects (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005). This work also found that visions in psychosis are most likely to be multimodal experiences. Visions can also talk to and touch the person experiencing them (Dudley et al., 2018; Dudley, Watson et al., 2023; Hoffman & Varanko, 2006). Whilst informative, the quantitative measures commonly used in research often only ask a limited number of questions on visions (Aynsworth et al., 2017), which lack detailed exploration of these experiences, or include questions that are overly sensitive or too specific which can over- or under-estimate people's experience of visions (Aynsworth et al., 2023). Thus, there is still a crucial lack of phenomenological description and understanding of visions.

Therefore, a necessary first step to improve the understanding and treatment of visions is to learn from first-hand accounts of the experience. In this study, we used semi-structured qualitative interviews to gather detailed descriptions of the phenomenology of visions. We wanted to address the research question: 'What do people with psychosis who have visions actually see?'

## METHOD

### Design

A Big Q qualitative design was used (Kidder & Fine, 1987). A Lived Experience Advisory Panel (LEAP) helped to design the study and contributed to the interpretation and understanding of the findings. This study was approved by the NHS Health Research Authority (HRA) Newcastle and North Tyneside 1 Research Ethics Committee (reference: 21/NE/0099).

A critical realist ontological approach was taken to this research. This assumes that whilst there is one shared reality, peoples' perspectives of this are influenced by language, culture, and life experiences, meaning that the 'true' reality is only partially accessible (Clarke, 2021). A contextualist epistemology underpinned this position, which believes that humans act in context, and that they cannot be separated from the lives in which they live (Braun & Clarke, 2021). Within this stance, data collected does not represent a 'true' reality. Instead, researchers' subjectivity can be used to generate themes and understandings, which will be influenced by their own experiences and biases. Therefore, maintaining reflexivity is essential throughout the analysis.

## Participants

A criterion-based purposeful approach was taken to form the participant group (Palinkas et al., 2015). This was based on the following inclusion criteria: (a) current experiences of visions defined as 'visual perception-like experiences that occur without an external stimulus. They are vivid and clear, with the full force and impact of normal perceptions, and not under voluntary control' (American Psychiatric Association, 2013), (b) have a psychosis spectrum diagnosis (e.g. F20-F29 as classified in the ICD-10), (c) receiving care within an NHS mental health team, (d) aged 16 years or above and (e) willing and able to provide informed consent.

Exclusion criteria were: (a) visions only when under the influence of drugs or alcohol, (b) visions only when on the borders of sleep, i.e., hypnagogic/hypnopompic hallucinations, (c) visions that are only fleeting or rarely occur so a detailed interview would not be relevant, (d) significant brain injury or neurological condition, including dementia, to ensure that visions are unlikely to be a result of this, rather than psychosis or (e) moderate to severe learning disability meaning it could affect the capacity to provide informed consent.

Participants were recruited from NHS psychosis services in the North East of England.

## Procedure

The topic guide (Data S1) was developed in collaboration with people with lived experience, existing literature, and consultation with researchers in this field. The LEAP ensured the topic guide explored people's experiences of visions in an open and curious way. Whilst questions and prompts were included in the topic guide, it was used flexibly to respond spontaneously with questions or responses to each participant's narrative. Where people had more than one type of vision, the interview focused on the vision that they felt was most distressing or important to gain the most comprehensive understanding of their experiences.

Potential participants were initially approached by a member of their clinical team. Those interested were then contacted via phone to arrange a screening with a Clinical Psychologist, trained in qualitative research (CA). During which the Participant Information Sheet was shared and participants were given the opportunity to ask questions. If willing, an interview was then arranged and conducted by CA. Written informed consent was given prior to participation. This included consent to the use of pseudonymised quotes. Interviews were audio-recorded on an encrypted dictaphone, and then transcribed verbatim and pseudonymised. Participants were able to choose their own pseudonyms.

## Reflexive thematic analysis

Braun and Clarke's six-phases of analysis (Braun & Clarke, 2006) were used iteratively to ensure thorough data exploration. First, CA familiarised herself with the data, by transcribing the interviews, reading and re-reading the data whilst making initial notes. Initial codes were then generated, by reviewing the data several times. This then allowed CA to generate themes, collating all data relating to each of them in Nvivo 12 (QSR International Pty Ltd, 2021). Themes were reviewed in supervision and with members of the LEAP, then re-reviewed, generating several thematic maps to consider how best to convey the meaning of the data. Subsequently, themes were then defined, named, and ordered appropriately to reflect a narrative representative of participants experiences. An example of this iteration was that initially a theme of 'Multimodal experiences' was generated, which involved descriptions of the different multimodal (hallucinations occurring in different domains but seeming to originate from the same source) and multisensory hallucinations (hallucinations occurring in separate domains that were not from the same source; Toh et al., 2022). However, reporting in such a descriptive way missed the crucial element of how and why multimodal hallucinations particularly impacted on people and caused greater

distress. Instead, on reviewing with the LEAP and supervisory team, what emerged was that what was most important in the accounts is that multimodal experiences were the most coherent with how real humans are experienced. We subsequently then removed the aspects of multisensory from the theme, as this told us less about the phenomenology of people's visual experiences and instead how they appraise their hallucinations more generally. Another example of the impact of the LEAP in analysis was the adaptation of Table 1. Initially, this had included participants demographics alongside a brief summary of what their visions were. However, this felt reductive of people's true experiences. Considering both participants and the LEAP members were passionate for people to truly understand their experiences, it was felt that using quotes as descriptions achieved this better as they captured much more detail of to what people's visions were really like. Given the descriptions used, we removed demographic information to help ensure their anonymity.

### Reflexivity and considerations of data quality

Reflexivity "involves a disciplined practice of critically interrogating what we do, how and why we do it, and the impacts and influences of this on research." (Braun & Clarke, 2021, p. 5). To conduct high-quality analysis, it is essential to understand the researchers own perspectives (Elliott et al., 1999). To aid this, CA first engaged in a bracketing interview to help elicit values, assumptions, and biases prior to the interviews. This was supported by CA keeping a reflexive journal noting her reflections with regards to both conducting the interviews, and throughout the analytic process. To further reflect on subjectivity, coding and themes were regularly discussed and refined in supervision with FW and RD and with peer researcher SS, who has relevant lived experience, where different insights or perspectives were considered. The COREQ guidelines were also followed to support quality assurance (Tong et al., 2007; See Data S1).

In line with Braun and Clarke's (2021) ownership of subjectivity, the following statement is written in first person. I am a White British cis-gendered female working as a Clinical Psychologist. I have specialised in working in a range of services delivering therapy for people with psychosis. This has influenced my position to believe that psychosis (and therefore visions) is largely impacted by people's life experiences and cultural context. Subsequently, I believe that peoples experience of psychosis and visions have important meaning for each individual and are not simply a symptom of a psychiatric disorder. The research team are experienced in developing and delivering psychological treatments for distressing psychotic experiences, with RD and myself specifically exploring visions within our research. Equally, SS along with lived experience also explores historical accounts of visual hallucinations from the medieval period onwards. Therefore, our knowledge will have influenced the current analysis (Braun & Clarke, 2021). However, we hope that the inbuilt quality considerations enabled us to recognise researcher subjectivity, whilst remaining open minded and curious to participants narratives and the subsequent data analysis presented below.

## ANALYSIS

### Contextualising the data

Thirteen people were approached for the study. One person declined to be screened. Twelve participants took part (8 male and 4 female; mean age 38.1 years, SD = 10.9 and range 22–58). Seven participants were from Early Intervention in Psychosis teams, four from Community Mental Health Teams, and one from an Inpatient ward. Most participants were diagnosed with Psychosis NOS ( $n = 8$ ), three with schizophrenia and one with schizoaffective disorder. All but one of the participants were White British. Eight interviews were conducted at clinical bases and four at participant

TABLE 1 Brief descriptions of participants' visions.

| Participant | Content of visions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sarah       | "I see [deceased friend]... I see her as a normal person... I seen her clear as day and I was hearing her clear as day, like she was sitting right beside us... When she talks to us, it's very, very negative. Telling us to hurt meself, telling us to do things... It's not like I can look through her, it's not an outline of a person. It's actually like I'm looking at you."                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Mick        | "I'll have full on visions of people. I always see a man in the corner of me room. It was only ever when I was going to bed at night. Just literally like sought of stood there and stared. He's not like someone I recognise or anything like that. I can tell it's a man. He's quite big. You can see shoulders, y'know when you breathe and move up and down slightly. But no face, no hair, just like bald... it's as clear as you sat in front of me now."                                                                                                                                                                                                                                                                                                                                                                                         |
| Emily       | "I was seeing people like walking through the garden, hiding, banging on the window, as if trying to like break in and smash the window or something like that... sometimes I can make out a face, sometimes it's like I almost recognise the person... other times there's like no face – I can see clearly they've got the marks of a face but there's no mouth, there's no eyes, it's just like holes."                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Emily       | "I see mannequins. Sometimes they're dressed, sometimes they're naked. They're tall, discoloured like pale, sometimes they don't have facial features, sometimes they'll have facial features, like when I say facial features I mean like the eyes, the nose, everything you'd see on a human body I see there. It's a human face on a mannequin. There's no distinguishing sometimes if it's a male or a female. It's just a mannequin. They're always still in one position. Sometimes they're silent, some of them don't say anything, they just appear but then it's just distressing because they'll say things like, "Put cyanide in your mums tea, go on, do it, do it, hurt yourself", which I try not to listen to. I can feel the breath in my inner ear. It's like somebody licking the insides of my ear."                                 |
| Felix       | "I see snakes. Big ones, erm, very long ones. I see them everywhere and they're just like crawling."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Felix       | "[I see] a man in a grey t shirt always walking past the window. All I can see is his blue pants and his grey t shirt and [he] kind of hasn't got a face. It's like a shadow, dark and black. It hasn't got any visual looks... He just walks past slowly."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Scarlett    | "Then I seen kids at the bottom of my bed... I used to hear, you know like when you can hear a school playground in the background, I was hearing that and obviously I was lying in bed and kind of waking up, they were there."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Scarlett    | "I seen like a lot of shadows, like in the corner of me eye, like just kind of moving. But me most recent ones flies, and rats, and mice in me house."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Scarlett    | "[I see] things that I recognised and things that I'd never seen before like the children with no eyes or the black mass, kind of like a human but not. Just imagine like the darkest shadow you can have, the body's like an oval and it's got a round head and it's in the foetal position, but on all fours rather than at the side. It's like stretched like stretched out. It's like malformed but you can see the shape of the head, and then it can kinda like spread to try and feel the wall... But it's just so black... If I do choose not to ignore it, it normally brings on the tactile hallucinations where I feel itchy and like my skins on fire... I feel like there's ants crawling and it will get really hot and itchy and sometimes it feels like stuff behind my eyes as well. As if it's like almost forcing us to look at it." |
| Tony        | "Sometimes I see, like, figures, shadowy figures sometimes they're a little bit more fleshed out than that. Sometimes, I see deformed creatures, deformed babies, hybrid animals sometimes I see a mix between a man and a dog, which is quite negative and harmful and vicious, erm, other times I just see something – I just thought my [child] was there and [they] wasn't."                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

TABLE 1 (Continued)

| Participant | Content of visions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | "I see this guy who looks like he's been burnt, he's a prominent one at the moment. He tends to hang about in me [child's] bedroom or the landing of the house. He doesn't speak but the voices I get will speak, are commenting on him. I never see his face 'cause he's burnt there, so you see some eyes, he's got some black shit around his face, like black burns. He seems to come out of me kids wardrobe, he seems to live in there, he just walks past us, mainly at night, and he will just go to the other side of the room."                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Rodney      | "The weird person I see is called [famous person]. He looks like him, I smell the smell [of rotten vegetables] before I see him and that's how I know when he's going to appear, ya kna. I just kna he's gonna bring us down and call us names 'Ah you're useless, you should have done this, you should have done that.'"<br><br>"I've seen dogs as well. I smell that first and then I can look down, and I can feel it moving around my legs, ya kna, woving in and out, what they do. And I think, 'My god, who's dogs that?'"                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Kyle        | "I see evil clowns. They're opaque. So, it's exactly the same as me and you. I seen them [the clowns] in the street, but I mostly see them behind the windows. So, if I move back from the window, they've got their hands pressed on the window... They speak to me also... They tell me to kill people. Also calling me names, saying they're going to kill my family."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Joseph      | "[Famous person] drove past me. And then from that point onwards, I then began to see there was just like stream after stream after stream of famous people driving past me. Just anybody and everybody. It could have been, let's say about 200 hundred people driving past me... It's famous people and people connected to my life... Some people drive past and I smile and give them a little joke and something, and some people would drive past and belittle [me]... It was all real to me at the time, they all seem real."                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Lily        | "I see my [past abuser] obviously. He's dead now, but I see him... He started to threaten me, and he kept saying, 'See I told you you'd never get rid of me'... he touches me whenever he goes passed, he will either pull my hair or run his hands down my face and my neck... He's just the same as like you and I talking. I can see him the way I can see you."<br><br>"I see dead people with half a face."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Yogi        | "All different kinds [of people] – mostly the military. I see kids, I see men, women, wounded people, upset people, happy people, it all depends. But most of them are the military who have been shot or even worse. Missing limbs. Blood all over their faces."<br><br>"[I also see] just random people that I don't know, I've never seen. They just stand there, staring at us either smiling, laughing. Or I'll have some ones that are crying. They'll have the facial expression, they'll point at ya, shake their head like you're doing something wrong."                                                                                                                                                                                                                                                                                                                                                                                                             |
| Liam        | "It can vary. It can be completely different. Setting things alight in the house, when I've been sitting watching TV if I've had clothes drying on the radiator, me clothes will combust and go up in flames but the description of the actual flames are not real, they're almost cartoon-like. The same car will go past, what 20 times but the best way of describing them is a cartoon style flat non-dimensional car, so it just looks like a cardboard cut-out, so there's no shape or any sort of dimensions to it, it just a flat."<br><br>"There was a vision of me, of what I was wearing that afternoon, a vision of myself on fire. Flames coming off me back. The best way of describing it was a holographic type image, like a CCTV image of myself being replayed over and over, a loop on repeat, of me shouting... the image itself was that convincing, I think I convinced myself that it actually was happening, being visually replayed in front of us." |

(Continues)

homes. Interviews were on average 81 min (SD = 13:58; range 57–101 min). See Table 1 for content of people's visions.

## Overview of analysis

Three main themes were generated and covered key phenomenological aspects of visions: content, coherence, and quality. The first theme 'Content: People see people' described how participants typically saw visions of humans or human-like beings. This included two subthemes: (i) 'Links with the past' highlighted that visions can relate to participants earlier, often traumatic, life experiences in both direct and thematic ways and (ii) 'Uncanny Valley' identified that whilst visions typically took the form of someone with a human body, there was often a distinct feature or odd quality that identified the vision as not a real human. The second theme was 'Coherence: Visions of people who behave like people', which acknowledged that people's visions often shared dynamic human-like qualities, which added to their compelling nature. This included a subtheme of 'Coherence mirrors mood' explaining how such coherency often fluctuated with participants moods. The final theme was 'Quality: They look too real'. This captured the real-life perceptual quality of the visions, and the implications of this.

## Theme 1 – 'Content: People see people'

This theme describes the main content of the visions that participants reported seeing was people. Table 1 shows that a range of experiences were reported including animals, insects, or fleeting shadows, but the most distressing or important for participants was seeing people. These experiences seemed to be more distressing, and impactful on participant's lives, as they were much harder to ignore.

Some participants recognised the person they saw. This could be people from their past, famous people, or even people from their nightmares. Whilst for others, the people in the visions seemed unrelated and unknown.

He looks like [famous person] and he wears black clothes and all black jacket. He's all dressed in black...I just sit on the sofa and he stands up, he never sits down or anything. He just stands there and he paces.

Rodney

Just random people that I don't know, I've never seen. I've never seen on movies, never seen on the telly. Just random people. They just stand there, staring at us either smiling, laughing.

Yogi

The context in which people reported visions was important to the content. When visions of people were seen in participant's homes, they had developed into more of a 'character' or a personified entity with an energy or personality which could stay for prolonged periods of time. Such visions were in some way 'fixed' to a certain place (predominantly their homes), whereas in comparison when outside of their homes, the participants often experienced a random mix of unknown people, that were more fleeting.

Each person or whatever I see, it's like they're locked in the place that I see them. So 'The Man' is only ever in the bedroom. I don't see any of the others in the bedroom. All of the others will be in the garden.

Mick

[Famous person] was at my last home I was in as well, but I never seen him out in the open or in the daytime or out walking, it's always in the house that I see [him].

Rodney

### Subtheme 1 – 'Links with the past'

This subtheme reflects how visions often resembled past, and often traumatic, life experiences. Despite not directly asking people about life experiences, traumatic experiences were often discussed. Participants spoke of having struggled throughout their lives. This related to visions in three ways. First, visions could be directly linked to past life experiences, which participants could often also recognise, such as seeing the vision of a person who was related to a traumatic event.

I see the older version of [past abuser]. The one I see more clearly is the older [version of abuser], but the younger [version of the abuser] is the one that strangles me. He's the one I see in the morning, with his hands around my throat. I can see the hate in his eyes, it's like he's soulless, there's no soul.

Lily

Second, there were instances where the link was not obviously direct but rather there were thematic links between the visions in the present (such as how the visions made the participant feel) and how the participant felt during past traumatic life events. However, these links were not always obvious to the participant, but instead were more so to the researcher throughout the analysis.

Sometimes, like, at first my reaction was to like cowl and turn – not be like friendly, not to be accepting of the person driving past me – to see it as a humiliation... you know, like going back to the [birthplace] experience when I was very young, I was absorbing that material as a reaction to the people driving past me. ...Yeh, it triggered me back to that kind of personality self that I've kind of brought in those early years.

Joseph

Third, there could be an association between the time of adversity in participants lives and the visions in the present.

This was about the time I was getting bullied. I would have weird kind of nightmares. There used to be like a little like vent thing above the door... There were nothing there, I don't know why it was there, but I used to have nightmares about a faceless man looking through at us whilst I was sleeping and sometimes I'd wake up and I'd see the face there. Only for a second whilst, you know, your brain realises and your eyes realise that you're awake, but when I think about it, the kind of face there with just skin but like no, no eyes or mouth or anything like that, that is very similar to what I see [now]. It's almost like 'The Man's' a grown-up version of that.

Mick

## Subtheme 2 – ‘Uncanny Valley’

The second subtheme relates to the ‘Uncanny Valley’ effect (Mori, 1970), which explains how objects that bear resemblance to humans, but lack fundamental human qualities, can provoke feelings of eeriness and repulsion. Whilst participants reported seeing humans, they often lacked specific features or had a distinguishable quality that highlighted that the vision was not a real human, which was often puzzling or unsettling for them. The missing human element varied, such as a bodily feature (often eyes or face) was missing or dismembered, the clothing worn was from a past era, or the vision embodied a caricature of a human such as clowns or mannequins.

I can tell it's a man. He's quite big. You can see everything...But no face, no hair, just like bald...No features whatsoever...It's as if I'm seeing three quarters of it and the rest hasn't loaded.

Mick

These figures just had no face, flesh coloured, no clothes, no face, nothing identifiable as a human apart from the physique.

Tony

They weren't like kids were dressed now, like. They were kind of dressed as World War 2 type people. So, like, they have faces and stuff, like little boys and girls and they were just playing around. They were dressed like old fashioned so I was kind of thinking ‘Why would they be dressed like that?’

Felix

I see evil clowns. They've got big fuzzy orange hair. Quite plumpish. Snakes eyes, you know how it's horrible. In blue dungarees, face paint, red nose, sharp teeth. Sometimes, I'll see them walking down the street or hiding behind a bush, but mostly it's behind the window.

Kyle

## Theme 2 – ‘Coherence: Visions of people who behave like people’

The second theme generated describes how the visions were very much like real humans owing to their human-like qualities and the way in which they behave. This was often due to their multimodal nature, whereby peoples' visions often involved different sensory modalities, such as being able to touch or talk to the person, which added to the visions compelling realness.

He will pull at me, or I'll feel his hands around my neck, he touches me whenever he goes passed. He would just grab me, smack my face off the door. I felt his whole hand on my back push me down the stairs...He calls me every name under the sun.

Lily

I would score the mannequins as being the most distressing because when they speak the like hairs on the back of my neck just stand up, it's like I've been electrocuted, it's like being

fully wired to a telephone pole...It's the fact they speak. It's the fact I hear the voice and that's distressing.

Emily

### Subtheme 1: Coherency mirrors mood

This subtheme reflects how the level of coherence was often dynamic. It often varied depending on participants' mood; with visions often becoming more coherent when low in mood. Several factors contributed to this: the multimodality and content of visions, their behaviour, and the duration they were present. When feeling low, the visions were more likely to be multimodal, such as the visions were more likely to speak and touch the participants. The content could also change when low in mood, with the visions saying more derogatory or insulting comments in a more aggressive nature to the participants, such as by shouting at them. The visions' behaviour would also appear more negative and aggressive such as intruding into people's personal space, grabbing the participant, or staring in an intimidating way. And finally, when participants' mood was low, the visions would stay present for longer periods of time. Such factors added to the coherent nature of visions making them more believable. In comparison, when feeling calmer, participants experienced the visions as less multimodal, so the visions would speak less or not at all, and their behaviour was less aggressive. Participants found this less distressing, therefore, enabling them to manage their visions more effectively.

Well, sometimes she talks to us when she's there, when I can see her...when she talks it's very negative. A lot of the time it's when I'm really, really low and I'm feeling really low about myself.

Sarah

### Theme 3 – 'Quality: They look too real'

The final theme generated was in relation to the perceptual quality of how the visions appeared to participants. Visions were not fleeting images in the corner of their eye or vague shadows. Instead, they had a compelling sense of reality in that visions shared the same level of perceptual detail, clarity, intricacy and depth as real people or objects. Such complexity and vividness of the visions, combined with the coherency of these, seemed to make the visions all-absorbing, whereby participants reported finding it almost impossible to disengage their attention.

These visions have always been very real to me, they're as real as you to me sitting [there], I could be touching you and it would feel like I'm touching a human, so they're not something like smoke when you put your hand through it, it disappears. They're very physical and they're very real.

Emily

[When paying them attention] they become more real. They're real already but they become more outlined. Like my whole attention on them, they seem like everything's going blurry but them [the visions]. It's like when my whole attention on them, nothing else matters 'cause all my attention goes on them. 'Cause I want to know if they're actually real or not.

Yogi

It's like watching a car crash, d'ya know what I mean? You can't look anywhere else. You just like absolutely locked onto it, like. You feel like you wanna run away and hide from it. But you can't take your eyes off it.

Mick

Consequently, owing to such difficulty discerning if visions were real or not, participants struggled to trust their own eyes. Understandably this had a detrimental impact on participant's lives, with them discussing being unable to leave their homes owing to a fear of being overwhelmed, acting inappropriately or being judged by others.

*Yogi:* "That's why I don't like being around people, I don't like going out anymore 'cause I don't know who's real and who's not. If I go out – me mate normally says 'Are you coming to [restaurant] or a drink at the pub?', I'll just back down straight 'No'. 'Cause the last time I went in, I saw visions all over the place."

*Interviewer:* "What happened then?"

*Yogi:* "I had to go home. In a bar full of people. Real people and you're seeing even more people that aren't even there. Then other people start looking at you going, 'What's he looking at?'. Just doesn't feel right."

I get really paranoid that people are staring at us and because I don't want them to. I don't know if it's going to be real or not like cause the man I saw, who [partner] didn't see. I don't know if he was just a man that left [the area] or if it was someone I was just seeing. Because [partner] should've seen him by the direction of where he was looking, so I don't like it when that happens so I try and avoid it. I don't want to go out and have a conversation with someone and my partner goes, "Who are you talking to?"

Scarlett

## DISCUSSION

To our knowledge, this is the first qualitative analysis exploring the phenomenology of visions in people with psychosis. Twelve participants provided rich accounts of their visions, demonstrating the incredible intricacy and intensity of these experiences. The three themes generated highlighted the content, coherence, and quality of visions. Typically, visions represented what people would expect to see in the everyday world: people, who behaved like people (such as having the capability to talk to and touch participants, increasingly when participants were in lower moods as if mirroring their feelings) and looked like humans (shared the same perceptual qualities as real living people). This powerful combination of content, coherence, and quality provides an important insight into how the complexity and vividness of visions contribute to their compelling sense of reality.

These findings are consistent with previous research which found that participants most commonly see people (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005), and that these are often multi-sensory and/or multi-modal experiences (Dudley et al., 2018; Dudley, Watson et al., 2023; Hoffman & Varanko, 2006; Toh et al., 2022). Yet our study provides much more detailed descriptions of precisely what people see, how the vision behaves and how they appear to the observer. Our findings support the notion that visions are seemingly much more complex, multi-modal experiences that can interact with people. They are not silent or static images that can be easily dismissed. Such findings provide insight into why visions can be so distressing and impactful on people's lives (Baethge et al., 2005; Chouinard et al., 2019; Mueser et al., 1990; Oorschot et al., 2012).

Furthermore, whilst not specifically asked about, we found that participants spontaneously spoke about how their visions were related to important (often traumatic) experiences in their lives. As with

auditory hallucinations (Hardy et al., 2005), visions seem to have direct content and thematic linkage with adversity and meaningful events. Emphasising that the content or experience of visions is meaningful in the context of the person's life.

In terms of theoretical understanding, the Predictive Processing Framework (PPF; Friston, 2009) could explain seeing visions that represent what we might expect to see in our social world. PPF suggests that perception is an unconscious process which combines sensory data from the environment with prior beliefs (or expectations) about the world. Therefore, hallucinations may arise by an "over-weighting of prior beliefs relative to sensory perceptions" (Kafadar et al., 2020). As social creatures, we are primed to see dynamic people; static/silent humans are less usual, which could lead the brain's expectations to override perception to make the visions more multimodal in content. The relationship of visions to past trauma and the increasing levels of coherency when people were low in mood (as if the visions were mirroring their moods) could also be explained by this theory (Lyndon & Corlett, 2020) – whereby difficult life experiences (both day to day and past) influence people's expectations and biases to an extent which are difficult to undo. Hence such prior beliefs can override, or even ignore, other sensory data and lead people to see more distressing negative content or people from their past trauma in their visions. However, discussions with the LEAP questioned the reliability of the PPF to explain visions. Whilst there was an acknowledgement that predictive processing likely plays a function in all of our perceptions and can lead to misperceptions at times, it lacks sufficient detail to provide explanations as to how people's visions could be so vivid, complex, and prolonged in duration. In the absence of acceptable or convincing explanations, patients with psychosis have described engaging in a process of meaning making (Aynsworth et al., *in prep*). From a cognitive perspective, appraisals are central to determining the impact of experiences (Beck, 1976). Working with appraisals is a key part of cognitive therapy approaches to voices (Morrison, 1998) and visions (Collerton et al., 2005; Thomson et al., 2017; Wilson et al., 2015). Therefore, there is an opportunity for further development of cognitive approaches to visions drawing on the phenomenology outlined here to help make sense of (or appraise) people's experiences. For example, seeing visions of people that look and behave like real people (i.e. the coherence and quality of the phenomenon) could provide insight as to why people may appraise their experiences as real people and are therefore difficult to dismiss. Further to this, an interaction between mood and the phenomenology of visions was described: when participants were lower in mood, visions would present as more negative or aggressive in their behaviour, which could offer an understanding as to why visions are often appraised as threatening (Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2005).

## Limitations

There are several limitations to the study that need to be considered. First, the sample was predominantly White British which reflects the demographics of the North-East of England where the study was conducted (94% White British according to the latest census; Office for National Statistics, 2022) and who access local mental health services (83.7% White British; Campbell-Lee & Cohen-Tovee, 2023). However, given the findings relating to past experiences and social context influencing the content of visions, we expect there may be differences with a more diverse participant group, especially given the inequalities and discrimination that different ethnic groups can face (Equality and Human Rights Commission, 2016; Runnymede Trust, 2021). This is of particular importance given the overrepresentation of people with psychosis from ethnic minority groups (Baker et al., 2021; Selten et al., 2020). Second, this study focused discussions on the most important or distressing visions that people wanted to talk about. However, many people do not find visions problematic (Aynsworth et al., 2023; Linszen et al., 2022). Therefore, such findings may not apply to those who are less distressed by their visions, for example people in the earlier stages of psychosis (Dudley, Denton et al., 2023) or older adults where visions are typically unimodal (Dudley et al., 2018). However, the limited work to date has shown similarities between non-clinical and clinical groups in terms of content of what is seen (people, faces). Third,

this study explored visions in people who were able to provide rich detailed accounts of their visions. A greater range of phenomenology may be experienced which has not been captured here.

Future studies investigating different populations and experiences would be helpful to extend our understanding of visions. For example, phenomenology of visions may differ between people diagnosed with psychosis and people diagnosed with other conditions such as eye disease or dementia, where there is an indication that visual hallucinations may be more unimodal (Dudley et al., 2019). Alternatively, given our results are consistent with the work indicating an important role for trauma in psychosis (Dudley, Turkington et al., 2023; Shevlin et al., 2007; Varese et al., 2012), especially in those with visions (Solevik et al., 2016), it would be helpful to consider if different types of trauma may lead to different phenomenology of visions.

## Research and clinical implications

The findings provide a framework to guide both clinical and research questions through three important areas: the content, coherence, and quality of visions. First, to ensure visions are accurately assessed, better assessment tools, including psychometrically robust measures, are required. This framework could also guide questions during clinical assessments. First, clinicians could explore the detailed content of what people see. This could identify links to past trauma or identify any unique qualities of the visions which could identify this as a vision compared to a real person (such as through the Uncanny Valley effect). Second, clinicians could consider the coherency of their visions such as exploring multimodal aspects of these, and how the visions can change depending on a person's mood. Third, the quality of experiences could be explored to gain more understanding of how the visions physically appear to the person and how that may impact people's reactions to this. By capturing more comprehensive information about visions, it could support the delivery of core therapeutic principles in clinical care, such as normalising and empathy to reduce internalised stigma (Aynsworth et al., *in prep*; Renouf et al., 2018) and enhance therapeutic alliance (Goldsmith et al., 2015). More specifically, targeted techniques could be developed from this learning. We noted the 'Uncanny Valley' observation that visions often lacked a human quality, which people found distressing. However, such discrepancies could in turn be used to generate doubt and help to test if the vision is real or not, which could foster more helpful coping. E.g. if the vision is missing eyes or a mouth, then it could be used to consider the coherency of the experience. This could be a route to help meet the need for acceptable and convincing explanations of visions that patients are seeking (Aynsworth et al., *in prep*).

## CONCLUSION

Traditionally visions have been viewed as fleeting, unimodal experiences, which lack perceptual clarity. However, the first-person accounts in this study indicate that visions are much more complex, vivid, and absorbing experiences which share the same perceptual qualities as other humans or objects in the everyday world. We provide a framework to support clinicians and researchers to ask about people's visions: to explore the content of what people see, enquire about the coherence of the visions, and consider the perceptual qualities of these.

## AUTHOR CONTRIBUTIONS

**Charlotte Aynsworth:** Conceptualization; data curation; methodology; formal analysis; project administration; writing – original draft; writing – review and editing; visualization; resources. **Felicity Waite:** Conceptualization; methodology; validation; supervision; resources; visualization; writing – review and editing. **Samuel Sargeant:** Conceptualization; methodology; resources; writing – review and editing. **Clara Humpston:** Writing – review and editing. **Robert Dudley:** Conceptualization; methodology; resources; supervision; validation; visualization; writing – review and editing.

## ACKNOWLEDGEMENTS

First, we would like to thank the participants for being so honest and brave in sharing their stories. We would also like to thank the LEAP who have provided invaluable feedback throughout the study. We would also like to thank Lucy O'Grady for her support transcribing interviews. C.A. was funded by the National Institute Health and Care Research (NIHR) Doctoral Clinical and Academic Practitioner programme (NIHR302871). Previously, C.A. was supported by the HEE/NIHR Pre-doctoral Bridging Scheme. C.A. and R.D.'s time on the project was also funded by the NIHR Applied Research Collaboration (ARC) North East and North Cumbria (NIHR200173). F.W. was supported by a Wellcome Trust (102176/B/13/Z). The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

## CONFLICT OF INTEREST STATEMENT

R.D. declares royalties received for workshops on the topic of visual hallucinations and their treatment. C.A., F.W., S.S. and C.H. have no conflicts of interest to declare.

## DATA AVAILABILITY STATEMENT

The data will not be made available as they contain highly personal, and potentially identifiable information and the right to share this information was not part of the consent procedures.

## ORCID

Charlotte Aynsworth  <https://orcid.org/0000-0002-2183-8203>

Samuel Sargeant  <https://orcid.org/0000-0002-7661-5488>

## REFERENCES

- Allen, S., Goodall, T., Jones, C., James, R., & Surtees, A. (2023). What is the prevalence of visual hallucinations in a first-episode psychosis population? A systematic review and meta-analysis of the literature. *Schizophrenia Bulletin Open*, 4(1), sgad002. <https://doi.org/10.1093/schizbullopen/sgad002>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Association. <https://doi.org/10.1176/appi.books.9780890425596>
- Aynsworth, C., Collerton, D., & Dudley, R. (2017). Measures of visual hallucinations: Review and recommendations. *Clinical Psychology Review*, 57, 164–182. <https://doi.org/10.1016/j.cpr.2017.05.001>
- Aynsworth, C., Dudley, R., Sargeant, S., Humpston, C., & Waite, F. "I just want an explanation": A qualitative investigation of how people make sense of visual hallucinations in psychosis. [Manuscript in preparation].
- Aynsworth, C., Robinson, J., Perver, M., Collerton, D., & Dudley, R. (2023). What is the frequency and nature of visual hallucinations in non-clinical participants? *Psychology and Psychotherapy: Theory, Research and Practice*, 36(2), 281–295. <https://doi.org/10.1111/papt.12440>
- Baethge, C., Baldessarini, R. J., Freudenthal, K., Streeruwitz, A., Bauer, M., & Bschor, T. (2005). Hallucinations in bipolar disorder: Characteristics and comparison to unipolar depression and schizophrenia. *Bipolar Disorders*, 7(2), 136–145. <https://doi.org/10.1111/j.1399-5618.2004.00175.x>
- Baker, S. J., Jackson, M., Jongsma, H., & Saville, C. W. N. (2021). The ethnic density in psychosis: A systematic review and multilevel meta-analysis. *The British Journal of Psychiatry*, 219(6), 632–643. <https://doi.org/10.1192/bjp.2021.96>
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. International Universities Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications Ltd.
- Campbell-Lee, D., & Cohen-Tovee, E. (2023). Ethnic groups equity of access population data analysis. <https://doi.org/10.13140/RG.2.2.15860.32641>
- Chouinard, V. A., Shinn, A. K., Valeri, L., Chouinard, P. A., Gardner, M. E., Asan, A. E., Cohen, B. C., & Öngür, D. (2019). Visual hallucinations associated with multimodal hallucinations, suicide attempts and morbidity of illness in psychotic disorders. *Schizophrenia Research*, 208, 196–201. <https://doi.org/10.1016/j.schres.2019.02.022>
- Clark, D. M. (2004). Developing new treatments: On the interplay between theories, experimental science and clinical innovation. *Behaviour Research and Therapy*, 42(9), 1089–1104. <https://doi.org/10.1016/j.brat.2004.05.002>
- Clarke, C. (2021). Foundations of qualitative research 2. Part 3: Key theoretical and philosophical concepts in qualitative research [Webinar]. YouTube. <https://www.youtube.com/watch?v=bgZuFmO9130&t=5s>

- Collerton, D., Perry, E., & McKeith, I. (2005). Why people see things that are not there: A novel perception and attention deficit model for recurrent complex visual hallucinations. *Behavioral and Brain Sciences*, 28(6), 737–757. <https://doi.org/10.1017/S0140525X05000130>
- Dudley, R., Aynsworth, C., Cheetham, R., McCarthy-Jones, S., & Collerton, D. (2018). Prevalence and characteristics of multi-modal hallucinations in people with psychosis who experience visual hallucinations. *Psychiatry Research*, 269, 25–30. <https://doi.org/10.1016/j.psychres.2018.08.032>
- Dudley, R., Aynsworth, C., Mosimann, U., Taylor, J. P., Smailes, D., Collerton, D., McCarthy-Jones, S., & Urwyler, P. (2019). A comparison of visual hallucinations across disorders. *Psychiatry Research*, 272, 86–92. <https://doi.org/10.1016/j.psychres.2018.12.052>
- Dudley, R., Denton, S., Mathewson, J., Perver, S., Aynsworth, C., Dodgson, G., & Barclay, N. (2023). Prevalence of multisensory hallucinations in people at risk of transition to psychosis. *Psychiatry Research*, 322, 115091. <https://doi.org/10.1016/j.psychres.2023.115091>
- Dudley, R., Turkington, D., Coulthard, N., Pyle, M., Gumley, A., Schwannauer, M., Kingdon, D., & Morrison, A. P. (2023). Childhood trauma in clozapine-resistant schizophrenia: Prevalence, and relationship with symptoms. *Schizophrenia Bulletin Open*, 4(1), sgad030. <https://doi.org/10.1093/schizbullopen/sgad030>
- Dudley, R., Watson, F., O'Grady, L., Aynsworth, C., Dodgson, G., Common, S., Day, B. A., & Fernyhough, C. (2023). Prevalence and nature of multi-sensory and multi-modal hallucinations in people with first episode psychosis. *Psychiatry Research*, 319, 114988. <https://doi.org/10.1016/j.psychres.2022.114988>
- Dudley, R., Wood, M., Spencer, H., Brabban, A., Mosimann, U. P., & Collerton, D. (2012). Identifying specific interpretations and use of safety behaviours in people with distressing visual hallucinations: An exploratory study. *Behavioural and Cognitive Psychotherapy*, 40(3), 367–375. <https://doi.org/10.1017/S1352465811000750>
- Elliott, R., Fischer, C. T., & Rennie, D. L. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British Journal of Clinical Psychology*, 38(3), 215–229. <https://doi.org/10.1348/014466599162782>
- Equality and Human Rights Commission. (2016). Healing a divided Britain: The need for a comprehensive race equality strategy. Equality and Human Rights Commission. [https://www.equalityandhumanrights.com/sites/default/files/healing\\_a\\_divided\\_britain\\_-\\_the\\_need\\_for\\_a\\_comprehensive\\_race\\_equality\\_strategy\\_final.pdf](https://www.equalityandhumanrights.com/sites/default/files/healing_a_divided_britain_-_the_need_for_a_comprehensive_race_equality_strategy_final.pdf)
- Freeman, D. (2016). Persecutory delusions: A cognitive perspective on understanding and treatment. *The Lancet Psychiatry*, 3, 685–692. [https://doi.org/10.1016/S2215-0366\(16\)00066-3](https://doi.org/10.1016/S2215-0366(16)00066-3)
- Freeman, D., Emsley, R., Diamond, R., Collett, N., Bold, E., Chadwick, E., Isham, L., Bird, J. C., Edwards, D., Kingdon, D., Fitzpatrick, R., Kabir, T., & Waite, F. (2021). Comparison of a theoretically driven cognitive therapy (the feeling safe programme) with befriending for the treatment of persistent persecutory delusions: A parallel, single-blind, randomised controlled trial. *The Lancet Psychiatry*, 8(8), 696–707.
- Friston, K. (2009). The free-energy principle: A rough guide to the brain? *Trends in Cognitive Sciences*, 13(7), 293–301. <https://doi.org/10.1016/j.tics.2009.04.003>
- Gauntlett-Gilbert, J., & Kuipers, E. (2005). Visual hallucinations in psychiatric conditions: Appraisals and their relationship to distress. *British Journal of Clinical Psychology*, 44(1), 77–87. <https://doi.org/10.1348/014466504x19451>
- Goldsmith, L. P., Lewis, S. W., Dunn, G., & Bentall, R. P. (2015). Psychological treatments for early psychosis can be beneficial or harmful, depending on the therapeutic alliance: An instrumental variable analysis. *Psychological Medicine*, 45(11), 2365–2373. <https://doi.org/10.1017/S003329171500032X>
- Hardy, A., Fowler, D., Freeman, D., Smith, B., Steel, C., Evans, J., Garety, P., Kuipers, E., Bebbington, P., & Dunn, G. (2005). Trauma and hallucinatory experience in psychosis. *The Journal of Nervous and Mental Disease*, 193(8), 501–507. <https://doi.org/10.1097/01.nmd.0000172480.56308.21>
- Hoffman, R. E., & Varanko, M. (2006). 'Seeing voices': Fused visual/auditory verbal hallucinations reported by three persons with schizophrenia-spectrum disorder. *Acta Psychiatrica Scandinavica*, 114(4), 290–292. <https://doi.org/10.1111/j.1600-0447.2006.00791.x>
- Kafadar, E., Mittal, V. A., Strauss, G. P., Chapman, H. C., Ellman, L. M., Bansal, S., Gold, J. M., Alderson-Day, B., Evans, S., Moffatt, J., Silverstein, S. M., Walker, E. F., Woods, S. W., Corlett, P. R., & Powers, A. R. (2020). Modeling perception and behavior in individuals at clinical high risk for psychosis: Support for the predictive processing framework. *Schizophrenia Research*, 226, 167–175. <https://doi.org/10.1016/j.schres.2020.04.017>
- Kreis, I., Wold, K. F., Åsbo, G., Simons, C., Flaaten, C. B., Engen, M. J., Lyngstad, S. H., Widing, L. H., Ueland, T., & Melle, I. (2024). The relationship between visual hallucinations, functioning, and suicidality over the course of illness: A 10-year follow-up study in first-episode psychosis. *Schizophrenia*, 10(1), 30. <https://doi.org/10.1038/s41537-024-00430-8>
- Kidder, L. H., & Fine, M. (1987). Qualitative and quantitative methods: When stories converge. *New Directions for Program Evaluation*, 1987(35), 57–75. <https://doi.org/10.1002/ev.1459>
- Linszen, M. M. J., de Boer, J. N., Schutte, M. J. L., Begemann, M. J. H., de Vries, J., Koops, S., Blom, R. E., Bohlken, M. M., Heringa, S. M., Blom, J., & Sommer, I. E. (2022). Occurrence and phenomenology of hallucinations in the general population: A large online survey. *Schizophrenia*, 8, 41. <https://doi.org/10.1038/s41537-022-00229-9>
- Lyndon, S., & Corlett, P. R. (2020). Hallucinations in posttraumatic stress disorder: Insights from predictive coding. *Journal of Abnormal Psychology*, 129(6), 534–543. <https://psycnet.apa.org/doi/10.1037/abn0000531>
- Mori, M. (1970). The uncanny valley. *Energy*, 7, 33–35.

- Morrison, A. P. (1996). A cognitive analysis of maintenance of auditory hallucinations: Are voices to schizophrenia what bodily sensations are to panic? *Behavioural and Cognitive Psychotherapy*, 26, 289–302. <https://doi.org/10.1017/S1352465898264010>
- Mueser, K. T., Bellack, A. S., & Brady, E. U. (1990). Hallucinations in schizophrenia. *Acta Psychiatrica Scandinavica*, 82(1), 26–29. <https://doi.org/10.1111/j.1600-0447.1990.tb01350.x>
- National Institute of Mental Health. (2023). Understanding psychosis. [Brochure]. <https://www.nimh.nih.gov/sites/default/files/documents/health/publications/understanding-psychosis/23-MH-8110-Understanding-Psychosis.pdf>
- Office for National Statistics. (2022). Population and household estimates, England and Wales: Census: Mid-2021. <https://census.gov.uk/census-2021-results>
- Oorschot, M., Lataster, T., Theuvsen, V., Lardinois, M., Van Os, J., Delespaul, P., & Myin-Germeys, I. (2012). Symptomatic remission in psychosis and real-life functioning. *The British Journal of Psychiatry*, 201(3), 215–220. <https://doi.org/10.1192/bjp.bp.111.104414>
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42, 533–544. <https://doi.org/10.1007/s10488-013-0528-y>
- QSR International Pty Ltd. (2021). NVivo version 12 (released in 2021). <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>
- Renouf, S., Ffytche, D., Pinot, R., Murray, J., & Lawrence, V. (2016). Visual hallucinations in dementia and Parkinson's disease: A qualitative exploration of patient and caregiver experiences. *International Journal of Geriatric Psychiatry*, 33(10), 1327–1334. <https://doi.org/10.1002/gps.4929>
- Runnymede Trust. (2021). *England civil society submission to the United Nations Committee on the elimination of racial discrimination*. Runnymede Trust.
- Selten, J. P., Van Der Ven, E., & Termorshuizen, F. (2020). Migration and psychosis: A meta-analysis of incidence studies. *Psychological Medicine*, 50(2), 303–313.
- Shetlin, M., Houston, J. E., Dorahy, M. J., & Adamson, G. (2007). Cumulative traumas and psychosis: An analysis of the National Comorbidity Survey and the British psychiatric morbidity survey. *Schizophrenia Bulletin*, 34(1), 193–199. <https://doi.org/10.1093/schbul/sbm069>
- Solovik, M., Joa, I., Larsen, L. K., Langeveld, J., Johannessen, J. O., Bjørnstad, J., Anda, L., Gisselgård, J., Hegstad, W., & Brennecke, V. (2016). Visual hallucinations in first-episode psychosis: Association with childhood trauma. *PLoS One*, 11(5), e0153458.
- Thomson, C., Wilson, R., Collerton, D., Freeston, M., & Dudley, R. (2017). Cognitive behavioural therapy for visual hallucinations: An investigation using a single-case experimental design. *The Cognitive Behaviour Therapist*, 10, E10. <https://doi.org/10.1017/S1754470X17000174>
- Toh, W. L., Bere, M., & Rossell, S. L. (2022). Distinguishing multimodal versus multisensory hallucinations in psychosis: Key definitions and a way forward. *The Australian and New Zealand Journal of Psychiatry*, 56(5), 4443–4450. <https://doi.org/10.1177/00048674211031455>
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349–357. <https://doi.org/10.1093/intqhc/mzm042>
- Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., Read, R., van Os, J., & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: A meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin*, 38(4), 661–671. <https://doi.org/10.1093/schbul/sbs050>
- Waters, F., Collerton, D., Ffytche, D., Dudley, R., Blom, J. D., Mosman, U. P., Eperiesi, F., Ford, S., & Larcia, F. (2014). Visual hallucinations in the psychosis-spectrum, and comparative information from neurodegenerative disorders and eye disease. *Schizophrenia Bulletin*, 40(Suppl. 4), s233–s245. <https://doi.org/10.1093/schbul/sbu036>
- Wilson, R., Collerton, D., Freeston, M., Christodoulides, T., & Dudley, R. (2015). Is seeing believing? The process of change during cognitive-behavioural therapy for distressing visual hallucinations. *Clinical Psychology & Psychotherapy*, 23(4), 285–297. <https://doi.org/10.1002/cpp.1962>

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Data S1:

How to cite this article: Aynsworth, C., Waite, F., Sargeant, S., Humpston, C., & Dudley, R. (2025). Visual hallucinations in psychosis: What do people actually see? *Psychology and Psychotherapy: Theory, Research and Practice*, 98, 58–73. <https://doi.org/10.1111/papt.12553>

## Appendix 2: Topic Guide – Qualitative Interviews

### Visual hallucinations in psychosis Qualitative Interviews Topic Guide

#### Introduction

Visual hallucinations (VH), also known as visions, occur when people see things that are not actually there. Eyes can often play tricks on people, leading them to see something that isn't there but for most people this is a fleeting and an easily understood experience, but this seems to be more frequent and upsetting for people with psychosis, where they occur in 27% of people. The occurrence of visions is often associated with more frequent and prolonged hospital admissions (Baegthe et al., 2015; Meuser, Bellack & Brady, 1990) and poorer treatment outcomes (David et al., 2011; Mueser et al., 1990; Oorschot et al., 2012). Despite such negative impact of visions, relatively little is known about these. What is known has largely been explored using quantitative measures, which have questionable reliability and validity (Aynsworth, Collerton & Dudley, 2017).

The aim of these interviews is to be the first to provide detailed first person perspective experiences of visions in psychosis. By carrying out semi-structured interviews, designed collaboratively with people with lived experience, we aim to understand more about the content of what people see, to try to identify important maintenance factors of these experiences, and better understand the impact of visions on people's lives and clarify their treatment preference for visions. From this, we hope to develop more effective and targeted treatments for those who experience visions.

#### Overview of interview

Introduction to topic of VH

Content of VH

Sense making

Emotional reactions

Beliefs about visions

Behavioural reactions

Impact

Stigma

Treatment

Initially the interview start with introductions from the interviewer, explaining their role and how the interview will be carried out. The interview will start with an open question to elicit a narrative context for people's visions. This will allow the interviewee opportunity to feel more relaxed with the interview, having more influence on what is being shared and how, allowing both parties to build rapport. The interviewer will then use their answer as a basis to explore further other areas of their experiences to elicit details on the content, maintenance, impact of the VH and treatments. The interviewer will respond to their narrative in a flexible and curious way to naturally encourage conversations with the

participant. Prompts are included so that the interviewer can invite further detail and explore the participants experiences in more detail. The interviewer will hold an open, curious, validating and non-judgemental stance throughout the interview to enable the participant to feel safe and supported.

### **Interview Schedule**

These are the types of questions and topics to be covered during the interview; however, the questions will evolve in response to the participant's language and understanding. It is hoped that the questions will act as prompts to encourage the participants to speak freely and more detailed about their experiences. Questions can be rephrased to ensure participants understanding and the order is flexible to respond to the participant's narrative. The interviewer will use the participants own vocabulary to enhance the discussions of their experiences.

#### *General introductions – scene setting*

Thank you for being to be part of this interview.

Researcher introduce themselves and role

Lasts about 60-90 minutes

No right or wrong answer

Reflective discussion

Don't have to answer

Can take a break at any time

Before we begin, can I check you are in a comfortable place to discuss your experiences? In which you can speak openly, with minimal distractions?

*Collect oral consent, if not conducted face to face.*

If you're happy then I will start the audio recording and ask you to confirm again that you are happy to take part in this interview. I will read through a series of questions to confirm you are happy with all aspects of the study.

START RECORDING -

COMPLETE ORAL CONSENT FORM

END RECORDING -

I will now start recording (again) and we can get started.

START RECORDING -

I know I have just talked this through but just to confirm for this recording – are you happy to take part in this interview?

### **Introduction to the topic of VH**

To begin with, you were referred by your care team. Do you mind just explaining a little more about your involvement with care team such as who you work with and what they offer you.

*The purpose here is to encourage the person to talk about a topic that they may be more familiar discussing. It will also foster rapport allowing the interviewer to understand the participant's position in relation to services.*

Brilliant, thank you. We have discussed that the main focus of this topic is VH. What do you refer to your experiences as such as VH or vision?

*Use the participants term of reference for the interview.*

I'd like to begin by hearing more about your experiences of VH (or other preferred term)?

*Prompts:*

- How often do you experience these?
- What sorts of things do you see?*
- When did you first experience these?
- When did you last experience one of these?

### **Content of vision**

I would really like to imagine what it looks like when you see them so I can try to understand better what it's like for you, can you describe this to me in more detail?

*Prompts:*

- Option to draw their VH, if they wished to.
- How does it appear? Is it as in normal perception or does it have different qualities?
- Is it clear? Vivid? Bright? Blurred? Colour?
- What size is it? Normal size in reality or does it differ to the size which you'd expect it to be?
- How long does it last for? Does it usually last this amount of time or does it vary?
- are there any patterns to when you see it? E.g. time of day or setting.
- Does it feel real to you? During and after. What makes it so?
- How does the vision present itself to you? What do you notice something first?
- Do you recognise the vision?
- Are visions worse or change at all depending on how you are feeling? E.g. when you feel more unwell.
- Have you ever experienced something disappearing from your eye sight? Something that was there that suddenly was not anymore?
- Does vision change in different situations e.g. busy crowded places compared to when alone
- Do you experience the visions in the same place? Or have you noticed a pattern to when they might appear to you?
- Does the vision ever talk to you? If so, what does it say? Is it present when it does? Is the movement congruent as if the vision is talking? Or do you ever heard the voice of vision when you can't see it? How often is this the case?
- Does it ever touch you? Can you tell me more about that? Are there times when it has

*touched you but without you seeing the vision at the same time? How often is this the case?*

*- Does it ever have a smell associated with it? Before or after. Can you tell me more about that?*

*- If you experience hallucinations across different senses, do you think they are related to each other?*

*- Sometimes visions can portray everyday events such as a woman talking, sometimes that can be more supernatural or unusual such as a dog talking to you. What are yours like?*

*- How does it end? When do you know that it's gone?*

*- What is the worst bit about the vision?*

*- What is the best bit about the vision?*

### **3. Sense-making – understanding of visions**

**Why do you think when you see visions? What do your visions mean to you?**

*Prompts:*

*How you do make sense of the vision/s?*

*Do you have a theory as to why you see visions?*

*What do you think keeps your vision appearing? What leads you to keep seeing visions?*

*Do you feel it's something related to you or something external – out of your control or influence?*

*Do you think the visions are related to something personal or something that has happened in your life?*

#### **Emotional reactions**

**You've described seeing X. How does it make you feel when you see it?**

*Prompts:*

*What is it that makes you feel this way? Can you tell me more about that?*

*Is it related to the vision (e.g content, presence), yourself (controllability, stigma) or something different?*

*How do you feel when you see it?*

*How do you feel when it's gone?*

*How would you like to feel when you see it?*

*Does it make you feel differently at different times? If so, can you tell me more about that?*

*Has your emotional reaction changed during the course of your seeing the vision?*

*How do you feel now talking about it?*

*How strongly do you feel that emotion?*

*Where do you feel that in your body?*

*What is the worst moment, and what do you feel right then?*

#### **Beliefs about visions**

**What do you believe is happening when you see the vision - during and after?**

*Prompts:*

*When you see X, what do you think to yourself?*

*What do you think about the vision?*

*What do you think about the vision when it's not there?*

*What do you think about yourself when you see it?*

*How do you feel about seeing visions?*

*Do you feel that you have any control or power over the vision?*

*What does it make you believe about yourself?*

*What does it make you believe about the world?*

*What would you think of someone else who reported seeing things?*

*Does it cross your mind that you may be at risk of being hurt by the vision, or that you may be losing your mind?*

*Does your beliefs change across time e.g when you are in a crisis compared to when you are not? Does it fluctuate with how you are feeling?*

*Are there any other places or images that are similar to your visions? E.G have you ever seen your vision in something else e.g. a tv show or film or something similar to your vision?*

## **Behavioural reactions**

**You described seeing X, what do you do when you see that? E.g. how do you react or behave?**

*Prompts:*

*What do you do to cope? What do you do to keep yourself safe?*

*What makes you behave in that way? What drives that behaviour?*

*What are the consequences of you behaving that way?*

*Have you ever behaved differently? If so, what happened?*

*What would happen if you didn't behave like that?*

*Is this how you would like to behave when you experience this?*

*Are there particular behaviours that are helpful or unhelpful for you?*

*Has anyone ever told/helped you with how to respond or what to do when you see the vision?*

*(link back to the appraisals and ask if this stops them 'losing control' or from their appraisal coming true...)*

## **Impact**

**You've described really well what you see and how it impacts you in the moment, does seeing visions have an impact on your life more generally? E.g. does it impact on your ability to do things that you want to do in your life or affect your relationships?**

*Prompts:*

*Do the visions help you to do things?*

*Do the visions have a helpful impact on your life in anyway?*

*Does seeing visions impact on your relationships? If so, can you tell me more about that?*  
*Would your life be different without visions? If so, in what way?*  
*How has life changed for you since you started seeing visions?*  
*Has seeing visions impacted on your work life?*  
*Has seeing visions impacted on different areas of your life?*  
*Has visions changed your ability to go to different places e.g crowded or busier places?*

## **Stigma**

**Do you think there is a stigma attached to you experiencing visions?**

*Prompts:*

*Has seeing visions impacted on how you view yourself?*  
*Has seeing visions impacted on how others view you? Public, closer friends and family.*  
*How have people reacted when you tell them about seeing visions? Have you ever experienced positive or negative reactions to your visions?*  
*If you have not told anybody, what stops you from sharing this? Would you like to be able to share this?*  
*Do you know of other people that see visions?*  
*How do you think people view people who see visions?*  
*Are you more awareness of stigma differ across situations?*  
*How do you feel about the stigma?*

## **Treatment**

**Have you ever been offered or received treatment for the visions?**

*Prompts:*

*If so, can you tell me more about that? What was it? Did it help you?*  
*If not, how does that make you feel? How do you make sense of not being offered a treatment for these?*  
*Would you like a choice in the treatment to help you? If so, what types of treatment would be helpful?*  
*Do you want to continue seeing visions? Do you consider them a part of you?*  
*In an ideal world, what would be the outcome of your life and the visions? Would they stay or go?*  
*What do you think could make a difference to this?*  
*If available, would you like an intervention to help you to understand and manage visions?*  
*If you could have a treatment, what would it look like? What would it involve?*  
*In comparison to other difficulties that you may experience such as voices, anxiety etc, where does a treatment for visions fit in a 'priority list'?*  
*If not a priority, what else do you feel needs treatment or resolving before focusing on visions?*  
*What places visions in that position on your 'priority list'?*  
*Is there anything less of a priority for treatment compared to visions?*

*If I could tell you that you could live a life without visions, what would you say? How would you feel?*

*If I told you that you could live a life with visions but be less distressed by these, what would you say? How would that make you feel?*

**Is there anything that we've not asked about that you want to share, or think would be important for us to know to understand your views?**

**We've reached the end of the interview. Thank you for your time today, we really appreciate you sharing your experiences with us. We will be in touch with the results of the study, if you would like to find out more about this.**

--END RECORDING --

*General prompts:*

Can you tell more about that?

How does that make you feel?

Are there any times where you've felt or behave differently?

What are the clues that tell you that?

What makes you think that?

What else have you thought about that?

Has anything else come to mind when you experience that?

Acknowledge the participant is separate to their experiences.

## Appendix 3: COREQ checklist – Chapter 2

| No. Item                                       | Guide questions/description                                                                                                                              | Reported on Page # |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Domain 1: Research team and reflexivity</b> |                                                                                                                                                          |                    |
| <i>Personal Characteristics</i>                |                                                                                                                                                          |                    |
| 1. Inter viewer/facilitator                    | Which author/s conducted the interview or focus group?                                                                                                   | 43                 |
| 2. Credentials                                 | What were the researcher's credentials?<br>E.g. PhD, MD                                                                                                  | 43                 |
| 3. Occupation                                  | What was their occupation at the time of the study?                                                                                                      | 43                 |
| 4. Gender                                      | Was the researcher male or female?                                                                                                                       | 45                 |
| 5. Experience and training                     | What experience or training did the researcher have?                                                                                                     | 43                 |
| <i>Relationship with participants</i>          |                                                                                                                                                          |                    |
| 6. Relationship established                    | Was a relationship established prior to study commencement?                                                                                              | N/A                |
| 7. Participant knowledge of the interviewer    | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research                                                 | 43                 |
| 8. Interviewer characteristics                 | What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic               | 45                 |
| <b>Domain 2: study design</b>                  |                                                                                                                                                          |                    |
| <i>Theoretical framework</i>                   |                                                                                                                                                          |                    |
| 9. Methodological orientation and Theory       | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | 41-45              |
| <i>Participant selection</i>                   |                                                                                                                                                          |                    |
| 10. Sampling                                   | How were participants selected? e.g. purposive, convenience, consecutive, snowball                                                                       | 42                 |
| 11. Method of approach                         | How were participants approached? e.g. face-to-face, telephone, mail, email                                                                              | 42                 |

|                                        |                                                                                   |        |
|----------------------------------------|-----------------------------------------------------------------------------------|--------|
| 12. Sample size                        | How many participants were in the study?                                          | 46     |
| 13. Non-participation                  | How many people refused to participate or dropped out? Reasons?                   | 46     |
| <i>Setting</i>                         |                                                                                   |        |
| 14. Setting of data collection         | Where was the data collected? e.g. home, clinic, workplace                        | 46     |
| 15. Presence of non-participants       | Was anyone else present besides the participants and researchers?                 | N/A    |
| 16. Description of sample              | What are the important characteristics of the sample? e.g. demographic data, date | 46     |
| <i>Data collection</i>                 |                                                                                   |        |
| 17. Interview guide                    | Were questions, prompts, guides provided by the authors? Was it pilot tested?     | 43     |
| 18. Repeat interviews                  | Were repeat inter views carried out? If yes, how many?                            | N/A    |
| 19. Audio/visual recording             | Did the research use audio or visual recording to collect the data?               | 43     |
| 20. Field notes                        | Were field notes made during and/or after the inter view or focus group?          | 45     |
| 21. Duration                           | What was the duration of the inter views or focus group?                          | 46     |
| 22. Data saturation                    | Was data saturation discussed?                                                    | 46     |
| 23. Transcripts returned               | Were transcripts returned to participants for comment and/or correction?          | N/A    |
| <b>Domain 3: analysis and findings</b> |                                                                                   |        |
| <i>Data analysis</i>                   |                                                                                   |        |
| 24. Number of data coders              | How many data coders coded the data?                                              | 44     |
| 25. Description of the coding tree     | Did authors provide a description of the coding tree?                             | N/A    |
| 26. Derivation of themes               | Were themes identified in advance or derived from the data?                       | 44     |
| 27. Software                           | What software, if applicable, was used to manage the data?                        | 44     |
| 28. Participant checking               | Did participants provide feedback on the findings?                                | 45, 69 |
| <i>Reporting</i>                       |                                                                                   |        |
| 29. Quotations presented               | Were participant quotations presented to                                          | 47-58  |

|                                  |                                                                                        |       |
|----------------------------------|----------------------------------------------------------------------------------------|-------|
|                                  | illustrate the themes/findings? Was each quotation identified? e.g. participant number |       |
| 30. Data and findings consistent | Was there consistency between the data presented and the findings?                     | 45-58 |
| 31. Clarity of major themes      | Were major themes clearly presented in the findings?                                   | 45-58 |
| 32. Clarity of minor themes      | Is there a description of diverse cases or discussion of minor themes?                 | 45-58 |

## Appendix 4: Submitted paper on appraisals of visions (Chapter 3)

**Title: “I just want an explanation”: A qualitative investigation of how people with psychosis make sense of visual hallucinations.**

### **Abstract**

**Objectives.** Visual hallucinations (visions) in people with psychosis are common and often distressing. Cognitive theory emphasises a central role of appraisals in determining distress. We explored how people made sense of their visions to inform the development of targeted cognitive treatments for visions.

**Design.** Semi-structured interviews were conducted with 12 participants with psychosis recently reporting visions.

**Methods.** Reflexive thematic analysis was utilised.

**Results.** There was an overarching theme that participants lacked convincing and acceptable explanations as to why they saw visions. The absence of credible explanations led people to rely on two types of themes of how to make sense of their experiences. Theme one was ‘Unconvincing and unacceptable’ appraisals – such as visions were internally generated in some way, perhaps owing to poor sleep or stress. These were unconvincing as they did not account for the complexity and life-like reality of visions. Theme two was ‘Convincing but unacceptable’ appraisals. These were typically threat-based interpretations – such as ‘It’s real’, ‘It’s here to harm’ or ‘I’m mad’. These appraisals were often more believable, yet incurred higher levels of distress. Appraisals were not static. They changed in response to dynamic factors such as the presence of visions and the participants’ emotional state.

**Conclusions.** Participants described a need to understand why they see visions. Yet the most convincing explanations often led to high levels of distress. Generating credible and acceptable ways to explain visions and understanding the dynamic factors that drive vision-specific appraisals may provide a potential route to improve cognitive treatments for these.

### **Practitioner points**

- Participants describe not knowing why they see things others do not.
- Participants attempt to make sense of visions, but existing ‘normalising’ explanations lack credibility.
- Threat-based appraisals of visions are more convincing but at the cost of being more distressing.
- Understanding vision-specific appraisals, and the dynamic factors that drive their endorsement, may inform psychological treatment delivery and future development.
- This framework requires testing with a larger diverse sample to further evaluate representativeness.
- Extending this study to include people with less frequent or positively experienced visions could also broaden our understanding of appraisals.

## Introduction

Visual hallucinations, also known as visions, are defined as a visual percept, occurring when awake, which is not caused by an external stimulus and is not under voluntary control (Waters et al., 2014). Whilst visions can encompass a range of experiences, people with psychosis report that their visions can be complex, vivid, and all-encompassing experiences (Aynsworth et al., 2025). In many cases the visions are of people, that behave like people (by talking to and touching the observer) and look like people (sharing the same perceptual qualities as any other “real” experience) (Aynsworth et al., 2025; Dudley et al., 2018). Consequently, they have a compelling sense of reality, making it hard for people to distinguish if visions are real or not. People can find such experiences incredibly distressing (Dudley et al., 2013; 2023; Gauntlett-Gilbert & Kuipers, 2005), which can lead to a greater likelihood of hospitalisation, suicidality, and poorer functioning (Baegthe et al., 2015; Kries et al., 2024; Meuser, Bellack & Brady, 1990; Oorschot et al., 2012).

However, it is not simply the presence of visions alone that accounts for this distress. Aynsworth et al. (2023) found that 84% of a non-clinical sample reported visions during their lifetime. Many (37%) of these experiences were similar in content (seeing figures, people) to those reported by people with psychosis. Like with other unusual experiences (auditory hallucinations or hearing voices; Morrison, 1998), a key factor driving distress is a person’s appraisal of such experiences. People who are not distressed by visions tend to report explanations such as that the visions result from their eyes playing tricks on them or from being tired (Aynsworth et al., 2023). Whereas people with psychosis report that their visions are a threat: they are a sign they are

losing their mind, or that they will be physically hurt by the vision (Dudley et al. 2012; Gauntlett-Gilbert & Kuipers., 2003). These differences are consistent with cognitive theory which emphasises the fundamental role of appraisals in accounting for the distress and impact of an experience (Beck, 1976). Unlike hearing voices, visions have been given little consideration from a cognitive therapy perspective. There have only been two small case series using cognitive therapy for visions, and these showed limited reduction in distressing appraisals (Thompson et al., 2017; Wilson et al., 2016). A possible explanation for this lack of benefit was that these approaches were not tailored to the unique experience and specific appraisals of visions (Collerton & Dudley, 2004). Instead, they were adapted from voice hearing models (Chadwick & Birchwood, 1994; Morrison, 2001). A lack of rich phenomenological understanding of visions may have contributed to the lack of understanding of the specific appraisals people hold. Much of our knowledge of visions has relied on quantitative measures that lack detail about the experience of seeing things that others do not (Aynsworth et al., 2017). Owing to the impact and need for improved treatments, it is timely and important to progress the understanding of how people come to appraise their visions. By listening to and learning from people with lived experience, we aim to develop better treatments tailored for visions.

## **Method**

### *Design*

An individual interview study was used, with semi-structured interviews. Reflexive thematic analysis was used for the analytic method, situated within a 'Big Q' approach to enquiry (Kidder & Fine, 1987).

The study design was informed by a Lived Experience Advisory Panel (LEAP), who were consulted on all stages of the project. There were a series of involvement meetings including collaborating on developing the topic guide, designing study documents, and reviewing the analysis. The meetings occurred in both group and individual formats, depending on the preference of those with lived experience.

Ethical approval was granted by NHS Health Research Authority (HRA) Newcastle and North Tyneside 1 Research Ethics Committee (reference: 21/NE/0099).

A critical realist approach was taken, which posits that whilst there is a shared truth, the interpretation of this can vary depending on individuals' knowledge, culture, and life experiences. Hence, the 'true reality' is not fully accessible as it cannot be separated from the observer and the context in which they live (Clarke, 2021). Instead, researchers can bring their own subjectivity to the analysis to generate meaning in the data but must recognise their own influence and biases in doing so (Clarke, 2021).

### *Participants*

The qualitative interview data were obtained within a study with the primary research aim to explore people's experiences of visions. There were distinct research questions related to the phenomenology, appraisals, and impact. Firstly, data has been published in relation to the phenomenology of visions (Aynsworth et al., 2025). This provides a framework of the characteristics of visions, including the content, quality, and multimodal human-like behaviour observed in visions. The current paper sets out to

answer a distinct research question: how do people make sense of visions, with a focus on people's beliefs of why they see visions and what it means to them. A new analysis was undertaken on the data to answer this specific research question.

Recruitment used a criterion-based purposeful approach (Palinkas et al., 2015). The inclusion criteria were a) current experiences of visions (defined as within the last month. Visions were defined as “visual perception-like experiences that occur without an external stimulus. They are vivid and clear, with the full force and impact of normal perceptions, and not under voluntary control”, (American Psychiatric Association, 2013)), b) have a psychosis spectrum diagnosis, c) receiving care within an NHS mental health team, d) aged 16 or above, and e) willing and able to provide informed consent.

Exclusion criteria were a) visions only when under the influence of drugs or alcohol, b) visions only when on the borders of sleep i.e. hypnagogic/hypnopompic hallucinations, c) visions that are only fleeting or rarely occur so a detailed interview would not be relevant, d) significant brain injury or neurological condition, including dementia or e) moderate to severe learning disability meaning it would be harder to provide informed consent.

Thirteen people were approached to take part. One person declined before screening, and twelve participated.

#### *Sample size considerations*

Malteud et al. (2016) offer a framework to considering information power when determining sample size in qualitative research. This includes considering the study aim, the sample specificity, and quality of dialogue. Given the narrow aim of this study which focused on one specific aspect of people's experiences (their appraisals), which has not previously been explored in such detail, the specificity of the sample all having visions, alongside an analysis plan of in-depth exploration of participants' narratives, it would suggest that a relatively small sample would still offer a high information power (Malteud et al., 2016). This was further considered throughout data collection, where it was evident that there was a strong quality of dialogue being captured (Malteud et al., 2016). Therefore, 12 participants were deemed sufficient to offer a relatively high information power.

### *Procedure*

The topic guide (Supplementary material A) was developed collaboratively with the LEAP, expert researchers, and consultation with the relevant literature. The interview was wide-ranging, exploring various aspects of the experience of visions including, but not limited to, phenomenology, appraisals, and any consequent emotional and behavioural impact. When participants reported multiple visions, the focus of the interview was on the most distressing or important vision(s) for the participant to discuss in order to capture their experiences most accurately. The topic guide included prompts to elicit further detail and was used flexibly, with an open and curious perspective to elicit detailed accounts and follow participants' narratives.

Potential participants were initially approached by Care Co-ordinators in NHS mental health services. If interested in the project, they were then contacted by CA (Clinical Psychologist, trained in qualitative methodology) to arrange a screening. During the screening, the Participant Information Sheet was shared, and the study was discussed in more detail. Participants were then given at least 24 hours before being contacted again to proceed with the interview. Prior to the interview, written informed consent was taken. Interviews were conducted by CA and were on average 81 minutes (SD =13:58; range 57 to 101 minutes). They were conducted either in NHS clinics (n=8) or at the participant's home (n=4). Interviews were audio recorded on a Dictaphone and transcribed verbatim. Participants were able to choose a pseudonym.

#### *Reflexive thematic analysis*

Analysis followed the six-phases set out by Braun and Clark (2006). CA initially familiarised herself with the data through transcribing the interviews, reading and re-reading the transcripts and making notes. Initial codes were then generated and reviewed several times before generating themes, formed by grouping together codes into relevant topics, using Nvivo 12 (QSR International Pty Ltd, 2021). This process was iterative whereby themes were taken to supervision and the LEAP to review to consider the most appropriate way to convey participants' experiences. For a more detailed example of how themes were developed, see Supplementary material B.

#### *Reflexivity and considerations of data quality*

To conduct a high-quality analysis, it is important to reflect on and understand the researcher's subjectivity and influences on their perspective. Prior to the interviews, CA

completed a bracketing interview to highlight and understand her values, assumptions, and therefore potential biases. CA kept a reflexive journal throughout, noting reflections on the interviews and the analytic process. Coding and themes were discussed in supervision and the LEAP to highlight and discuss different perspectives, and refine thinking. A reflective statement is provided below. It is written from a first-person perspective in line with Braun and Clarke's (2021) ownership of subjectivity. The COREQ guidelines were also followed to support quality assurance (Tong et al., 2007; See supplementary material C).

#### *Reflexive statement*

As first author, I am a White British cis-gendered female Clinical Psychologist. I have specialised in researching and delivering psychological therapies for people with psychosis, with a particular emphasise on a Cognitive Behavioural Therapy (CBT) approach. Furthermore, RD and FW have clinical skills and research expertise in this area. SS is a peer researcher with lived experience of visions. He also has a background in medieval literature, allowing him to explore visual hallucinations from a historical perspective. Through detailed exploration of the data, supervision, and discussions with the LEAP, it was evident that appraisals were of central importance for people. To do participants' narratives justice, it was vital that we explored their causes of distress through such detailed focus to allow participants' voices to be heard. Especially in an area where so many participants reported feeling unheard.

## **Results**

### *Contextualising the data*

Twelve participants took part in the study (8 male, 4 female; mean age 38.1 years, SD = 10.9 and range 22 - 58). Participants were recruited from NHS mental health services in the North East of England; including Early Intervention in Psychosis teams (n=7), Community Mental Health Teams (n=4), and an Inpatient Ward (n=1). All but one of the participants were White British. Most were diagnosed with Psychosis Not Otherwise Specified (n=8), others were diagnosed with schizophrenia (n=3) or schizoaffective disorder (n=1).

In terms of the content of visions reported, participants reported a wide range of different experiences. Most commonly, participants reported seeing people or figures, some of which were known to the observer and others who were not. Sometimes the visions were of a typical human, whilst for others the visions included somewhat unusual content e.g. facelessness, or disturbing content such as injured people. Other experiences including seeing animals, mythical or hybrid creatures, or cartoon-like visions.

### *Overview of analysis*

An overarching theme and two main themes were generated to understand how people made sense of their visions. The overarching theme captured an absence of explanations for why they saw things that others did not. This drove participants to engage in a process of searching for a way to make sense of their experiences, which is demonstrated in Figure 1. This broadly led to two accounts of their experiences.

‘Unconvincing but acceptable’ explanations of their visions (Theme 1) were often held with relatively little conviction as they were not sufficiently comprehensive to explain

the full complexity and realness of participants' visions. 'Convincing but unacceptable' explanations (Theme 2) were described as more believable as they captured the life-like experience of visions or were more in line with participants' views of the world or self. Yet, such accounts were also more unacceptable to participants because they were often threat-based understandings, which caused high levels of distress and negative impact on people's lives. Therefore, participants were left searching for 'Convincing and acceptable' explanations, which were elusive. See Table 1 for an overview of the themes with illustrative quotes.

It is worth noting that the themes captured below include both explanations that relate directly to why the visions were occurring and subsequent appraisals about what seeing visions meant about the participants (discussed further in Supplementary material B). Therefore, we encourage the reader to see this as a representation of how people make sense of their visions more broadly, which includes the complex dynamics between explanations and appraisals.

*Table 1. Summary of participants explanations*

| Theme                     | Illustrative Quote                                                                                                                                                                                                                                      |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overarching theme         |                                                                                                                                                                                                                                                         |
| Absence of an explanation | <i>"I'm seeing people that aren't there, and people are just carrying on their lives as if normal and I'm thinking, "Well why is this happening to me? What's happened to me to get this? Why has it happened?" I don't know what's happened."</i> Yogi |
| Themes                    |                                                                                                                                                                                                                                                         |

|                                             |  |                                                                                                                                                                                                                                               |
|---------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <hr/>                                       |  |                                                                                                                                                                                                                                               |
| 1. Unconvincing but acceptable explanations |  |                                                                                                                                                                                                                                               |
| <hr/>                                       |  |                                                                                                                                                                                                                                               |
| 1.1 It's my brain playing tricks on me      |  | <i>"At the beginning, it was kind of really strange but now I'm kind of used to it now, cause I know like it's kind of all me head, so I kind of just not acknowledge anymore."</i> Felix                                                     |
| 1.2 It's due to life events                 |  | <i>"I know the more stressed I am, the less sleep I have, the more drugs I take, the more....everything, I see [the vision] more."</i><br><br>Sarah                                                                                           |
| <hr/>                                       |  |                                                                                                                                                                                                                                               |
| 2. Convincing but unacceptable explanations |  |                                                                                                                                                                                                                                               |
| <hr/>                                       |  |                                                                                                                                                                                                                                               |
| 2.1. It's real                              |  | <i>"He just looks like, I seen him on [that] day, I can see him just like that. He's just the same as, like, you and I talking...I can see him the way I can see you."</i> Lily                                                               |
| 2.2. It's here to harm                      |  | <i>"But there was always this sort of feeling that goes with it, it was never good, it was always like malicious. I always thought like he wanted to hurt us ... So always they're out to get us or hurt us or something like that."</i> Mick |
| 2.3. It's unstoppable                       |  | <i>"I've got no control over when I see her. I've got no control over her."</i> Sarah                                                                                                                                                         |
| 2.4. I'm mad                                |  | <i>"I thought "That's it. You're mad now. You're going to get locked away."...I thought I'd finally snapped."</i> Scarlett                                                                                                                    |
| 2.5. I'm worthless                          |  | <i>"[I'm] Just a fucked up person. A broken person really."</i> Yogi                                                                                                                                                                          |
| 2.6. I'm being punished                     |  | <i>"The main reason I see him all the time is because of what happened...I think it's a bad spirit that's attached to us."</i> Rodney                                                                                                         |
| <hr/>                                       |  |                                                                                                                                                                                                                                               |

### Overarching Theme – ‘Absence of an explanation’

The overarching theme generated was the absence of explanation for why participants experienced visions. Participants did not have clear ideas as to why they were seeing visions. Despite being in mental health services for many years, participants reported that they were rarely spoken to about their visions, and received little to no support or advice as to how to manage visions or the associated distress. This left participants not only feeling let down by services, but also feeling further confused and concerned by the visions. Subsequently, participants felt stuck, and unable to “move on” with their lives.

*“I’d just like to know what’s like happening, like what’s going on in me brain and, just make it, like just understand things that are like happening to us.” Felix*

*“I don’t know, I wish someone would just tell us, you know. So basically this whole thing, not knowing what it is, has messed my life up cause it’s put my life on hold. That’s all I want. I just want an explanation of, you know, what I’m seeing, what I’m experiencing every day. It’s stopping me from getting on with my life ‘cause at the minute, I’ve got no life, I’ve got no direction, I’ve just got me trying to function the best I can everyday without knowing what’s wrong.” Emily*

The complex, vivid, and all-encompassing nature of the visions demanded an explanation. Participants therefore felt compelled to search for their own understanding of what their visions were. This led participants to conclusions that

broadly fitted into two categories: ‘Unconvincing but acceptable’ explanations and ‘Convincing but unacceptable’ explanations.

#### Theme 1 – ‘Unconvincing but acceptable’ explanations

Participants described a range of ‘unconvincing but acceptable’ explanations. These explanations were typically beliefs that the participants could relate to in some degree, so felt somewhat acceptable, such as recognising that on some level the visions may be internally generated, or in some way they themselves were responsible for the visions. They could recognise that the visions may not be owing to an external stimulus so were not necessarily ‘real’.

*“Something I’m just seeing with my mind, it’s not like a real person.” Tony*

However, the different explanations presented within this theme were also mostly unconvincing as participants did not endorse or believe such explanations with any real certainty because they did not feel that they could adequately explain the vivid, complex, and all-encompassing nature of their visions. These explanations were often representative of those used in clinical teams as a way of normalising people’s experiences of psychosis (and other mental health difficulties) to reduce associated distress. Typically, these explanations were spoken of by participants as fleeting suggestions which were quickly dismissed as they lacked any coherent or believable justification. Participants spoke of such explanations being more accessible when they felt calmer, or more “rational in their thoughts” but would be inaccessible when

experiencing a vision in the moment as the overwhelming realness of the vision would make any such explanations seem implausible.

#### Subtheme 1.1 - 'It's my brain playing tricks on me'

There were a range of appraisals that were considered within this subtheme, such as the visions were a result of participants' eyes playing tricks on them or that there was something 'wrong' with their brain which made them see things that were not actually there. Crucially, in such explanations, participants could recognise to some degree that that the visions may not real, but they lacked any detailed understanding as to why or how this may be the case.

*"Well it's part of me, so they're part of me so obviously something within me is dysfunctional, mentally or medically. They're made up of me, so it's me doing it cause it's my brain, it's my brain that's doing it so what they mean to me is supposedly I can say that they belong to me, so it might be me doing them or me not knowing that I'm doing them." Emily*

Participants seemed somewhat reassured to some degree by recognising that the vision may not be real, and such explanations lacked the emotional judgement attached to their visions that was present in later subthemes ('I'm mad' and 'I'm worthless'). They were spoken of in a more matter of fact, less frightening way.

However, such appraisals often led to a severe lack of trust in their own senses.

Participants spoke of no longer being able to engage in everyday activities owing to a loss in their ability to trust their own eyes to appropriately recognise what is real or not, as if living in a perpetual state of confusion.

*“I think the worst part is the uncertainty and the not knowing what’s real and what isn’t.*

*Have those things actually occurred or did they not? So, it’s the whole confusion, the whole what is real, what isn’t?” Liam*

#### Subtheme 1.2 – ‘It’s due to life events’

There were occasions when participants provided somewhat more elaborate explanations relating to their life experiences or emotional state. They typically formed these appraisals through periods of self-reflection where participants were able to consider similarities between their visions and past traumatic life experiences, or patterns in how daily life experiences affected these, such as the visions reflecting their own emotional states, particularly when they were stressed or upset. Such explanations were often reinforced because the content of the visions often became more negative when people were in lower, more negative moods, as if mirroring these.

*“I’m seeing this person because I am going through a traumatic experience and I am so flipping stressed out that this is how my mental health is dealing with my situations is portraying visions.” Sarah*

*“It could be like my emotions personified. Like a projection. Rather than ‘cause I don’t feel things normally, I see them. If I’m in a bad mood, if somethings upset us or something like that, that is when it’ll happen. As if it’s reacting to my emotional state.”*

*Scarlett*

There was also a recognition that such heightened emotional mood states or stress often occurred in combination with disrupted and poor sleep, which further exacerbated the visions.

*“The more stressed I got, the more, more things started to happen. I’d wake up in the morning and have panic attacks before work. Not because of work, but just because of feeling like things were, maybe I’m gonna see something today. I knew something weird was going on. I’d panic and then I started not being able to sleep. Obviously, you’re not sleeping... minds not able to take it.” Mick*

Some participants reported how mental health professionals had attempted to help or explain visions; by sharing similar normalising explanations of hallucinatory experiences e.g. they were to do with their mood, drug use, or poor sleep. However, it seemed that because these explanations often lacked comprehensive detail or any mechanistic explanation as to how such factors could lead to such vivid visions, participants did not seem to hold any real conviction in such explanations. Whilst they could often recognise an element of possibility in the explanations, such as acknowledging difficult life experiences could somehow be related to visions, such

explanations could often feel dismissive as they failed to explain in sufficient detail how exactly that could lead to or cause visions.

*“[Care co-ordinator] just said, “Cause you’re not sleeping” and that was it, so you’re obviously not really the best answer to give someone, is it? You haven’t really explained how [sleep] does it or why does it?” Felix*

*“There’s been loads of traumatic things but I just don’t know why it would make us have visions of people being there.” Yogi*

Whilst the explanations identified within this theme were mentioned as potential causal factors of visions, these were quickly dismissed when in the presence of a vision.

Participants reported it was almost impossible to hold ‘normalising’ explanations of visions when faced with the powerful complexity of the visions. Therefore, the failure of these explanations to adequately explain such life-like experiences of visions meant they were often unconvincing and quickly dismissed as unacceptable.

*“When you’re in a psychotic episode, everything’s real. You don’t think, “Ah there’s a clown that cannit be real.” You think, “Ah, there’s a clown, shit what’s going on?! What am I going to do?”. It puts you in a state of reality where everything’s real. And you believe strongly that it’s real. Nothing can deter you away from the fact of you thinking it’s real.” Kyle*

## Theme 2 – ‘Convincing but unacceptable’ explanations

The second theme generated was ‘Convincing but unacceptable’ explanations. These were often more convincing to participants because the beliefs about their visions seemed to concur with their world view, that they had developed from prior negative life experiences (that the world and people in it were unsafe) as well as provide more credible explanations for the vivid life-like experiences of their visions. Yet, such explanations were still ultimately unacceptable as they were primarily threat-based, which led to high levels of distress and negative impacts on participants’ lives.

Participants tended to hold such appraisals with more conviction when they were experiencing increased negative emotions, such as high levels of worry, low self-esteem or negative intrusive mental images, or when not feeling physically well e.g. experiencing poor sleep or feeling sick. Such states seemed to influence appraisals in two ways. First, such factors increased the likelihood of seeing visions, particularly multimodal experiences (hallucinations occurring in multiple sensory modalities at the same time), which felt more life-like, leading to the increased conviction in such threat-based explanations. Second, the experience or combination of these factors typically reduced people’s feelings of resilience to effectively cope with the visions, hence viewing them as more threat-based.

### Subtheme 2.1 ‘It’s real’

When in the presence of visions, participants predominantly believed that the visions were real. They described that given the perceptual acuity of their visions being exactly the same as real external stimuli, it gave the visions a complexity and vividness that

they could not explain away as being unreal. Such beliefs were particularly strong when the vision was present. The all-encompassing nature of visions made it almost impossible for participants to disengage from the experience.

*“I mean it’s just too real for it to be in me mind. I mean, your mind cannit project visions of people, like there, in solid form and all that, and hear things and see things and smell things. I don’t think it can.” Rodney*

### Subtheme 2.2 ‘It’s here to harm’

This subtheme highlighted the belief that the visions were there to physically or emotionally harm the participants, their friends or family. Such beliefs were often strengthened by the multimodal nature of visions, where they would verbally express their intent to harm the participant or loved ones, or the experience of multisensory voices (hallucinations believed to originate from another source than the visual hallucination) that also commented on their visions.

*“I think they just want me dead. Cause they would go away if I was dead... They wouldn’t keep harassing me and harassing me if they didn’t want something similar to that. It’s the clown that’s telling us to kill people. Also calling me names, saying they’re going to kill my family...” Kyle*

*“I see this guy who looks like he’s been burnt. He doesn’t speak but the voices I get will speak, are commenting on him....The main things [the voices] say about it is that I’m*

*gonna end up like him, if I'm not careful. Since then, I've been absolutely paranoid about smoke detectors and carbon monoxide alarms and that kind of stuff, make sure they work in case he's actually saying that as a way of warning me of what I'm going to end up looking like, and so are the children."* Tony

Participants also spoke of fearing potential repercussions or punishment by the visions for not having behaved appropriately e.g. for speaking about the visions during the interview. This occurred even when the visions were not present, as if they were still able to listen in or watch the participants.

*"P: I'm dreading to gan home tonight, man. Just in case, ya kna."*

*I: "Do you think talking about it makes it more likely that he would be there?"*

*P: "Aye, yeh." Rodney*

Such threat-based and negative appraisals often led people to take steps to keep themselves safe from the visions. There was an array of different safety behaviours discussed but typically participants used avoidance and hypervigilance. Such behaviours reinforced participants' threat-based beliefs as they were not able to form alternative explanations for their experiences.

*"Barely got out – erm, felt unsafe obviously with someone constantly walking past me windows, so I was like, every noise and thing like that I heard in the house was kind of*

*like freaking us out. So, I was making sure that I'd locked me doors, to make sure that no one could get in."* Felix

*"Cause I'm thinking [the visions] will hurt [my child]... I'll be in bed every hour when [their] asleep, just checking [they're] safe...I check [their] breathing, I check [their] belly, to check if it pushes me hard up, just to see if [they're] breathing."* Yogi

Participants also believed the visions could cause them psychological harm. They spoke of the visions as wanting to drive them "insane", as if the visions had a personal vendetta against them and would not stop until the participants ended their lives or were mentally broken.

*"I think [the visions] job is to terrorise me. He always said that he would never let me go and I would never have peace. Never. He said he will always be there."* Lily

It was not always the presence of visions that was distressing for people, but also the anticipation of their occurrence. Some participants described an impending doom when the visions were not there, whereby they would sit and worry (typically through visual mental imagery) as if preparing them for its' inevitable arrival.

*"You're just constantly on edge. You can't relax at all because you're just waiting for the next thing to happen, and then it doesn't happen and you're like, "Ah well, it didn't happen yesterday, so it's got happen today". D'ya know what I mean? ... It's put so*

*much fear in you, that you're you usually just waiting for it to happen again, so you can get it over with. Mick*

### Subtheme 2.3 – 'It's unstoppable'

This subtheme captures the explanations that the visions were out of the individuals control and were an inevitable part of participants' daily lives. Participants discussed not being able to exert any power or influence over the visions, resulting in them feeling passive and powerless to the visions' existence, presence, duration, and behaviour. Participants explained that they were simply stuck with the visions.

*"I don't feel like I have any control whatsoever. I just have to wait for him leaving, ya kna, after he's said his things and all that, I just have to wait for him to disappear."* Rodney

The sense of losing control was exacerbated by the belief that they were unable to escape the visions. Participants felt intruded upon by the visions, as if nowhere was safe – not even their homes. This was particularly distressing as home was for many participants their only 'safe space'.

*"I ask him to stay out of my bedroom, it's the one place I ask him to stay out of, but it's the one place he's there all the time. So, I've taken to sleeping down here."* Lily

Prolonged feelings of no control often developed into a sense of resigned acceptance. Participants felt that they would inevitably see visions for the rest of their lives. This

further reinforced beliefs that they were powerless and therefore had to accept a life with visions and no future prospects of recovery.

*“You don’t ever grow used to it, it’s always a shock but you kind of settle in the fact that it’s not going to get better. D’ya know what I mean? You just come to terms with it. I know a lot of people might be defeated by that thought or a lot of people might think that’s a bad way to look at it, but in a way it kinda helps...because if you’re not waiting for yourself to get better, then you know, you can just focus on what’s there in front of ya.” Mick*

In some cases, such loss of control led to the belief that participants only chance of escaping the visions was by ending their own lives. Such desperation led to several participants acting on or continually contemplating such thoughts.

*“I want to disappear from the earth, if I disappear then maybe I won’t see the visions. If I could just spend my whole life in a coma, I would pick that any day of the week rather than live the life that I have right now”. Emily*

This appraisal was often exacerbated by dissociative-like experiences of losing control of themselves and their body, as if being taken over by the visions when they were present.

*“When I see them daily, you just think you won’t see them if I’m dead. I’ve had those thoughts and I tried it...I just didn’t want to see them again. It felt like they were taking*

*over me, rather than me coping with them. I was more focused on them than anything.”*

*Yogi*

#### Subtheme 2.4 – ‘I’m mad’

This subtheme was related to the idea that seeing visions meant that participants were going “mad”, “crazy” or losing grip with reality. This included both self- and other-appraisals and therefore often led participants to be fearful of speaking out about their experiences in case of being sectioned or judged negatively by others. Subsequently, participants spoke of a loss of confidence in themselves because of them seeing visions, and perceiving themselves to be different from others. This is distinct from the explanation that the vision was there to cause physical or emotional harm directly – subtheme ‘It’s here to harm’.

*“I thought I was losing me mind. I was all ready for the trip to the bloomin’ psychiatric unit, I thought I’d be sectioned.” Sarah*

*“I couldn’t imagine of the stuff I’ve discussed there talking to me GP about. I could imagine a GP looking at us, as if to say, “There’s something not right here, you’re coming with us now.” That’s one of the biggest worries I think I’ve had is the fact that you’ve got that threat where they can section ya.” Liam*

Such concern of judgement was often caused by a strong sense of internalised stigma about one’s visions. This was largely caused by cultural influences and societal views of psychosis, whereby people with psychosis are often portrayed as “crazy” or “mad”.

As a result, participants often felt unable to seek help or speak to others about their experiences. This limited the opportunity for them to consider alternative explanations of their experiences.

*“I just don’t just want [people] thinking that I’m weird or to be relegated to a different level of human existence.” Tony*

*“Whenever you see or hear something in the films or TV, they’re always depicted as like, ya kna, they’re absolutely nuts, like. It’s always, ya kna, attached with things like you want to kill yourself or stuff like that. All the time. And that’s all anyone ever sees about it.” Mick*

*“[I thought] I’d get sectioned. Cause you see these stories online, when you’ve seen all these movies on that when people who admit they’ve got mental health problems, that’s the first thing the GP’s going to do, section us and strap us to a bed.” Emily*

The feeling of being stigmatised or ‘different’ was not always triggered by the occurrence of visions. Some people had long held beliefs that they were “mad” or an outsider of society. Therefore, the presence of visions seemed to act as the confirmation of such appraisals.

*“I always thought I was a bit nuts to be honest, like. I’ve always been a bit weird so it kind of made sense. I was like, “This is like, typical me.”” Mick*

In some cases, appraisals of being “mad” extended to fears that participants were therefore dangerous. This belief manifested itself in two ways. First, participants were fearful that they may act on the demands of the visions, despite this being at odds with their personal values. Second, participants feared that they may act to protect their family member or friends from the visions and unintentionally harm their loved ones in the process. Both fears further exacerbated beliefs of them being “mad” because they believed it meant that they had the capacity to act out of character and may cause harm. Understandably, this caused high levels of distress and shame for the participants.

*“If one [a vision] was coming at me [child] with something, and I went and jumped in but I actually get [my child], something like that, I could physically do that, I’ve got no control over ‘cause I’m thinking it’s someone completely different.” Yogi*

#### Subtheme 2.5 – ‘I’m worthless’

For some participants seeing visions indicated that they were worthless, damaged or were in some way not a good person. Such appraisals were often reinforced by the multimodal nature of visions, whereby the vision confirmed these appraisals through verbally abusing participants.

*“It makes you feel worthless and just, don’t kna, just feel horrible.” Liam*

*“He keeps calling us names for not doing what he wants us to do. And I keep saying, “I’m not gonna do that, I’ll get in to trouble, ya kna.” And he keeps saying, “Ah you’re*

*just a pussy, man, you're useless, you're worthless, you're good for nobody, you can't even do that." and "You can't even do this".* Rodney

Some participants understood the visions to be an external representation of their low self-esteem; their deepest fears or core beliefs about themselves mirrored back to them. Often because they believed they were bad or worthless, they saw the visions' purpose as a way to humiliate or shame them by reflecting to them the way in which society may see them.

*"The feeling I got from [the vision] was like he was some kind of sick pervert kind thing, for want of a better word... Yeh and then [the voice] was just sitting there talking to me, sometimes he would say, "That's how people see you, people see you like him"... When [the visions] all started, like the [hybrid creature], the more I started believing everything about what's happening, the more I start believing that I am a pervert myself and I should just be killed basically, not be let out into society.... The more I thought like that and I got home for example, the more he'd [the vision] be there."* Tony

#### Subtheme 2.6 'I'm being punished'

For some people, the visions were understood as a punishment by an external force for a previous wrongdoing, as if to seek revenge. Often, the supposed wrongdoing was unknown by the participant, instead it was more of a feeling that they had done something wrong at some point during their lives. Whereas for others, they could recognise the potential cause or event which meant that external agents or paranormal entities, such as spirits or a curse, were punishing them. Despite spiritual beliefs often

being protective for people, for these participants being cursed or seeing spirits was not viewed as a special or positive trait. Instead, it was because they were deserving of a punishment and hence the visions persisted.

*“Well, I think it’s almost like a curse ‘cause my [parent] used to dabble in some really stupid stuff when they was younger, like the occult and stuff, so I believe it stuck with them and then when they died, it needed someone else to stick to.” Scarlett*

*“Because of that altercation, that afternoon. It all stemmed from the start of me going outside and obviously acting aggressively and violent, from that afternoon, this software [causing the visions] was used to manipulate, to threaten us, belittle us and to get revenge on us basically.” Liam*

#### *Summary - The search for an explanation*

People reported not knowing why they see visions. This drove a dynamic yet unsatisfactory search to try to make sense of their visions (Figure 1). This led people to two types of explanations. First, those that were ‘Unconvincing but acceptable’. These types of explanations were possible but lacked any real depth or justification so felt difficult to believe. Second, there were ‘Convincing but unacceptable’ explanations. Whilst these were predominantly more threat-based and distressing, such explanations often confirmed people’s core beliefs about themselves and the world, or captured the life-like realness of visions, making them more believable, yet they were still unacceptable because of the distress they caused.

Participants seemed to oscillate between these different types of explanations with the presence or absence of several factors or processes. See Table 2 for a summary of factors that increase people's conviction in 'Unconvincing but unacceptable' appraisals. When such factors were not present, people could sometimes consider appraisals that were less threat-based, such as normalising explanations (Unconvincing but acceptable explanations) whereas when present, these factors often reinforced people's threat-based appraisals (Convincing but unacceptable).

However, participants were ultimately searching for explanations to enable them to live the lives they wanted. They could not reach such an explanation and therefore were stuck in this cycle with no satisfactory exit. What is missing from this cycle are 'Convincing **and** acceptable' explanations which can explain the compelling reality of the visions, and so enable them to live without fear and distress.

Figure 2 The dynamic process of understanding visions

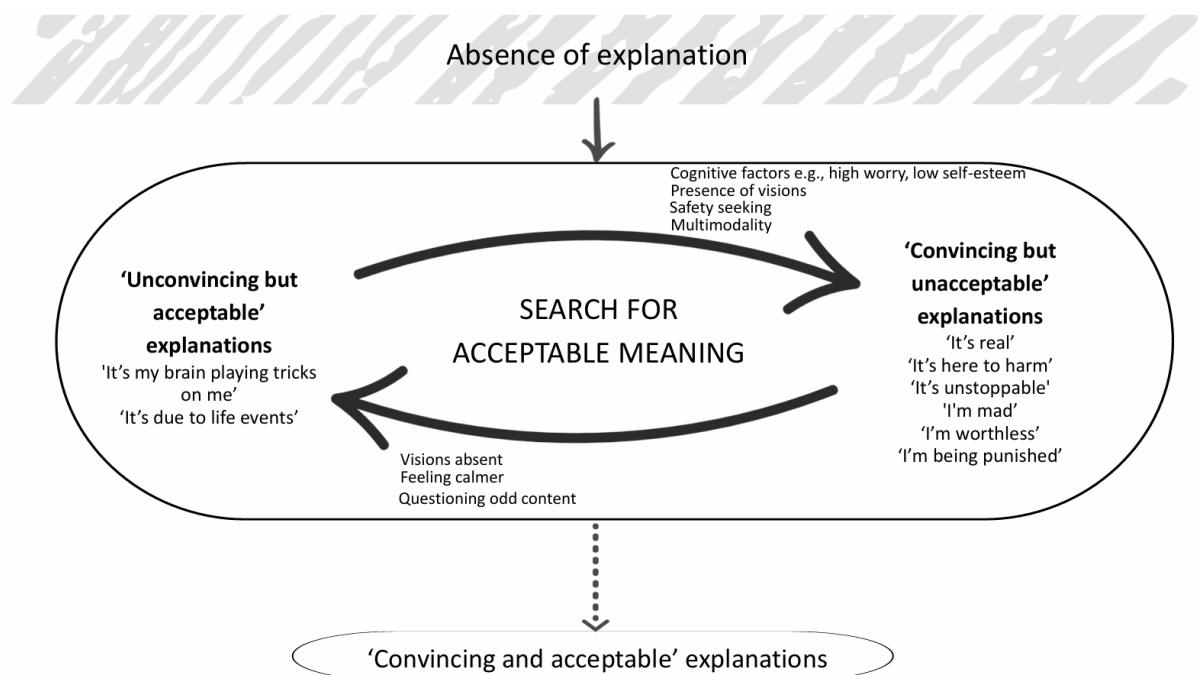


Table 2. Dynamic factors which influenced the presence and conviction of 'Convincing but unacceptable' appraisals.

| Dynamic factors influencing appraisals                                        |
|-------------------------------------------------------------------------------|
| Presence of visions in the moment                                             |
| Multimodal nature of visions                                                  |
| Multisensory experience of other hallucinatory experiences e.g. voice hearing |
| Safety-seeking behaviours                                                     |
| Heightened negative emotional states (or stress)                              |
| Rumination/high levels of worry                                               |
| Vivid mental imagery                                                          |
| Poor sleep                                                                    |

---

Low self esteem

Dissociation (being absorbed by visions)

Prior negative beliefs of world

---

## Discussion

Visions in people with psychosis can be compelling and seemingly real experiences which are associated with high levels of distress. Despite this, they are not well understood or treated. This study used qualitative methods to gain rich, detailed, first-person accounts of how people with psychosis make sense of their distressing visions. There was a notable absence of credible, satisfactory explanations of visions. This absence resulted in a search for meaning that led to explanations that were 'Unconvincing but acceptable' or 'Convincing but unacceptable'. 'Unconvincing but acceptable' appraisals could not account for the full complexity and vividness of people's visions meaning they were often dismissed as implausible. 'Convincing but unacceptable' explanations, despite being more threat-based and distressing, felt more believable to people as they were more plausible explanations in that they accounted for the authenticity of the visions, and were consistent with their prior views of themselves and the world. It is evident that people lack 'Convincing **and** acceptable' explanations of visions, which, if developed, may allow people to better understand their experiences, become less distressed, and improve their lives.

It is important to note that searching for meaning was a dynamic process as people were not static in their appraisals. Participants often cycled between the two

competing types of explanations. Factors identified as driving people to hold more distressing ‘Convincing but unacceptable’ appraisals included (but were not limited to) the visions being present, their multimodal quality, and the use of safety-seeking behaviours. For example, when their visions are present, participants reported that they were too real and life-like to dismiss or rationally explain in the moment. This was made worse when the visions were multimodal, as they appeared capable of verbally or physically reinforcing such a threat. Therefore, participants often resorted to safety-seeking behaviours to avoid harm coming to them, be it physical, social, or emotional harm. These behaviours then prevented them from learning contradictory evidence against such appraisals. In comparison, when the vision was absent, participants felt calmer and were more able to consider the possibility of normalising explanations, such as the visions were a result of stress or past trauma. However, this capacity quickly diminished when in the presence of the vision again. Such a dynamic process has been found in those at risk of developing psychosis (Brew et al., 2017). Therefore, to improve the lives of people with visions in psychosis, convincing **and** acceptable explanations of visions need to remain credible, even in the presence of the vision.

However, appraisals were also influenced by the other factors besides the presence of the vision. Visions tended to happen more when people experienced a combination of factors such as poor sleep, heightened negative emotional states (e.g. worry, anger), dissociation, intrusive mental imagery, and low self-esteem. These potentially influential mechanisms could be potential targets for future treatment development (see Paulik et al., 2024). For example, if people were able to sleep better, worry less, and feel better about themselves, it could reduce the likelihood of visions occurring, as

with other psychosis symptoms (Freeman et al., 2014; 2015a; 2015b; Gumley et al., 2006; Waite et al., 2023).

These findings have wider clinical implications. First, our findings are consistent with the cognitive theory that appraisals are key in driving distress (Beck et al., 1979). They may also help to explain why previous attempts to apply CBT to visions may not have led to significant improvements (Thomson et al., 2017; Wilson et al., 2016). The framework presented here demonstrates that visions are more than a threat to psychological and physical wellbeing (Collerton & Dudley, 2004). Threats also included a loss of control over participant's personal behaviour, visions, and wider lives, as well as confirming people's inner negative core beliefs about themselves. This work also highlights that visions are not silent or still images, rather they frequently talk to, and touch the person (Aynsworth et al., 2024; Dudley et al., 2019) making them even harder to dismiss as a trick of the mind (Dudley et al., 2023; Montagnese et al., 2021).

Finally, this study emphasised how typical normalising explanations, commonly used by clinicians, are limited when it comes to explaining people's visions, especially when these are multimodal experiences. Clinicians often normalise hallucinatory experiences through explanations such as poor sleep, trauma, brains playing tricks on people or confusion in identifying the origin of information (Aynsworth et al., 2017; Dudley et al., 2022; 2024). However, these alternative explanations were not convincing and appeared to contribute towards people holding more threat-based beliefs because of their inability to explain the complexity of visions. This pattern that was also found in a non-clinical sample (Aynsworth et al., 2023), whereby appraisals of visions being due

to stress and tiredness increased participants' distress. This could be an important factor in explaining the smaller effects found for CBT for psychosis (Bighelli et al., 2018; Turner et al., 2014) compared to other disorders, such as CBT for panic disorder (Butler et al., 2005; Gould, Ott & Pollack, 1995) and generalised anxiety disorder (Cuijper et al., 2014; Hanrahan et al., 2013). In CBT for panic disorder, the appraisal "My racing heart means I am having a heart attack" can instead be understood with a scientifically credible alternative explanation of "I am experiencing panic, which is leading to an increase in adrenaline which is causing my heart to race quickly". Whereas, we do not yet have a credible mechanistic explanation for visions to truly offer alternative, culturally acceptable explanations for these experiences. Therefore, more credible and mechanistic explanations that can viably explain how these processes may lead to visions are needed. These need to be simple and credible enough to be useful when people need them the most (Dudley et al., 2024).

### *Limitations*

To our knowledge, this study presents one of the first qualitative studies exploring how people make sense of their visions and provides a framework which researchers and clinicians can use to assess appraisals of visions. However, there are a number of limitations. First, this study only included a small sample, meaning the findings and the proposed framework needs to be tested with a more representative sample. Second, the interviews primarily focused on visions that were most important for people, and therefore inevitably on more negative visions. Exploring and understanding positive and less distressing visions would also be important in developing alternative explanations and interventions for such experiences. Third, only people who had experienced visions

within the last month were included. It could be helpful to explore with people who experience less frequent visions or those who no longer experience visions as this could broaden the range of appraisals, particularly those that may be ‘Convincing and acceptable’.

### *Future directions*

Future work could firstly develop a robust measure to assess appraisals that could capture a broader range of experiences and aid the assessment process further (Aynsworth et al., 2017). Such a measure could then be used to guide and evaluate treatments in order to better support people with visions. Second, greater exploration of potential psychological mechanisms contributing towards visions and threatening appraisals e.g. poor sleep, low self-esteem, could identify potential targets for such treatments. This study provides a framework to support clinicians and researchers to begin this work. Developing our understanding of explanations, as well as causal mechanisms, of visions will enable us to provide more convincing and acceptable explanations to help reduce the significant distress often associated with visions.

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Aynsworth, C., Collerton, D., & Dudley, R. (2017). Measures of visual hallucinations: review and recommendations. *Clinical psychology review*, 57, 164-182.  
<https://doi.org/10.1016/j.cpr.2017.05.001>
- Aynsworth, C., Nemat, N., Collerton, D., Smailes, D., & Robert Dudley. (2017). Reality monitoring performance and the role of visual imagery in visual hallucinations. *Behaviour Research and Therapy*, 97, 115-122.  
<https://doi.org/10.1016/j.brat.2017.07.012>
- Aynsworth, C., Rolinson, J., Pervez, M., Collerton, D., & Dudley, R. (2022). What is the frequency and nature of visual hallucinations in non-clinical participants? *Psychology and Psychotherapy: Theory, Research and Practice*.  
<https://doi.org/10.1111/papt.12440>
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. International Universities Press.
- Bighelli, I., Salanti, G., Huhn, M., Schneider-Thoma, J., Krause, M., Reitmeir, C., Wallis, S., Schwermann, F., Pitschel-Walz, G., Barbui, C., Furukawa, T. A., & Leucht, S. (2018). Psychological interventions to reduce positive symptoms in schizophrenia: Systematic review and network meta-analysis. *World Psychiatry*, 17, 316–329.  
<https://doi.org/10.1002/wps.20577>
- Brew, B., Shannon, C., Storey, L., Boyd, A., & Mulholland, C. (2017). A qualitative phenomenological analysis of the subjective experience and understanding of the

- at risk mental state. *International journal of qualitative studies on health and well-being*, 12(1), <https://doi.org/10.1080/17482631.2017.1342504>
- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical psychology review*, 26(1), 17-31. <https://doi.org/10.1016/j.cpr.2005.07.003>
- Chadwick, P., & Birchwood, M. (1994). The omnipotence of voices: A cognitive approach to auditory hallucinations. *British Journal of Psychiatry*, 164, 190–201. <https://doi.org/10.1192/bjp.164.2.190>
- Clarke, C. (2021). Foundations of qualitative research 2. Part 3: key (theoretical and philosophical concepts in qualitative research [Webinar]. YouTube. <https://www.youtube.com/watch?v=bgZuPmO9130&t=5s>
- Collerton, D., Barnes, J., Diederich, N. J., Dudley, R., ffytche, D., Friston, K., Goetz, C. G., Goldman, J. G., Jardri, R., Kulisevsky, J., Lewis, S. J. G., Nara, S., O’Callaghan, C., Onofrj, M., Pagonabarraga, J., Parr, T., Shine, J. M., Stebbins, G., Taylor, J. P., ... Weil, R. S. (2023). Understanding visual hallucinations: A new synthesis. In *Neuroscience and Biobehavioral Reviews* (Vol. 150). Elsevier Ltd. <https://doi.org/10.1016/j.neubiorev.2023.105208>
- Cuijpers, P., Sijbrandij, M., Koole, S., Huibers, M., Berking, M., & Andersson, G. (2014). Psychological treatment of generalized anxiety disorder: a meta-analysis. *Clinical psychology review*, 34(2), 130-140. <https://doi.org/10.1016/j.cpr.2014.01.002>
- Dudley, R., Aynsworth, C., Mosimann, U., Taylor, J.-P., Smailes, D., Collerton, D., McCarthy-Jones, S., & Urwyler, P. (2019). A comparison of visual hallucinations

across disorders. *Psychiatry Research*, 272.

<https://doi.org/10.1016/j.psychres.2018.12.052>

Dudley, R., Collerton, D., Nicholson, M., & Mosimann, U. (2013). Clinical characteristics of disclosed visual hallucinations in users of an Early Intervention in Psychosis Service. *Psychosis*, 5(2), 127–133.

<https://doi.org/10.1080/17522439.2012.699543>

Dudley, R., Denton, S., Mathewson, J., Pervez, S., Aynsworth, C., Dodgson, G., & Barclay, N. (2023). Prevalence of multisensory hallucinations in people at risk of transition to psychosis. *Psychiatry Research*, 322, 115091.

<https://doi.org/10.1016/j.psychres.2023.115091>

Dudley, R., Dodgson, G., Common, S., Ogundimu, E., Liley, J., O'Grady, L., Watson, F., Gibbs, C., Arnott, B., Fernyhough, C., Alderson-Day, B., & Aynsworth, C. (2024). Effects of a novel, brief psychological therapy (Managing Unusual Sensory Experiences) for hallucinations in first episode psychosis (MUSE FEP): Findings from an exploratory randomised controlled trial. *Journal of Psychiatric Research*, 174, 289-296. <https://doi.org/10.1016/j.jpsychires.2024.04.031>

Dudley, R., Dodgson, G., Common, S., O'Grady, L., Watson, F., Gibbs, C., Arnott, B., Fernyhough, C., Alderson-Day, B., Ogundimu, E., Kharatikoopaei, E., Patton, V., & Aynsworth, C. (2022). Managing Unusual Sensory Experiences in People with First-Episode Psychosis (MUSE FEP): a study protocol for a single-blind parallel-group randomised controlled feasibility trial. *BMJ Open*, 12(5).

<https://doi.org/10.1136/bmjopen-2022-061827>

Dudley, R., Kuyken, W., & Padesky, C. A. (2011). Disorder specific and trans-diagnostic case conceptualisation. *Clinical Psychology Review*, 31(2).

<https://doi.org/10.1016/j.cpr.2010.07.005>

Dudley, R., Sargeant, S., Gibbs, C., Prentice, L., McCartney, L., Aynsworth, C., Maskey, M. & Skeggs, A. (2026). Virtual reality for visions (VRV): a proof-of-concept study examining the development of a new treatment for distressing visual hallucinations in people with psychosis. *British Medical Journal Open*, e107535.

<https://doi.org/10.1136/bmjopen-2025-107535>

Dudley, R., White, S., Miskin, R., Oakes, L., Longden, E., Steel, C., Swann, S., Underwood, R., & Peters, E. (2024). Hallucinations across sensory domains in people with post-traumatic stress disorder and psychosis. *Psychiatry Research*, 116229. <https://doi.org/https://doi.org/10.1016/j.psychres.2024.116229>

Freeman, D., Dunn, G., Startup, H., Pugh, K., Cordwell, J., Mander, H., ... & Kingdon, D. (2015a). Effects of cognitive behaviour therapy for worry on persecutory delusions in patients with psychosis (WIT): a parallel, single-blind, randomised controlled trial with a mediation analysis. *The Lancet Psychiatry*, 2(4), 305-313.

<https://doi.org/10.1016/j.jpsychires.2013.06.016>

Freeman, D., Waite, F., Startup, H., Myers, E., Lister, R., McInerney, J., ... & Yu, L. M. (2015b). Efficacy of cognitive behavioural therapy for sleep improvement in patients with persistent delusions and hallucinations (BEST): a prospective, assessor-blind, randomised controlled pilot trial. *The Lancet Psychiatry*, 2(11), 975-983. [https://doi.org/10.1016/S2215-0366\(15\)00314-4](https://doi.org/10.1016/S2215-0366(15)00314-4)

- Gumley, A., Karatzias, A., Power, K., Reilly, J., McNay, L., & O'Grady, M. (2006). Early intervention for relapse in schizophrenia: Impact of cognitive behavioural therapy on negative beliefs about psychosis and self-esteem. *British Journal of Clinical Psychology*, 45(2), 247-260. <https://doi.org/10.1348/014466505X49925>
- Gould, R. A., Ott, M. W., & Pollack, M. H. (1995). A meta-analysis of treatment outcome for panic disorder. *Clinical Psychology Review*, 15(8), 819-844. [https://doi.org/10.1016/0272-7358\(95\)00048-8](https://doi.org/10.1016/0272-7358(95)00048-8)
- Hanrahan, F., Field, A. P., Jones, F. W., & Davey, G. C. (2013). A meta-analysis of cognitive therapy for worry in generalized anxiety disorder. *Clinical psychology review*, 33(1), 120-132. <https://doi.org/10.1016/j.cpr.2012.10.008>
- Montagnese, M., Leptourgos, P., Fernyhough, C., Waters, F., Larøi, F., Jardri, R., McCarthy-Jones, S., Thomas, N., Dudley, R., Taylor, J.-P., Collerton, D., & Urwyler, P. (2021). A Review of Multimodal Hallucinations: Categorization, Assessment, Theoretical Perspectives, and Clinical Recommendations. *Schizophrenia Bulletin*, 47(1). <https://doi.org/10.1093/schbul/sbaa101>
- Morrison, A. (1998). A cognitive analysis of the maintenance of auditory hallucinations: Are voices to schizophrenia what bodily sensations are to panic? *Behavioural and Cognitive Psychotherapy*, 26, 289–302. <https://doi.org/10.1017/S1352465898264010>
- Morrison, A. P. (2001). The interpretation of intrusions in psychosis: an integrative cognitive approach to hallucinations and delusions. *Behavioural and cognitive psychotherapy*, 29(3), 257-276. <https://doi.org/10.1017/S1352465801003010>

O'Brien, J., Taylor, J. P., Ballard, C., Barker, R. A., Bradley, C., Burns, A., Collerton, D., Dave, S., Dudley, R., Francis, P., Gibbons, A., Harris, K., Lawrence, V., Leroi, I., Mckeith, I., Michaelides, M., Naik, C., O'callaghan, C., Olsen, K., ... Ffytche, D. (2020). Visual hallucinations in neurological and ophthalmological disease: Pathophysiology and management. *Journal of Neurology, Neurosurgery and Psychiatry*, 91(5). <https://doi.org/10.1136/jnnp-2019-322702>

Turkington, D., Dudley, R., Warman, D. M., & Beck, A. T. (2004). Cognitive-Behavioral Therapy for Schizophrenia: A Review. *Journal of Psychiatric Practice*, 10(1). <https://doi.org/10.1097/00131746-200401000-00002>

Turner, D. T., van der Gaag, M., Karyotaki, E., & Cuipers, P. (2014). Psychological interventions for psychosis: A meta-analysis of comparative outcome studies. *American Journal of Psychiatry*, 171, 523–538. <https://doi.org/10.1176/appi.ajp.2013.13081159>

Waite, F., Černis, E., Kabir, T., Iredale, E., Johns, L., Maughan, D., ... & Freeman, D. (2023). A targeted psychological treatment for sleep problems in young people at ultra-high risk of psychosis in England (SleepWell): a parallel group, single-blind, randomised controlled feasibility trial. *The Lancet Psychiatry*, 10(9), 706-718. [https://doi.org/10.1016/s2215-0366\(23\)00203-1](https://doi.org/10.1016/s2215-0366(23)00203-1)

Williams, B., & Healy, D. (2001). Perceptions of illness causation among new referrals to a community mental health team: “explanatory model” or “exploratory map”? *Social science & medicine*, 53(4), 465-476. [https://doi.org/10.1016/S0277-9536\(00\)00349-X](https://doi.org/10.1016/S0277-9536(00)00349-X)



## Appendix 5: COREQ checklist – Chapter 3

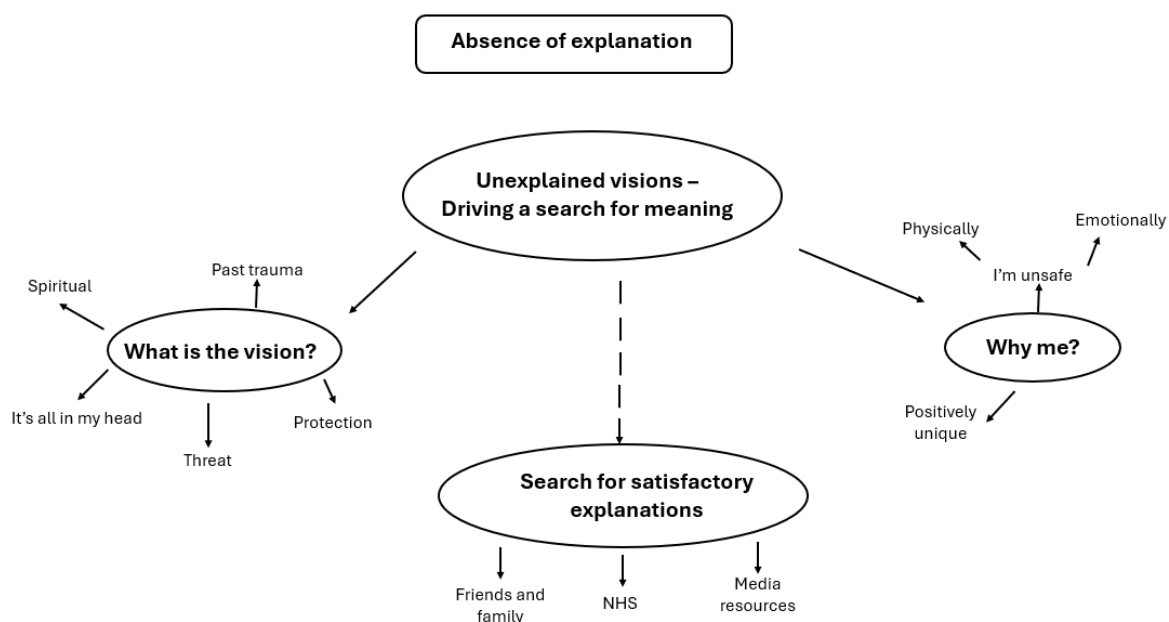
| No. Item                                       | Guide questions/description                                                                                                                              | Reported on Page # |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Domain 1: Research team and reflexivity</b> |                                                                                                                                                          |                    |
| <i>Personal Characteristics</i>                |                                                                                                                                                          |                    |
| 1. Inter viewer/facilitator                    | Which author/s conducted the interview or focus group?                                                                                                   | 43                 |
| 2. Credentials                                 | What were the researcher's credentials?<br>E.g. PhD, MD                                                                                                  | 43                 |
| 3. Occupation                                  | What was their occupation at the time of the study?                                                                                                      | 43                 |
| 4. Gender                                      | Was the researcher male or female?                                                                                                                       | 45                 |
| 5. Experience and training                     | What experience or training did the researcher have?                                                                                                     | 43                 |
| <i>Relationship with participants</i>          |                                                                                                                                                          |                    |
| 6. Relationship established                    | Was a relationship established prior to study commencement?                                                                                              | N/A                |
| 7. Participant knowledge of the interviewer    | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research                                                 | 43                 |
| 8. Interviewer characteristics                 | What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic               | 45, 69             |
| <b>Domain 2: study design</b>                  |                                                                                                                                                          |                    |
| <i>Theoretical framework</i>                   |                                                                                                                                                          |                    |
| 9. Methodological orientation and Theory       | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | 41-45              |
| <i>Participant selection</i>                   |                                                                                                                                                          |                    |
| 10. Sampling                                   | How were participants selected? e.g. purposive, convenience, consecutive, snowball                                                                       | 42                 |

|                                        |                                                                                   |           |
|----------------------------------------|-----------------------------------------------------------------------------------|-----------|
| 11. Method of approach                 | How were participants approached? e.g. face-to-face, telephone, mail, email       | 42        |
| 12. Sample size                        | How many participants were in the study?                                          | 46        |
| 13. Non-participation                  | How many people refused to participate or dropped out? Reasons?                   | 46        |
| <i>Setting</i>                         |                                                                                   |           |
| 14. Setting of data collection         | Where was the data collected? e.g. home, clinic, workplace                        | 46        |
| 15. Presence of non-participants       | Was anyone else present besides the participants and researchers?                 | N/A       |
| 16. Description of sample              | What are the important characteristics of the sample? e.g. demographic data, date | 46, 69-70 |
| <i>Data collection</i>                 |                                                                                   |           |
| 17. Interview guide                    | Were questions, prompts, guides provided by the authors? Was it pilot tested?     | 43        |
| 18. Repeat interviews                  | Were repeat inter views carried out? If yes, how many?                            | N/A       |
| 19. Audio/visual recording             | Did the research use audio or visual recording to collect the data?               | 43        |
| 20. Field notes                        | Were field notes made during and/or after the inter view or focus group?          | 45        |
| 21. Duration                           | What was the duration of the inter views or focus group?                          | 46        |
| 22. Data saturation                    | Was data saturation discussed?                                                    | 46        |
| 23. Transcripts returned               | Were transcripts returned to participants for comment and/or correction?          | N/A       |
| <b>Domain 3: analysis and findings</b> |                                                                                   |           |
| <i>Data analysis</i>                   |                                                                                   |           |
| 24. Number of data coders              | How many data coders coded the data?                                              | 44        |
| 25. Description of the coding tree     | Did authors provide a description of the coding tree?                             | N/A       |
| 26. Derivation of themes               | Were themes identified in advance or derived from the data?                       | 44        |
| 27. Software                           | What software, if applicable, was used to manage the data?                        | 44        |
| 28. Participant checking               | Did participants provide feedback on the findings?                                | 45, 69    |
| <i>Reporting</i>                       |                                                                                   |           |

|                                  |                                                                                                                                 |       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------|
|                                  |                                                                                                                                 |       |
| 29. Quotations presented         | Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number | 70-88 |
| 30. Data and findings consistent | Was there consistency between the data presented and the findings?                                                              | 70-88 |
| 31. Clarity of major themes      | Were major themes clearly presented in the findings?                                                                            | 70-88 |
| 32. Clarity of minor themes      | Is there a description of diverse cases or discussion of minor themes?                                                          | 70-88 |

## Appendix 6: Thematic maps – developing appraisals themes (Chapter 3)

Figure A demonstrates that initially the appraisals were categorised as “What is the vision?” and “why me?”. This tried to capture peoples’ initial reactions and then how people made more sense of visions on reflection; how people made sense of the presence of the vision (explanations), compared to what it meant more generally about themselves that they saw visions (appraisals). This also captured the impact of a lack of explanation and the behaviour sought out to seek resolve. However, these themes were difficult to distinguish at times and there were often overlaps between these. Through further analysis, the issue of believability became more apparent, so we considered factors that influenced people’s strength of conviction in the beliefs, which resulted in the generation of ‘Unconvincing explanations’ and ‘Convincing but unacceptable explanations’. Initially this was viewed as a linear process with a starting and end point generated (Figure B). However, the process was more cyclical in nature, whereby participants were continuously engaged in a sense making process; we needed to capture how appraisals were dynamic and could vary over times. This led to the final thematic map, displayed as Figure 1 (as included in main text).



*Figure A Initial thematic maps of themes of appraisals.*

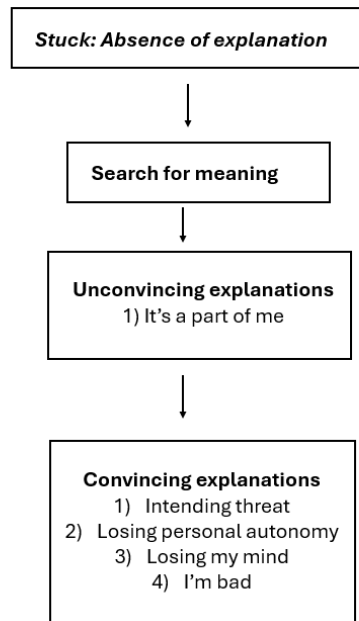


Figure B Thematic map demonstrating a linear process in forming appraisals of visions

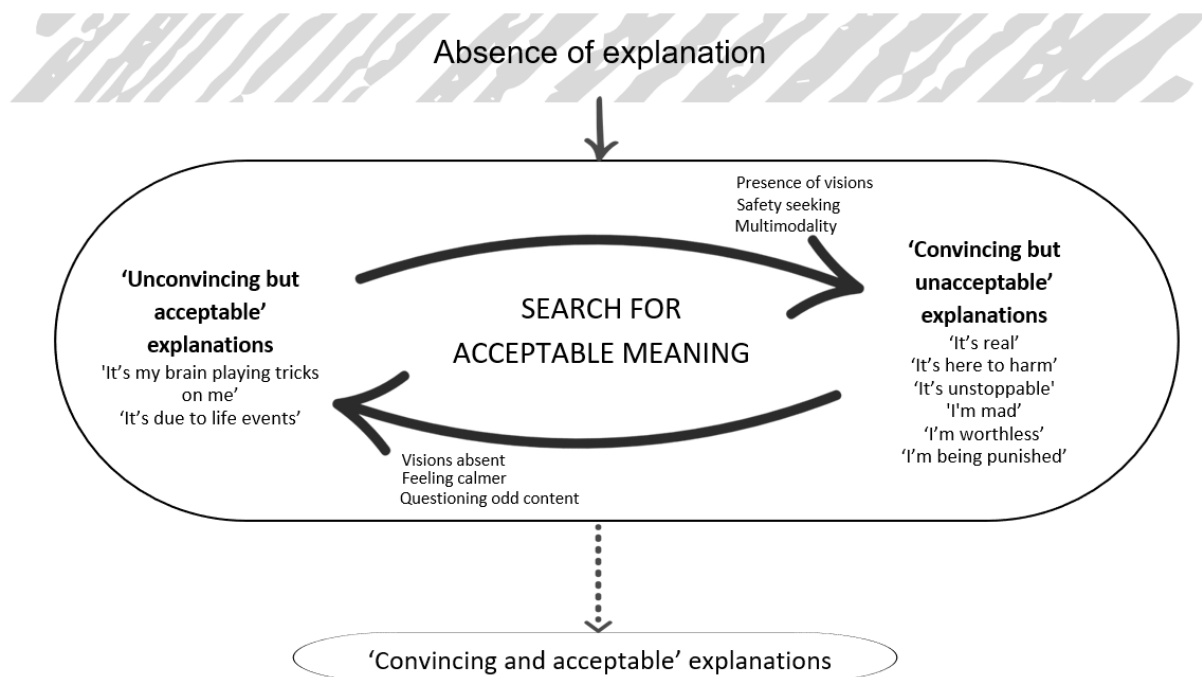


Figure 1 Final thematic map capturing dynamic cycle of appraisals of visions

## Appendix 7: VISION-QUEST Baseline Assessment Pack



### VISION-QUEST:

**A questionnaire study into visual hallucinations**

**Baseline assessment (pack 1)**

|                                |                                                                                                                                                                                                                                                                                                                                                                      |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <b>Participant ID:</b>         | <input type="text"/>                                                                                                                                                                                                                                                                                                                                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |
| <b>Site ID:</b>                | <input type="text"/>                                                                                                                                                                                                                                                                                                                                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |
| <b>Date:</b>                   | <table><tr><td><input type="text" value="D"/></td><td><input type="text" value="D"/></td><td>/</td><td><input type="text" value="M"/></td><td><input type="text" value="M"/></td><td>/</td><td><input type="text" value="Y"/></td><td><input type="text" value="Y"/></td><td><input type="text" value="Y"/></td><td><input type="text" value="Y"/></td></tr></table> | <input type="text" value="D"/> | <input type="text" value="D"/> | /                              | <input type="text" value="M"/> | <input type="text" value="M"/> | /                              | <input type="text" value="Y"/> | <input type="text" value="Y"/> | <input type="text" value="Y"/> | <input type="text" value="Y"/> |
| <input type="text" value="D"/> | <input type="text" value="D"/>                                                                                                                                                                                                                                                                                                                                       | /                              | <input type="text" value="M"/> | <input type="text" value="M"/> | /                              | <input type="text" value="Y"/> | <input type="text" value="Y"/> | <input type="text" value="Y"/> | <input type="text" value="Y"/> |                                |                                |
| <b>Researcher:</b>             | <input type="text"/>                                                                                                                                                                                                                                                                                                                                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |

### **Instructions for participant**

Thank you for agreeing to take part in this study.

Please complete each question in this pack and take breaks if you would like to. Sometimes it's hard to choose the best option for you – please don't think for too long, just choose the answer that comes to you first. Not all questions may feel relevant to you, and that's ok, it is so we can capture a wide range of experiences across lots of different people.

Some of the questionnaires you will complete are quite long and contain similar types of questions. This is so that we can choose the best questions to ask people in the future. It will help us to understand more about the types of thoughts people have, and how these are related to visions.

There are no right or wrong answers to these questions.

Your answers will help us to support people in the future and this is really important to us.

**Thank you for your time.**

## About you

1. What is your current age?

2. What is your gender?

Male

☐

Intersex

☐

Female

☐

I prefer not to say

☐

Non-binary

☐

I use another term.

☐

If so, please state this below:

---

3. Is your gender identity the same as the sex you were assigned at birth?

Yes

☐

No

☐

I prefer not to say

☐

4. What is your sexual orientation best described as?

|                       |                          |                     |                          |
|-----------------------|--------------------------|---------------------|--------------------------|
| Heterosexual/straight | <input type="checkbox"/> | Pansexual           | <input type="checkbox"/> |
| Gay                   | <input type="checkbox"/> | Asexual             | <input type="checkbox"/> |
| Lesbian               | <input type="checkbox"/> | I use another term  | <input type="checkbox"/> |
| Bisexual              | <input type="checkbox"/> | I prefer not to say | <input type="checkbox"/> |

5. Which option best describes your ethnicity?

| Asian or Asian British                                  |  | Mixed or multiple ethnic groups                     |  |
|---------------------------------------------------------|--|-----------------------------------------------------|--|
| Indian                                                  |  | White and Black Caribbean                           |  |
| Pakistani                                               |  | White and Black African                             |  |
| Bangladeshi                                             |  | White and Asian                                     |  |
| Chinese                                                 |  | Any other Mixed or multiple ethnic background       |  |
| Any other Asian background                              |  |                                                     |  |
| Black, Black British, Caribbean or African              |  | White                                               |  |
| Caribbean                                               |  | English, Welsh, Scottish, Northern Irish or British |  |
| African                                                 |  | Irish                                               |  |
| Any other Black, Black British, or Caribbean background |  | Gypsy or Irish Traveller                            |  |
| Other ethnic group                                      |  | Roma                                                |  |
| Arab                                                    |  | Any other White background                          |  |
| Any other ethnic group                                  |  |                                                     |  |

If you ticked 'Any other' option, please provide details:

.....

6. Which option best describes your current relationship status?

|                                       |                          |                           |                          |
|---------------------------------------|--------------------------|---------------------------|--------------------------|
| Single                                | <input type="checkbox"/> | Married/civil partnership | <input type="checkbox"/> |
| In a relationship (living separately) | <input type="checkbox"/> | Separated                 | <input type="checkbox"/> |
| In a relationship (Cohabiting)        | <input type="checkbox"/> | Divorced                  | <input type="checkbox"/> |
| Widowed                               | <input type="checkbox"/> | I prefer not to say       | <input type="checkbox"/> |

7. Please tick the box which best describes your religion?

|           |                          |                                |                          |
|-----------|--------------------------|--------------------------------|--------------------------|
| Buddhist  | <input type="checkbox"/> | Sikh                           | <input type="checkbox"/> |
| Christian | <input type="checkbox"/> | I have an alternative religion | <input type="checkbox"/> |
| Hindu     | <input type="checkbox"/> | No religion                    | <input type="checkbox"/> |
| Jewish    | <input type="checkbox"/> | I prefer not to say            | <input type="checkbox"/> |
| Muslim    | <input type="checkbox"/> |                                |                          |

8. How many years have you been involved with mental health services?

### About your visions

#### Appraisals - Visual Hallucinations Scale (A-VHS)

*People tell us that they sometimes experience strange or unusual experiences like seeing things that others do not. These are known as visual hallucinations or visions. These can occur for many people, but sometimes the visions can be very distressing. We want to ask you particularly about your experiences in the **last two weeks** concerning seeing things that are not there. We are asking about things that seem real, occur when you are awake, and are not owing to another obvious reason like being very drowsy, or having taken drugs. We are looking to understand more about the types of things you see, how you make sense of these and the impact on you.*

1. Have you seen a vision in the past four weeks?

Yes ☐ No ☐

2. What best describes what you saw? ***You can choose more than one option.***

|                 |                          |                                                                                                                                                       |                          |                         |                          |
|-----------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------|--------------------------|
| People          | <input type="checkbox"/> | Objects                                                                                                                                               | <input type="checkbox"/> | Scenery                 | <input type="checkbox"/> |
| Faces           | <input type="checkbox"/> | Animals/insects                                                                                                                                       | <input type="checkbox"/> | Religious character     | <input type="checkbox"/> |
| Figures/shadows | <input type="checkbox"/> | Unusual creature                                                                                                                                      | <input type="checkbox"/> | Flashing colours/lights | <input type="checkbox"/> |
| Other           | <input type="checkbox"/> | Human but with a unique or odd characteristic (such as faceless, no eyes, injured, old fashioned clothes, in a human body but not person e.g. clown). |                          |                         | <input type="checkbox"/> |

***IF ANSWERED 'NO' TO QUESTION 1 OR ONLY 'FLASHING COLOURS/LIGHTS' TO QUESTION 2, THEN YOU UNFORTUNATELY ARE NOT ABLE TO PARTICIPATE IN THIS STUDY SO YOU CAN END THIS ASSESSMENT HERE. THIS IS BECAUSE WE ARE LOOKING TO FIND OUT MORE ABOUT RECENT COMPLEX VISUAL EXPERIENCES. OTHERWISE PLEASE CONTINUE.***

3. Please could you briefly provide more details describing exactly what you see? *E.g. what/who you see, any unique characteristics, perceptual quality (what its look like e.g. real, clear, blurry, vividness), what does the vision do? We are really interested to learn more about your experiences so feel free to write as much or as little as you prefer here. It can be in sentences or bullet points, whatever feels best for you to describe these. However please do not write any personally identifiable information such as names, addresses.*

4. Does the vision ever talk to you?

Yes ☐ No ☐

- 4a. If yes, how often?

| Never                    | Rarely                   | Sometimes                | Often                    | Always                   |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- 4b. When the vision talks to you, what is the content of what it says?

| Very negative            | Quite negative           | Neutral                  | Quite Positive           | Very positive            |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

5. Does the vision ever touch you?

Yes ☐ No ☐

5a. If yes, how often?

| Never | Rarely | Sometimes | Often | Always |
|-------|--------|-----------|-------|--------|
|       |        |           |       |        |

5b. When the vision touches you, what type of touch is it?

| Very negative | Quite negative | Neutral | Quite Positive | Very positive |
|---------------|----------------|---------|----------------|---------------|
|               |                |         |                |               |

6. Is the vision ever accompanied by a particular smell?

Yes ☐ No ☐

6a. If yes, how often?

| Never | Rarely | Sometimes | Often | Always |
|-------|--------|-----------|-------|--------|
|       |        |           |       |        |

6b. When the smell is present, what type of smell is this?

| Very negative | Quite negative | Neutral | Quite Positive | Very positive |
|---------------|----------------|---------|----------------|---------------|
|               |                |         |                |               |

7. How long have you seen visions?

\_\_\_\_\_

8. If available, would you like a treatment for your visions?

Yes ☐ No ☐

8a. If 'Yes', would you like to this be a psychological treatment such as talking therapy?

Yes ☐ No ☐

8b. If 'No', what type of treatment would you prefer?

***PLEASE CONTINUE TO THE NEXT PAGE***

## Hamilton Questionnaire – Adapted for Visions (HViQ)

### Instructions:

Please tick or cross one option that best describes your experience of visions during the **past week, including today**.

1. How frequently did you see visions?

- |                          |                           |
|--------------------------|---------------------------|
| <input type="checkbox"/> | No visions                |
| <input type="checkbox"/> | Less than once a day      |
| <input type="checkbox"/> | Once or twice a day       |
| <input type="checkbox"/> | Several times a day       |
| <input type="checkbox"/> | All the time / constantly |

2. How negative is the content (e.g. the physical appearance) of the visions?

- |                          |                     |
|--------------------------|---------------------|
| <input type="checkbox"/> | Not negative at all |
| <input type="checkbox"/> | Not that negative   |
| <input type="checkbox"/> | Fairly negative     |
| <input type="checkbox"/> | Very negative       |
| <input type="checkbox"/> | Horrible            |

3. How attention grabbing or noticeable are the visions?

- |                          |                                          |
|--------------------------|------------------------------------------|
| <input type="checkbox"/> | Not intrusive at all                     |
| <input type="checkbox"/> | Very discreet (not very noticeable)      |
| <input type="checkbox"/> | Average                                  |
| <input type="checkbox"/> | Fairly intrusive                         |
| <input type="checkbox"/> | Very intrusive (very attention grabbing) |

4. How long do the visions usually last?

- |                          |                                                  |
|--------------------------|--------------------------------------------------|
| <input type="checkbox"/> | Visions not present                              |
| <input type="checkbox"/> | A few second to one minute                       |
| <input type="checkbox"/> | A few minutes                                    |
| <input type="checkbox"/> | More than 10 minutes but less than an hour       |
| <input type="checkbox"/> | Longer than one hour / they just seem to persist |

5. How much do the visions interfere with your daily activities?

- |                          |                       |
|--------------------------|-----------------------|
| <input type="checkbox"/> | No interference       |
| <input type="checkbox"/> | A little bit          |
| <input type="checkbox"/> | Moderately            |
| <input type="checkbox"/> | Quite a bit           |
| <input type="checkbox"/> | Extremely interfering |

6. How distressing are the visions?

- |                          |                               |
|--------------------------|-------------------------------|
| <input type="checkbox"/> | No visions are distressing me |
| <input type="checkbox"/> | A little bit                  |
| <input type="checkbox"/> | Moderately                    |
| <input type="checkbox"/> | Quite a bit                   |
| <input type="checkbox"/> | Extremely distressing         |

7. How bad (worthless/useless) do the visions make you feel about yourself?

- |                          |                                      |
|--------------------------|--------------------------------------|
| <input type="checkbox"/> | No visions make me feel bad          |
| <input type="checkbox"/> | A little bit                         |
| <input type="checkbox"/> | Fairly bad                           |
| <input type="checkbox"/> | Very bad                             |
| <input type="checkbox"/> | Extremely bad (as bad as I can feel) |

8. How clearly do you see the visions?

- |                          |                                |
|--------------------------|--------------------------------|
| <input type="checkbox"/> | Visions not present            |
| <input type="checkbox"/> | Very blurry and unclear        |
| <input type="checkbox"/> | Fairly blurry and unclear      |
| <input type="checkbox"/> | Fairly clear and vivid visions |
| <input type="checkbox"/> | Very clear, vivid visions      |

9. How often does the vision control you and what you do?

- |                          |                  |
|--------------------------|------------------|
| <input type="checkbox"/> | None of the time |
| <input type="checkbox"/> | Rarely           |
| <input type="checkbox"/> | Sometimes        |
| <input type="checkbox"/> | Most of the time |
| <input type="checkbox"/> | All of the time  |

10. How often does the vision feel real?

|                          |                  |
|--------------------------|------------------|
| <input type="checkbox"/> | Never            |
| <input type="checkbox"/> | Rarely           |
| <input type="checkbox"/> | Sometimes        |
| <input type="checkbox"/> | Most of the time |
| <input type="checkbox"/> | All of the time  |

***PLEASE CONTINUE TO THE NEXT PAGE***

## Part 1: Thoughts about seeing visions

*People sometimes find it difficult to manage their visual experiences. This questionnaire asks about the thoughts you may have in relation to having seen the vision.*

*Please read each statement below and select the number that best describes how much you've had this thought over the **past two weeks**.*

| In the past two weeks I thought... |                                                                                | Never | Sometimes | Often | Always |
|------------------------------------|--------------------------------------------------------------------------------|-------|-----------|-------|--------|
| 1.                                 | The visions encourage me to do things that I do not want to do.                | 0     | 1         | 2     | 3      |
| 2.                                 | The visions are evil.                                                          | 0     | 1         | 2     | 3      |
| 3.                                 | I no longer know what's real or not because I see visions.                     | 0     | 1         | 2     | 3      |
| 4.                                 | The visions must be real because they look so life-like.                       | 0     | 1         | 2     | 3      |
| 5.                                 | Even when I cannot see the visions, I can still feel them.                     | 0     | 1         | 2     | 3      |
| 6.                                 | I see visions because I am weak.                                               | 0     | 1         | 2     | 3      |
| 7.                                 | The visions help me to keep control.                                           | 0     | 1         | 2     | 3      |
| 8.                                 | I see visions because I am lonely.                                             | 0     | 1         | 2     | 3      |
| 9.                                 | I see visions because my brain is damaged.                                     | 0     | 1         | 2     | 3      |
| 10.                                | The visions may make me lose control.                                          | 0     | 1         | 2     | 3      |
| 11.                                | I see visions because I do not deserve to be happy.                            | 0     | 1         | 2     | 3      |
| 12.                                | I see visions because I am a bad person.                                       | 0     | 1         | 2     | 3      |
| 13.                                | The vision will harm me.                                                       | 0     | 1         | 2     | 3      |
| 14.                                | People will think I am mad for seeing things.                                  | 0     | 1         | 2     | 3      |
| 15.                                | I see things because others in my family have had similar experiences.         | 0     | 1         | 2     | 3      |
| 16.                                | I see visions because I am worthless.                                          | 0     | 1         | 2     | 3      |
| 17.                                | The things I see must be real.                                                 | 0     | 1         | 2     | 3      |
| 18.                                | I see visions because I deserve bad things to happen to me.                    | 0     | 1         | 2     | 3      |
| 19.                                | The visions are all-powerful.                                                  | 0     | 1         | 2     | 3      |
| 20.                                | Even when I can't see the visions, they are still watching or listening to me. | 0     | 1         | 2     | 3      |
| 21.                                | The visions are related to me but I don't know how.                            | 0     | 1         | 2     | 3      |
| 22.                                | The visions are due to a chemical imbalance in my brain.                       | 0     | 1         | 2     | 3      |
| 23.                                | The visions keep me company.                                                   | 0     | 1         | 2     | 3      |
| 24.                                | I won't be able to cope with the vision.                                       | 0     | 1         | 2     | 3      |
| 25.                                | The visions have bad intentions.                                               | 0     | 1         | 2     | 3      |
| 26.                                | The visions are paranormal experiences e.g. ghosts or spirits.                 | 0     | 1         | 2     | 3      |

| In the past two weeks I thought... |                                                                                                    | Never | Sometimes | Often | Always |
|------------------------------------|----------------------------------------------------------------------------------------------------|-------|-----------|-------|--------|
| 27.                                | The visions directly replay something that has happened in the past.                               | 0     | 1         | 2     | 3      |
| 28.                                | The visions mean I am close to God.                                                                | 0     | 1         | 2     | 3      |
| 29.                                | I have no control over the visions.                                                                | 0     | 1         | 2     | 3      |
| 30.                                | The visions are communicating my emotions to me.                                                   | 0     | 1         | 2     | 3      |
| 31.                                | The visions can read my thoughts.                                                                  | 0     | 1         | 2     | 3      |
| 32.                                | I am not sure if I am awake or dreaming.                                                           | 0     | 1         | 2     | 3      |
| 33.                                | The visions are trying to make me lose my mind.                                                    | 0     | 1         | 2     | 3      |
| 34.                                | The visions are external to me.                                                                    | 0     | 1         | 2     | 3      |
| 35.                                | The visions are my brain playing tricks on me.                                                     | 0     | 1         | 2     | 3      |
| 36.                                | The visions are trying to wear me down.                                                            | 0     | 1         | 2     | 3      |
| 37.                                | The visions provide guidance for my life.                                                          | 0     | 1         | 2     | 3      |
| 38.                                | I need to find out who the visions are.                                                            | 0     | 1         | 2     | 3      |
| 39.                                | I see visions because I have a vivid imagination.                                                  | 0     | 1         | 2     | 3      |
| 40.                                | The visions I see reflect things that have happened to me in my life.                              | 0     | 1         | 2     | 3      |
| 41.                                | My physical health difficulties are causing me to see visions.                                     | 0     | 1         | 2     | 3      |
| 42.                                | Other people are causing me to see visions.                                                        | 0     | 1         | 2     | 3      |
| 43.                                | I have no future while I see visions.                                                              | 0     | 1         | 2     | 3      |
| 44.                                | The visions are related to jinn (i.e. supernatural beings related to Arabic and Muslim tradition). | 0     | 1         | 2     | 3      |
| 45.                                | I cannot escape the visions.                                                                       | 0     | 1         | 2     | 3      |
| 46.                                | I see visions of people I have lost or not fully grieved for.                                      | 0     | 1         | 2     | 3      |
| 47.                                | The visions mean that I am useless.                                                                | 0     | 1         | 2     | 3      |
| 48.                                | I see visions because I have had difficult things happen to me throughout my life.                 | 0     | 1         | 2     | 3      |
| 49.                                | I see visions because I am cursed.                                                                 | 0     | 1         | 2     | 3      |
| 50.                                | Seeing visions means I am crazy.                                                                   | 0     | 1         | 2     | 3      |
| 51.                                | The visions are similar to the content of my dreams or nightmares.                                 | 0     | 1         | 2     | 3      |
| 52.                                | I see visions because I am stressed.                                                               | 0     | 1         | 2     | 3      |
| 53.                                | The visions keep me connected to people in my past.                                                | 0     | 1         | 2     | 3      |
| 54.                                | The visions mean that I am a bad person.                                                           | 0     | 1         | 2     | 3      |
| 55.                                | The visions represent how I feel.                                                                  | 0     | 1         | 2     | 3      |
| 56.                                | The visions may make me act without stopping to think first.                                       | 0     | 1         | 2     | 3      |
| 57.                                | The visions are dangerous.                                                                         | 0     | 1         | 2     | 3      |
| 58.                                | The visions mean that I am beyond help.                                                            | 0     | 1         | 2     | 3      |
| 59.                                | I am a burden on others because I see visions.                                                     | 0     | 1         | 2     | 3      |
| 60.                                | I am scared to understand why I see visions.                                                       | 0     | 1         | 2     | 3      |

| In the past two weeks I thought... |                                                                       | Never | Sometimes | Often | Always |
|------------------------------------|-----------------------------------------------------------------------|-------|-----------|-------|--------|
| 61.                                | I am seeing visions because I expect to see them.                     | 0     | 1         | 2     | 3      |
| 62.                                | The visions are trying to make me do what it wants.                   | 0     | 1         | 2     | 3      |
| 63.                                | I see visions because I am struggling to cope with my emotions.       | 0     | 1         | 2     | 3      |
| 64.                                | The vision will harm my friends or family.                            | 0     | 1         | 2     | 3      |
| 65.                                | The content of what I see means I am not normal.                      | 0     | 1         | 2     | 3      |
| 66.                                | The visions are a sign that I am being punished.                      | 0     | 1         | 2     | 3      |
| 67.                                | The visions help me to cope with life.                                | 0     | 1         | 2     | 3      |
| 68.                                | My brain is not capable of making these visions up.                   | 0     | 1         | 2     | 3      |
| 69.                                | I am different from others because I see visions.                     | 0     | 1         | 2     | 3      |
| 70.                                | The visions are trying to control me.                                 | 0     | 1         | 2     | 3      |
| 71.                                | I see visions because something is terribly wrong with me.            | 0     | 1         | 2     | 3      |
| 72.                                | The visions mean I am special.                                        | 0     | 1         | 2     | 3      |
| 73.                                | The visions are protecting me.                                        | 0     | 1         | 2     | 3      |
| 74.                                | Seeing visions means I can't live the life I want to.                 | 0     | 1         | 2     | 3      |
| 75.                                | I cannot trust my own mind because I see visions.                     | 0     | 1         | 2     | 3      |
| 76.                                | The visions make me feel unsafe.                                      | 0     | 1         | 2     | 3      |
| 77.                                | There is nothing I can do to manage the visions.                      | 0     | 1         | 2     | 3      |
| 78.                                | I am confused as to why I see visions.                                | 0     | 1         | 2     | 3      |
| 79.                                | I am seeing things because I'm tired.                                 | 0     | 1         | 2     | 3      |
| 80.                                | Other people are using the visions to try and make me lose my mind.   | 0     | 1         | 2     | 3      |
| 81.                                | I see visions because I am psychic.                                   | 0     | 1         | 2     | 3      |
| 82.                                | I can no longer do things I want because the visions will not let me. | 0     | 1         | 2     | 3      |
| 83.                                | I am losing touch with reality.                                       | 0     | 1         | 2     | 3      |

## Part 2: Emotional impact

People react in a range of ways to seeing a vision. Please rate how often you felt this way below in the **last two weeks** as a result of seeing the vision.

| At the time of seeing the vision, it made me feel... |             | Never | Sometimes | Often | Always |
|------------------------------------------------------|-------------|-------|-----------|-------|--------|
| 1.                                                   | Happy       | 0     | 1         | 2     | 3      |
| 2.                                                   | Frustrated  | 0     | 1         | 2     | 3      |
| 3.                                                   | Hopeless    | 0     | 1         | 2     | 3      |
| 4.                                                   | Fearful     | 0     | 1         | 2     | 3      |
| 5.                                                   | Calm        | 0     | 1         | 2     | 3      |
| 6.                                                   | Guilty      | 0     | 1         | 2     | 3      |
| 7.                                                   | Sad         | 0     | 1         | 2     | 3      |
| 8.                                                   | Angry       | 0     | 1         | 2     | 3      |
| 9.                                                   | Disgusted   | 0     | 1         | 2     | 3      |
| 10.                                                  | Ashamed     | 0     | 1         | 2     | 3      |
| 11.                                                  | Humiliated  | 0     | 1         | 2     | 3      |
| 12.                                                  | Anxious     | 0     | 1         | 2     | 3      |
| 13.                                                  | Comforted   | 0     | 1         | 2     | 3      |
| 14.                                                  | Embarrassed | 0     | 1         | 2     | 3      |
| 15.                                                  | Excited     | 0     | 1         | 2     | 3      |

## Part 3: Coping with the vision

Seeing things others do not can lead people to manage in different ways. Sometimes people avoid places where they think they may be more likely to see things, or they may try to reduce the impact when they actually see the vision. They may put up defences to keep themselves safe.

Please circle the number that best describes how often you may have used each strategy to try and cope with the visions in the **last two weeks**.

| In the last two week, when I saw the vision.... |                                                        | Never | Sometimes | Often | Always |
|-------------------------------------------------|--------------------------------------------------------|-------|-----------|-------|--------|
| 1                                               | I did nothing.                                         | 0     | 1         | 2     | 3      |
| 2                                               | I was able to stand up to the visions.                 | 0     | 1         | 2     | 3      |
| 3                                               | I used substances or alcohol to help me to cope.       | 0     | 1         | 2     | 3      |
| 4                                               | I left as soon as I noticed the visions.               | 0     | 1         | 2     | 3      |
| 5                                               | I did my best to ignore the visions.                   | 0     | 1         | 2     | 3      |
| 6                                               | I lost track of time.                                  | 0     | 1         | 2     | 3      |
| 7                                               | I talked to the visions.                               | 0     | 1         | 2     | 3      |
| 8                                               | I always looked at the vision, so I knew where it was. | 0     | 1         | 2     | 3      |
| 9                                               | I watched for signs that the vision may hurt me.       | 0     | 1         | 2     | 3      |
| 10                                              | I did something I enjoyed to distract me.              | 0     | 1         | 2     | 3      |
| 11                                              | I avoided being on my own in case I saw the visions.   | 0     | 1         | 2     | 3      |

| In the last two week, when I saw the vision.... |                                                                                            | Never | Sometimes | Often | Always |
|-------------------------------------------------|--------------------------------------------------------------------------------------------|-------|-----------|-------|--------|
| 12                                              | I turned up the lights brightly.                                                           | 0     | 1         | 2     | 3      |
| 13                                              | I avoided looking directly at the visions.                                                 | 0     | 1         | 2     | 3      |
| 14                                              | I spent excessive time thinking about what bad things might happen because of the visions. | 0     | 1         | 2     | 3      |
| 15                                              | I left the visions be.                                                                     | 0     | 1         | 2     | 3      |
| 16                                              | I just accepted the visions as part of my life, allowing me to live the life I want.       | 0     | 1         | 2     | 3      |
| 17                                              | I did something to test if the visions were really there or not.                           | 0     | 1         | 2     | 3      |
| 18                                              | I sought reassurance from others to see if the vision was real or not.                     | 0     | 1         | 2     | 3      |
| 19                                              | I found myself thinking about the vision long after it had gone.                           | 0     | 1         | 2     | 3      |
| 20                                              | I had to walk away from the visions.                                                       | 0     | 1         | 2     | 3      |
| 21                                              | I reminded myself that the visions are not real.                                           | 0     | 1         | 2     | 3      |
| 22                                              | I was unable to look away from the visions.                                                | 0     | 1         | 2     | 3      |
| 23                                              | I was absorbed by the visions.                                                             | 0     | 1         | 2     | 3      |
| 24                                              | I went to sleep.                                                                           | 0     | 1         | 2     | 3      |
| 25                                              | I meditated.                                                                               | 0     | 1         | 2     | 3      |
| 26                                              | I argued back against the visions.                                                         | 0     | 1         | 2     | 3      |
| 27                                              | I kept my distance from the visions.                                                       | 0     | 1         | 2     | 3      |
| 28                                              | I avoided going places where I may see the visions.                                        | 0     | 1         | 2     | 3      |
| 29                                              | I had to keep an eye out for the vision, even when it was not there.                       | 0     | 1         | 2     | 3      |
| 30                                              | I was able to dismiss the visions.                                                         | 0     | 1         | 2     | 3      |
| 31                                              | I worried about the vision, even when it was not there.                                    | 0     | 1         | 2     | 3      |
| 32                                              | I looked out for the vision, even when it was not there.                                   | 0     | 1         | 2     | 3      |
| 33                                              | I often thought about what the visions were doing.                                         | 0     | 1         | 2     | 3      |
| 34                                              | I took medication to calm me down in the moment.                                           | 0     | 1         | 2     | 3      |
| 35                                              | I tried to distract myself from the visions.                                               | 0     | 1         | 2     | 3      |
| 36                                              | I used the visions as an indicator that I need to look after mental wellbeing.             | 0     | 1         | 2     | 3      |
| 37                                              | I could not rest until I find out what the vision is.                                      | 0     | 1         | 2     | 3      |
| 38                                              | I prayed or read religious texts.                                                          | 0     | 1         | 2     | 3      |

***You are approximately halfway through the assessment pack, so remember to take a break if you need to!***

***WHEN READY, PLEASE CONTINUE TO THE NEXT PAGE***

### About other sensory experiences

#### **Multi-Modality Unusual Sensory Experiences Questionnaire (MUSEQ) – Visual Hallucinations Subscale**

*Instructions:*

*We now know that both healthy people and people with medical or psychological conditions report having strange or unusual experiences. These experiences range from being very subtle to quite obvious. We want to find out more. Please answer all questions by placing a tick or cross (✓ or X) in the most appropriate response box. There are no right/wrong answers.*

| <b>There have been times when...</b> |                                                                                                                                  | <b>Never</b><br>(Never happened) | <b>Hardly Ever</b><br>(Once or twice in my life) | <b>Rarely</b><br>(Once or twice a year) | <b>Occasionally</b><br>(A few times a year) | <b>Frequently</b><br>(At least monthly) |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------|-----------------------------------------|---------------------------------------------|-----------------------------------------|
| 1.                                   | My eyes have played tricks on me.                                                                                                |                                  |                                                  |                                         |                                             |                                         |
| 2.                                   | I found that lights or colours seem brighter or more intense than they normally would be.                                        |                                  |                                                  |                                         |                                             |                                         |
| 3.                                   | I thought of people, objects, or landscapes, and could almost see their image in front of my eyes.                               |                                  |                                                  |                                         |                                             |                                         |
| 4.                                   | I have looked at a patterned object (e.g. wallpaper, curtains, tiled floor) and a figure or face has emerged.                    |                                  |                                                  |                                         |                                             |                                         |
| 5.                                   | I have seen lights, flashes, or other shapes that other people could not see.                                                    |                                  |                                                  |                                         |                                             |                                         |
| 6.                                   | I looked at an object and it transformed itself before my eyes into something else.                                              |                                  |                                                  |                                         |                                             |                                         |
| 7.                                   | I saw brief image of an object, animal, or person pass me by in my peripheral vision, but when I looked there was nothing there. |                                  |                                                  |                                         |                                             |                                         |
| 8.                                   | I saw people, faces, or animals, and then found that nothing was there.                                                          |                                  |                                                  |                                         |                                             |                                         |

## Specific Psychotic Experiences Questionnaire (SPEQ)

### *Instructions:*

*This question explores other types of unusual experiences that you may experience. Please rate each of the following statements according to how frequent you have had these experiences **over the past month**, using a 6-point scale: “Not at all (0)”, “Rarely” (1), “Once a month” (2), “Once a week” (3), “Several times a week” (4), “Daily” (5).*

| Did you... |                                                                                                             | Not at all | Rarely | Once a month | Once a week | Several times a week | Daily |
|------------|-------------------------------------------------------------------------------------------------------------|------------|--------|--------------|-------------|----------------------|-------|
| 1.         | Hear noises or sounds when there is nothing to explain them?                                                | 0          | 1      | 2            | 3           | 4                    | 5     |
| 2.         | Feel that someone is touching you, but when you look nobody is there?                                       | 0          | 1      | 2            | 3           | 4                    | 5     |
| 3.         | Hear sounds or music that people near you don't hear?                                                       | 0          | 1      | 2            | 3           | 4                    | 5     |
| 4.         | Detect smells which don't seem to come from your surroundings?                                              | 0          | 1      | 2            | 3           | 4                    | 5     |
| 5.         | See things that other people cannot?                                                                        | 0          | 1      | 2            | 3           | 4                    | 5     |
| 6.         | Experience unusual burning sensations or other strange feelings in or on your body that can't be explained? | 0          | 1      | 2            | 3           | 4                    | 5     |
| 7.         | See shapes, lights, or colours even though there is nothing really there?                                   | 0          | 1      | 2            | 3           | 4                    | 5     |
| 8.         | Hear voices commenting on what you're thinking or doing?                                                    | 0          | 1      | 2            | 3           | 4                    | 5     |
| 9.         | Notice smells or odours that people next to you seem unaware of?                                            | 0          | 1      | 2            | 3           | 4                    | 5     |

## About sleep

### Insomnia Severity Index (ISI)

*Instructions:*

*The Insomnia Severity Index has seven questions. For each question, please **circle** the number that best describes your answer.*

*Please rate the **current (i.e. last 2 weeks)** severity of your insomnia problem(s).*

| Insomnia Problem                | None | Mild | Moderate | Severe | Very severe |
|---------------------------------|------|------|----------|--------|-------------|
| 1. Difficulty falling asleep    | 0    | 1    | 2        | 3      | 4           |
| 2. Difficulty staying asleep    | 0    | 1    | 2        | 3      | 4           |
| 3. Problems waking up too early | 0    | 1    | 2        | 3      | 4           |

| 4. How <b>satisfied/dissatisfied</b> are you with your <b>current</b> sleep pattern? |                  |                             |                     |                          |
|--------------------------------------------------------------------------------------|------------------|-----------------------------|---------------------|--------------------------|
| <i>Very satisfied</i>                                                                | <i>Satisfied</i> | <i>Moderately satisfied</i> | <i>Dissatisfied</i> | <i>Very dissatisfied</i> |
| 0                                                                                    | 1                | 2                           | 3                   | 4                        |

| 5. How <b>noticeable</b> to others do you think your sleep problem is in terms of impairing the quality of your life? |                 |                 |             |                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-------------|-----------------------------|
| <i>Not at all noticeable</i>                                                                                          | <i>A little</i> | <i>Somewhat</i> | <i>Much</i> | <i>Very much noticeable</i> |
| 0                                                                                                                     | 1               | 2               | 3           | 4                           |

| 6. How <b>worried/distressed</b> are you about your current sleep problems? |                 |                 |             |                          |
|-----------------------------------------------------------------------------|-----------------|-----------------|-------------|--------------------------|
| <i>Not at all worried</i>                                                   | <i>A little</i> | <i>Somewhat</i> | <i>Much</i> | <i>Very much worried</i> |
| 0                                                                           | 1               | 2               | 3           | 4                        |

| 7. To what extent do you consider your sleep problem to <b>interfere</b> with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) <b>currently</b> ? |                 |                 |             |                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-------------|------------------------------|
| <i>Not at all interfering</i>                                                                                                                                                                                                     | <i>A little</i> | <i>Somewhat</i> | <i>Much</i> | <i>Very much Interfering</i> |
| 0                                                                                                                                                                                                                                 | 1               | 2               | 3           | 4                            |

### Disturbing Dreams and Nightmares Severity Index (DDNSI)

1. How many **nights** in a **week** do you have disturbing dreams and nightmares?

N/A    1        2        3        4        5        6        7

2. How many **disturbing dreams and/or nightmares** do you have in a week?

\_\_\_\_\_

3. On average, do your nightmares wake you up?

*Tick the most suitable box.*

|   |              |  |
|---|--------------|--|
| 0 | Never/Rarely |  |
| 1 | Occasionally |  |
| 2 | Sometimes    |  |
| 3 | Frequently   |  |
| 4 | Always       |  |

4. How would you rate **severity** of your disturbing dreams and/or nightmare problem?

*Tick the most suitable box.*

|   |                          |  |
|---|--------------------------|--|
| 0 | No problem               |  |
| 1 | Minimal problem          |  |
| 2 | Mild problem             |  |
| 3 | Moderate problem         |  |
| 4 | Severe problem           |  |
| 5 | Very severe problem      |  |
| 6 | Extremely severe problem |  |

5. How would you rate the **intensity** of your disturbing dreams and/or nightmares?

*Tick the most suitable box.*

|   |                            |  |
|---|----------------------------|--|
| 0 | Not intense                |  |
| 1 | Minimal intensity          |  |
| 2 | Mild intensity             |  |
| 3 | Moderate intensity         |  |
| 4 | Severe intensity           |  |
| 5 | Very severe intensity      |  |
| 6 | Extremely severe intensity |  |

## About dissociation

### The Dissociative Experiences Measure, Oxford (DEMO)

#### *Instructions:*

*Please answer the questions below based on how things have been for you in the past two weeks. If you are not sure, go with your best guess. Please only answer about experiences you have had while not under the influence of alcohol, drugs, or 'legal highs'.*

|     |                                                                                                                         | Not at all | Rarely | Sometimes | Often | Most of the time |
|-----|-------------------------------------------------------------------------------------------------------------------------|------------|--------|-----------|-------|------------------|
| 1.  | I have the feeling that other people, other things and the world surrounding me are not real.                           | 1          | 2      | 3         | 4     | 5                |
| 2.  | I have the feeling that everything is unreal.                                                                           | 1          | 2      | 3         | 4     | 5                |
| 3.  | I feel as if I don't exist, am not real.                                                                                | 1          | 2      | 3         | 4     | 5                |
| 4.  | I feel like I am in a parallel world.                                                                                   | 1          | 2      | 3         | 4     | 5                |
| 5.  | The world around me feels detached or unreal, as if there were an invisible barrier between me and the outside world.   | 1          | 2      | 3         | 4     | 5                |
| 6.  | I feel like the external world is not real, a joke, a lie.                                                              | 1          | 2      | 3         | 4     | 5                |
| 7.  | I feel emotionally numb.                                                                                                | 1          | 2      | 3         | 4     | 5                |
| 8.  | I just feel numb and empty inside.                                                                                      | 1          | 2      | 3         | 4     | 5                |
| 9.  | I feel I can't make a proper connection with anyone around me.                                                          | 1          | 2      | 3         | 4     | 5                |
| 10. | I do not seem to feel anything at all.                                                                                  | 1          | 2      | 3         | 4     | 5                |
| 11. | I feel like I'm 'just existing'.                                                                                        | 1          | 2      | 3         | 4     | 5                |
| 12. | I turn inwards, trying to work out why I feel so disconnected.                                                          | 1          | 2      | 3         | 4     | 5                |
| 13. | I find myself in situations or places with no memory of how I got there.                                                | 1          | 2      | 3         | 4     | 5                |
| 14. | I suddenly notice that I find myself in a place that is unknown to me without knowing how I got there.                  | 1          | 2      | 3         | 4     | 5                |
| 15. | I find evidence of something I've done recently (e.g. through finding notes or drawings) but I don't remember doing it. | 1          | 2      | 3         | 4     | 5                |
| 16. | I find new articles among my things without being able to remember ever having purchased them.                          | 1          | 2      | 3         | 4     | 5                |
| 17. | I find myself somewhere and do not remember how I got there.                                                            | 1          | 2      | 3         | 4     | 5                |
| 18. | I have big gaps in my memory for recent things in my life.                                                              | 1          | 2      | 3         | 4     | 5                |
| 19. | I stare aimlessly without thinking about anything.                                                                      | 1          | 2      | 3         | 4     | 5                |

|     |                                                                                                                                                                  | Not<br>at all | Rarely | Sometimes | Often | Most<br>of the<br>time |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|-----------|-------|------------------------|
| 20. | I 'zone out' and don't see or hear what's going on around me.                                                                                                    | 1             | 2      | 3         | 4     | 5                      |
| 21. | I sometimes sit staring off into space, thinking of nothing, and am not aware of the passage of time (other people tell me that I do this).                      | 1             | 2      | 3         | 4     | 5                      |
| 22. | I often think about nothing.                                                                                                                                     | 1             | 2      | 3         | 4     | 5                      |
| 23. | Sometimes my mind is absolutely blank.                                                                                                                           | 1             | 2      | 3         | 4     | 5                      |
| 24. | My mind just goes empty.                                                                                                                                         | 1             | 2      | 3         | 4     | 5                      |
| 25. | I can remember something that happened before so vividly that it's like a video is playing in my head.                                                           | 1             | 2      | 3         | 4     | 5                      |
| 26. | Unwanted images from the past come into my head.                                                                                                                 | 1             | 2      | 3         | 4     | 5                      |
| 27. | I am surprised by or don't expect some of the thoughts of images that happen in my head.                                                                         | 1             | 2      | 3         | 4     | 5                      |
| 28. | I experience past memories as if they are happening here and now.                                                                                                | 1             | 2      | 3         | 4     | 5                      |
| 29. | I can get so involved in fantasies or daydreaming that it seems to be really happening and I lose touch with what is happening in the real world at that moment. | 1             | 2      | 3         | 4     | 5                      |
| 30. | I hear someone talking when no-one nearby had actually said anything.                                                                                            | 1             | 2      | 3         | 4     | 5                      |

***PLEASE CONTINUE TO THE NEXT PAGE***

## About mental imagery

### The Plymouth Sensory Imagery Questionnaire (PSIQ)

*Instructions:*

*Please try to form the images described below and rate each mental image using the scale.  
Circle the answer.*

|     |                                                  |                               |   |   |   |   |   |   |   |   |                                     |
|-----|--------------------------------------------------|-------------------------------|---|---|---|---|---|---|---|---|-------------------------------------|
|     | <b><i>Imagine the appearance of...</i></b>       | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 1.  | A bonfire                                        | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 2.  | A sunset                                         | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 3.  | A cat climbing a tree                            | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
|     | <b><i>Imagine the sound of...</i></b>            | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 4.  | A car horn                                       | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 5.  | Hands clapping in applause                       | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 6.  | An ambulance siren                               | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
|     | <b><i>Imagine the smell of...</i></b>            | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 7.  | Newly cut grass                                  | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 8.  | Burning wood                                     | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 9.  | A rose                                           | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
|     | <b><i>Imagine the taste of...</i></b>            | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 10. | Black pepper                                     | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 11. | Lemon                                            | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 12. | Mustard                                          | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
|     | <b><i>Imagine touching...</i></b>                | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 13. | Fur                                              | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 14. | Warm sand                                        | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 15. | A soft towel                                     | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
|     | <b><i>Imagine the bodily sensation of...</i></b> | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 16. | Relaxing in a warm bath                          | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 17. | Walking briskly in the cold                      | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |

|     |                                  |                               |   |   |   |   |   |   |   |   |                                     |
|-----|----------------------------------|-------------------------------|---|---|---|---|---|---|---|---|-------------------------------------|
| 18. | Jumping into a swimming pool     | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
|     | <b><i>Imagine feeling...</i></b> | <b><i>No image at all</i></b> |   |   |   |   |   |   |   |   | <b><i>As vivid as real life</i></b> |
| 19. | Excited                          | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 20. | Relieved                         | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |
| 21. | Scared                           | 1                             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                  |

***PLEASE CONTINUE TO THE NEXT PAGE***

**About your emotions**

**The Dunn Worry Questionnaire (DWQ)**

*Instructions:*

*Please circle the number that best describe your experience in the **past month**.*

|     |                                                               | None of<br>the time | Rarely | Some of<br>the time | Often | All of the<br>time |
|-----|---------------------------------------------------------------|---------------------|--------|---------------------|-------|--------------------|
| 1.  | I've been worrying a lot.                                     | 0                   | 1      | 2                   | 3     | 4                  |
| 2.  | In my mind I have been going over problems again and again.   | 0                   | 1      | 2                   | 3     | 4                  |
| 3.  | There was little I could do to stop worrying.                 | 0                   | 1      | 2                   | 3     | 4                  |
| 4.  | I have been worrying even though I didn't want to.            | 0                   | 1      | 2                   | 3     | 4                  |
| 5.  | Worry has stopped me focussing on important things in my day. | 0                   | 1      | 2                   | 3     | 4                  |
| 6.  | Worry has stopped me sleeping.                                | 0                   | 1      | 2                   | 3     | 4                  |
| 7.  | Worry has caused me to feel upset.                            | 0                   | 1      | 2                   | 3     | 4                  |
| 8.  | Worry has made me feel stressed.                              | 0                   | 1      | 2                   | 3     | 4                  |
| 9.  | Worry has made me feel anxious.                               | 0                   | 1      | 2                   | 3     | 4                  |
| 10. | Worry has made me feel hopeless.                              | 0                   | 1      | 2                   | 3     | 4                  |

## Worry Modality Questionnaire (WMQ)

### *Instructions:*

*This questionnaire consists of 14 statements about ways you worry. It is interested in how you make sense of worry in your mind such as using 'internal dialogues', which are like inner conversations with yourself, or your 'minds eye' which is like your inner visual imagination. Please rate how much each statement applies to you by **circling the appropriate box** where 1 means 'Not at all', 2 'To a small extent', 3 'to an average extent', 4 'to a large extent', and 5 'to a very large extent'.*

| The moment I worry... |                                                                                                                                  | Not at all | To a small extent | To an average extent | To a large extent | To a very large extent |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|----------------------|-------------------|------------------------|
| 1.                    | I imagine unpleasant scenes or images that may happen in the future.                                                             | 1          | 2                 | 3                    | 4                 | 5                      |
| 2.                    | I think about what I might say in future situations that evoke strong emotions in me.                                            | 1          | 2                 | 3                    | 4                 | 5                      |
| 3.                    | I tell myself in my mind what could happen.                                                                                      | 1          | 2                 | 3                    | 4                 | 5                      |
| 4.                    | I can see with my mind's eye the consequences of my or other people's actions.                                                   | 1          | 2                 | 3                    | 4                 | 5                      |
| 5.                    | I repeat a word or phrase in my head.                                                                                            | 1          | 2                 | 3                    | 4                 | 5                      |
| 6.                    | I can't stop replaying in my mind a certain imagined situation that bothers me.                                                  | 1          | 2                 | 3                    | 4                 | 5                      |
| 7.                    | I imagine details of the circumstances of a future situation (e.g. smell, temperature, colour) that concerns me.                 | 1          | 2                 | 3                    | 4                 | 5                      |
| 8.                    | I imagine the physical sensation I might experience in a future situation (e.g. sweating, tension in the body) that concerns me. | 1          | 2                 | 3                    | 4                 | 5                      |
| 9.                    | I define myself with negative expressions (e.g., "I'm stupid", "I mess everything up", "I'm clumsy").                            | 1          | 2                 | 3                    | 4                 | 5                      |
| 10.                   | I have an internal dialogue to resolve the problem.                                                                              | 1          | 2                 | 3                    | 4                 | 5                      |
| 11.                   | I tell myself that I'm good for nothing.                                                                                         | 1          | 2                 | 3                    | 4                 | 5                      |
| 12.                   | Negative scenarios of the results of my actions appear in my thoughts.                                                           | 1          | 2                 | 3                    | 4                 | 5                      |
| 13.                   | My worry appears in the form of images, visualizations or scenes.                                                                | 1          | 2                 | 3                    | 4                 | 5                      |
| 14.                   | My worry comes in the forms of thoughts, words, or internal conversations.                                                       | 1          | 2                 | 3                    | 4                 | 5                      |

## The Perseverate Thinking Questionnaire (PTQ)

### *Instructions:*

*In this questionnaire, you will be asked to describe how you **typically** think about negative experiences or problems. Please read the following statements and rate the extent to which they apply to you when you think about negative experiences or problems.*

|     |                                                               | Never | Rarely | Sometimes | Often | Almost always |
|-----|---------------------------------------------------------------|-------|--------|-----------|-------|---------------|
| 1.  | The same thoughts keep going through my mind again and again. | 0     | 1      | 2         | 3     | 4             |
| 2.  | Thoughts intrude into my mind.                                | 0     | 1      | 2         | 3     | 4             |
| 3.  | I can't stop dwelling on them.                                | 0     | 1      | 2         | 3     | 4             |
| 4.  | I think about my problems without solving any of them.        | 0     | 1      | 2         | 3     | 4             |
| 5.  | I can't do anything else while thinking about my problems.    | 0     | 1      | 2         | 3     | 4             |
| 6.  | My thoughts repeat themselves.                                | 0     | 1      | 2         | 3     | 4             |
| 7.  | Thoughts come to my mind without me wanting them to.          | 0     | 1      | 2         | 3     | 4             |
| 8.  | I get stuck on certain issues and can't move on.              | 0     | 1      | 2         | 3     | 4             |
| 9.  | I keep asking myself questions without finding an answer.     | 0     | 1      | 2         | 3     | 4             |
| 10. | My thoughts prevent me from focusing on other things.         | 0     | 1      | 2         | 3     | 4             |
| 11. | I keep thinking about the same issue all the time.            | 0     | 1      | 2         | 3     | 4             |
| 12. | Thoughts just pop into my mind.                               | 0     | 1      | 2         | 3     | 4             |
| 13. | I feel driven to continue dwelling on the same issue.         | 0     | 1      | 2         | 3     | 4             |
| 14. | My thoughts are not much help to me.                          | 0     | 1      | 2         | 3     | 4             |
| 15. | My thoughts take up all my attention.                         | 0     | 1      | 2         | 3     | 4             |

## Emotion Reactivity Scale (ERS)

### *Instructions:*

*Please circle the answer that best describes how you **typically** feel. Each item is rated on a scale from 0 -4 where 0 = not at all like me and 4 = completely like me.*

|     |                                                                                                    | Not at<br>all like<br>me |   |   |   | Completely<br>like me |
|-----|----------------------------------------------------------------------------------------------------|--------------------------|---|---|---|-----------------------|
| 1.  | When something happens that upsets me, it's all I can think about it for a long time.              | 0                        | 1 | 2 | 3 | 4                     |
| 2.  | My feelings get hurt easily.                                                                       | 0                        | 1 | 2 | 3 | 4                     |
| 3.  | When I experience emotions, I feel them very strongly/intensely.                                   | 0                        | 1 | 2 | 3 | 4                     |
| 4.  | When I'm emotionally upset, my whole body gets physically upset as well.                           | 0                        | 1 | 2 | 3 | 4                     |
| 5.  | I tend to get very emotional very easily.                                                          | 0                        | 1 | 2 | 3 | 4                     |
| 6.  | I experience emotions very strongly.                                                               | 0                        | 1 | 2 | 3 | 4                     |
| 7.  | I often feel extremely anxious                                                                     | 0                        | 1 | 2 | 3 | 4                     |
| 8.  | When I feel emotional, it's hard for me to imagine feeling any other way.                          | 0                        | 1 | 2 | 3 | 4                     |
| 9.  | Even the littlest things make me emotional.                                                        | 0                        | 1 | 2 | 3 | 4                     |
| 10. | If I have a disagreement with someone, it takes a long time for me to get over it.                 | 0                        | 1 | 2 | 3 | 4                     |
| 11. | When I am angry/upset, it takes me much longer than most people to calm down.                      | 0                        | 1 | 2 | 3 | 4                     |
| 12. | I get angry at people very easily.                                                                 | 0                        | 1 | 2 | 3 | 4                     |
| 13. | I am often bothered by things that other people don't react to.                                    | 0                        | 1 | 2 | 3 | 4                     |
| 14. | I am easily agitated.                                                                              | 0                        | 1 | 2 | 3 | 4                     |
| 15. | My emotions go from neutral to extreme in an instant.                                              | 0                        | 1 | 2 | 3 | 4                     |
| 16. | When something bad happens, my mood changes very quickly. People tell me I have a very short fuse. | 0                        | 1 | 2 | 3 | 4                     |
| 17. | People tell me that my emotions are often too intense for the situation.                           | 0                        | 1 | 2 | 3 | 4                     |
| 18. | I am a very sensitive person.                                                                      | 0                        | 1 | 2 | 3 | 4                     |
| 19. | My moods are very strong and powerful.                                                             | 0                        | 1 | 2 | 3 | 4                     |
| 20. | I often get so upset it's hard for me to think straight.                                           | 0                        | 1 | 2 | 3 | 4                     |
| 21. | Other people tell me I'm overreacting.                                                             | 0                        | 1 | 2 | 3 | 4                     |

## Your thoughts about self and others

### The Brief Core Schema Scales: Beliefs about self scale (BCSS)

*Instructions:*

*This questionnaire lists beliefs that people can hold about themselves and other people. Please indicate whether you hold each belief (NO or YES). If you hold the belief then please indicate how strongly you hold it by circling a number (1–4). Try to judge the beliefs on how you have generally, over time, viewed yourself and others. Do not spend too long on each belief. There are no right or wrong answers and the first response to each belief is often the most accurate.*

|               |                  |    |       | Believe it slightly | Believe it moderately | Believe it very much | Believe it totally |
|---------------|------------------|----|-------|---------------------|-----------------------|----------------------|--------------------|
| <i>Myself</i> |                  |    |       |                     |                       |                      |                    |
| 1.            | I am unloved     | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 2.            | I am worthless   | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 3.            | I am weak        | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 4.            | I am vulnerable  | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 5.            | I am bad         | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 6.            | I am a failure   | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 7.            | I am respected   | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 8.            | I am valuable    | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 9.            | I am talented    | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 10.           | I am successful  | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 11.           | I am good        | No | Yes → | 1                   | 2                     | 3                    | 4                  |
| 12.           | I am interesting | No | Yes → | 1                   | 2                     | 3                    | 4                  |

## Revised-Green Paranoid Thoughts Scale (R-GTPS)

### *Instructions:*

*Please read each of the statements carefully. They refer to thoughts and feelings you may have had about others over the **last month**. Think about the last month and indicate the extent of these feelings from 0 (Not at all) to 4 (Totally).*

*Please do not rate the items according to any experience you may have had under the influence of drugs.*

|     |                                                                             | Not at<br>all | Somewhat |   |   | Totally |
|-----|-----------------------------------------------------------------------------|---------------|----------|---|---|---------|
| 1.  | Certain individuals have had it in for me.                                  | 0             | 1        | 2 | 3 | 4       |
| 2.  | People wanted me to feel threatened, so they stared at me.                  | 0             | 1        | 2 | 3 | 4       |
| 3.  | I was certain people did things in order to annoy me.                       | 0             | 1        | 2 | 3 | 4       |
| 4.  | I was convinced there was a conspiracy against me.                          | 0             | 1        | 2 | 3 | 4       |
| 5.  | I was sure someone wanted to hurt me.                                       | 0             | 1        | 2 | 3 | 4       |
| 6.  | I couldn't stop thinking about people wanting to confuse me.                | 0             | 1        | 2 | 3 | 4       |
| 7.  | I was distressed by being persecuted.                                       | 0             | 1        | 2 | 3 | 4       |
| 8.  | It was difficult to stop thinking about people wanting to make me feel bad. | 0             | 1        | 2 | 3 | 4       |
| 9.  | People have been hostile towards me on purpose.                             | 0             | 1        | 2 | 3 | 4       |
| 10. | I was angry that someone wanted to hurt me.                                 | 0             | 1        | 2 | 3 | 4       |

### About your health

#### Patient Health Questionnaire-2 (PHQ-2)

*Instructions:*

*Please respond to each question. Give answers as 0-3, using this scale:*

*0 = Not at all; 1 = Several days; 2 = More than half the days; 3 = Nearly every day*

Over the **last 2 weeks**, how often have you been bothered by any of the following problems?

|    |                                              | Not at all | Several days | More than half the days | Nearly every day |
|----|----------------------------------------------|------------|--------------|-------------------------|------------------|
| 1. | Little interest or pleasure in doing things. | 0          | 1            | 2                       | 3                |
| 2. | Feeling down, depressed or hopeless.         | 0          | 1            | 2                       | 3                |

**YOU HAVE NOW COMPLETED THE ASSESSMENT PACK.**

**THANK YOU FOR YOUR TIME.**

## Appendix 8: VISION-QUEST Follow up Assessment Pack



### VISION-QUEST:

A questionnaire study into visual hallucinations

Follow up assessment (pack 2)

|                 |                                                                                                                              |   |   |   |   |   |   |   |   |   |   |
|-----------------|------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|
| Participant ID: | <input type="text"/>                                                                                                         |   |   |   |   |   |   |   |   |   |   |
| Site ID:        | <input type="text"/>                                                                                                         |   |   |   |   |   |   |   |   |   |   |
| Date:           | <table><tr><td>D</td><td>D</td><td>/</td><td>M</td><td>M</td><td>/</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td></tr></table> | D | D | / | M | M | / | Y | Y | Y | Y |
| D               | D                                                                                                                            | / | M | M | / | Y | Y | Y | Y |   |   |
| Researcher:     | <input type="text"/>                                                                                                         |   |   |   |   |   |   |   |   |   |   |

### **Instructions for participant**

Thank you for agreeing to take part in this follow-up part of the study. This follow up involves you repeating some of the same questionnaires that you completed previously.

As before, please complete each question in this pack. Although there are fewer questionnaires than the previous version, you may still want to take breaks, if you would like to. Sometimes it's hard to choose the best option for you – please don't think for too long, just choose the answer that comes to you first.

Not all questions may feel relevant to you, and that's ok, it is so we can capture a wide range of experiences across lots of different people. Some of the questionnaires you will complete are quite long and contain similar types of questions. This is so that we can choose the best questions to ask people in the future. It will help us to understand more about the types of thoughts people have, and how these affect visions.

There are no right or wrong answers to these questions.

Your answers will help us to support people in the future and this is really important to us.

**Thank you for your time.**

## About your visions

### Appraisals - Visual Hallucinations Scale (A-VHS)

*People tell us that they sometimes experience strange or unusual experiences like seeing or hearing things that others do not. These are known as visual hallucinations or visions. These can occur for many people, but sometimes the visions can be very distressing. We want to ask you particularly about your experiences in the **last two weeks** concerning seeing things that are not there. We are asking about things that seem real, occur when you are awake, and are not owing to another obvious reason like being very drowsy, or having taken drugs. We are looking to understand more about the types of things you see, how you make sense of these and the impact on you.*

#### Part 1: Thoughts about seeing visions

*People sometimes find it difficult to manage their visual experiences. This questionnaire asks about the thoughts you may have in relation to having seen the vision.*

*Please read each statement below and select the number that best describes how much you've had this thought over the **past two weeks**.*

| In the past two weeks I thought... |                                                                        | Never | Sometimes | Often | Always |
|------------------------------------|------------------------------------------------------------------------|-------|-----------|-------|--------|
| 1.                                 | The visions encourage me to do things that I do not want to do.        | 0     | 1         | 2     | 3      |
| 2.                                 | The visions are evil.                                                  | 0     | 1         | 2     | 3      |
| 3.                                 | I no longer know what's real or not because I see visions.             | 0     | 1         | 2     | 3      |
| 4.                                 | The visions must be real because they look so life-like.               | 0     | 1         | 2     | 3      |
| 5.                                 | Even when I cannot see the visions, I can still feel them.             | 0     | 1         | 2     | 3      |
| 6.                                 | I see visions because I am weak                                        | 0     | 1         | 2     | 3      |
| 7.                                 | The visions help me to keep control.                                   | 0     | 1         | 2     | 3      |
| 8.                                 | I see visions because I am lonely                                      | 0     | 1         | 2     | 3      |
| 9.                                 | I see visions because my brain is damaged.                             | 0     | 1         | 2     | 3      |
| 10.                                | The visions may make me lose control.                                  | 0     | 1         | 2     | 3      |
| 11.                                | I see visions because I do not deserve to be happy.                    | 0     | 1         | 2     | 3      |
| 12.                                | I see visions because I am a bad person.                               | 0     | 1         | 2     | 3      |
| 13.                                | The vision will harm me.                                               | 0     | 1         | 2     | 3      |
| 14.                                | People will think I am mad for seeing things.                          | 0     | 1         | 2     | 3      |
| 15.                                | I see things because others in my family have had similar experiences. | 0     | 1         | 2     | 3      |
| 16.                                | I see visions because I am worthless                                   | 0     | 1         | 2     | 3      |
| 17.                                | The things I see must be real.                                         | 0     | 1         | 2     | 3      |

| In the past two weeks I thought... |                                                                                                    | Never | Sometimes | Often | Always |
|------------------------------------|----------------------------------------------------------------------------------------------------|-------|-----------|-------|--------|
| 18.                                | I see visions because I deserve bad things to happen to me.                                        | 0     | 1         | 2     | 3      |
| 19.                                | The visions are all-powerful.                                                                      | 0     | 1         | 2     | 3      |
| 20.                                | Even when I can't see the visions, they are still watching or listening to me.                     | 0     | 1         | 2     | 3      |
| 21.                                | The visions are related to me but I don't know how.                                                | 0     | 1         | 2     | 3      |
| 22.                                | The visions are due to a chemical imbalance in my brain.                                           | 0     | 1         | 2     | 3      |
| 23.                                | The visions keep me company.                                                                       | 0     | 1         | 2     | 3      |
| 24.                                | I won't be able to cope with the vision.                                                           | 0     | 1         | 2     | 3      |
| 25.                                | The visions have bad intentions                                                                    | 0     | 1         | 2     | 3      |
| 26.                                | The visions are paranormal experiences e.g. ghosts or spirits.                                     | 0     | 1         | 2     | 3      |
| 27.                                | The visions directly replay something that has happened in the past.                               | 0     | 1         | 2     | 3      |
| 28.                                | The visions mean I am close to God.                                                                | 0     | 1         | 2     | 3      |
| 29.                                | I have no control over the visions.                                                                | 0     | 1         | 2     | 3      |
| 30.                                | The visions are communicating my emotions to me.                                                   | 0     | 1         | 2     | 3      |
| 31.                                | The visions can read my thoughts.                                                                  | 0     | 1         | 2     | 3      |
| 32.                                | I am not sure if I am awake or dreaming.                                                           | 0     | 1         | 2     | 3      |
| 33.                                | The visions are trying to make me lose my mind.                                                    | 0     | 1         | 2     | 3      |
| 34.                                | The visions are external to me.                                                                    | 0     | 1         | 2     | 3      |
| 35.                                | The visions are my brain playing tricks on me.                                                     | 0     | 1         | 2     | 3      |
| 36.                                | The visions are trying to wear me down.                                                            | 0     | 1         | 2     | 3      |
| 37.                                | The visions provide guidance for my life.                                                          | 0     | 1         | 2     | 3      |
| 38.                                | I need to find out who the visions are.                                                            | 0     | 1         | 2     | 3      |
| 39.                                | I see visions because I have a vivid imagination.                                                  | 0     | 1         | 2     | 3      |
| 40.                                | The visions I see reflect things that have happened to me in my life.                              | 0     | 1         | 2     | 3      |
| 41.                                | My physical health difficulties are causing me to see visions.                                     | 0     | 1         | 2     | 3      |
| 42.                                | Other people are causing me to see visions.                                                        | 0     | 1         | 2     | 3      |
| 43.                                | I have no future while I see visions.                                                              | 0     | 1         | 2     | 3      |
| 44.                                | The visions are related to jinn (i.e. supernatural beings related to Arabic and Muslim tradition). | 0     | 1         | 2     | 3      |
| 45.                                | I cannot escape the visions.                                                                       | 0     | 1         | 2     | 3      |
| 46.                                | I see visions of people I have lost or not fully grieved for.                                      | 0     | 1         | 2     | 3      |
| 47.                                | The visions mean that I am useless.                                                                | 0     | 1         | 2     | 3      |
| 48.                                | I see visions because I have had difficult things happen to me throughout my life.                 | 0     | 1         | 2     | 3      |
| 49.                                | I see visions because I am cursed.                                                                 | 0     | 1         | 2     | 3      |

| In the past two weeks I thought... |                                                                     | Never | Sometimes | Often | Always |
|------------------------------------|---------------------------------------------------------------------|-------|-----------|-------|--------|
| 50.                                | Seeing visions means I am crazy.                                    | 0     | 1         | 2     | 3      |
| 51.                                | The visions are similar to the content of my dreams or nightmares.  | 0     | 1         | 2     | 3      |
| 52.                                | I see visions because I am stressed.                                | 0     | 1         | 2     | 3      |
| 53.                                | The visions keep me connected to people in my past.                 | 0     | 1         | 2     | 3      |
| 54.                                | The visions mean that I am a bad person.                            | 0     | 1         | 2     | 3      |
| 55.                                | The visions represent how I feel.                                   | 0     | 1         | 2     | 3      |
| 56.                                | The visions may make me act without stopping to think first.        | 0     | 1         | 2     | 3      |
| 57.                                | The visions are dangerous.                                          | 0     | 1         | 2     | 3      |
| 58.                                | The visions mean that I am beyond help.                             | 0     | 1         | 2     | 3      |
| 59.                                | I am a burden on others because I see visions.                      | 0     | 1         | 2     | 3      |
| 60.                                | I am scared to understand why I see visions.                        | 0     | 1         | 2     | 3      |
| 61.                                | I am seeing visions because I expect to see them.                   | 0     | 1         | 2     | 3      |
| 62.                                | The visions are trying to make me do what it wants.                 | 0     | 1         | 2     | 3      |
| 63.                                | I see visions because I am struggling to cope with my emotions      | 0     | 1         | 2     | 3      |
| 64.                                | The vision will harm my friends or family.                          | 0     | 1         | 2     | 3      |
| 65.                                | The content of what I see means I am not normal.                    | 0     | 1         | 2     | 3      |
| 66.                                | The visions are a sign that I am being punished.                    | 0     | 1         | 2     | 3      |
| 67.                                | The visions help me to cope with life.                              | 0     | 1         | 2     | 3      |
| 68.                                | My brain is not capable of making these visions up.                 | 0     | 1         | 2     | 3      |
| 69.                                | I am different from others because I see visions.                   | 0     | 1         | 2     | 3      |
| 70.                                | The visions are trying to control me.                               | 0     | 1         | 2     | 3      |
| 71.                                | I see visions because something is terribly wrong with me           | 0     | 1         | 2     | 3      |
| 72.                                | The visions mean I am special.                                      | 0     | 1         | 2     | 3      |
| 73.                                | The visions are protecting me.                                      | 0     | 1         | 2     | 3      |
| 74.                                | Seeing visions means I can't live the life I want to.               | 0     | 1         | 2     | 3      |
| 75.                                | I cannot trust my own mind because I see visions.                   | 0     | 1         | 2     | 3      |
| 76.                                | The visions make me feel unsafe                                     | 0     | 1         | 2     | 3      |
| 77.                                | There is nothing I can do to manage the visions.                    | 0     | 1         | 2     | 3      |
| 78.                                | I am confused as to why I see visions.                              | 0     | 1         | 2     | 3      |
| 79.                                | I am seeing things because I'm tired                                | 0     | 1         | 2     | 3      |
| 80.                                | Other people are using the visions to try and make me lose my mind. | 0     | 1         | 2     | 3      |
| 81.                                | I see visions because I am psychic.                                 | 0     | 1         | 2     | 3      |

| In the past two weeks I thought... |                                                                       | Never | Sometimes | Often | Always |
|------------------------------------|-----------------------------------------------------------------------|-------|-----------|-------|--------|
| 82.                                | I can no longer do things I want because the visions will not let me. | 0     | 1         | 2     | 3      |
| 83.                                | I am losing touch with reality.                                       | 0     | 1         | 2     | 3      |

## Part 2: Emotional impact

People react in a range of ways to seeing a vision. Please rate how often you felt this way below in the **last two weeks** as a result of seeing the vision.

| At the time of seeing the vision, it made me feel... |             | Never | Sometimes | Often | Always |
|------------------------------------------------------|-------------|-------|-----------|-------|--------|
| 1.                                                   | Happy       | 0     | 1         | 2     | 3      |
| 2.                                                   | Frustrated  | 0     | 1         | 2     | 3      |
| 3.                                                   | Hopeless    | 0     | 1         | 2     | 3      |
| 4.                                                   | Fearful     | 0     | 1         | 2     | 3      |
| 5.                                                   | Calm        | 0     | 1         | 2     | 3      |
| 6.                                                   | Guilty      | 0     | 1         | 2     | 3      |
| 7.                                                   | Sad         | 0     | 1         | 2     | 3      |
| 8.                                                   | Angry       | 0     | 1         | 2     | 3      |
| 9.                                                   | Disgusted   | 0     | 1         | 2     | 3      |
| 10.                                                  | Ashamed     | 0     | 1         | 2     | 3      |
| 11.                                                  | Humiliated  | 0     | 1         | 2     | 3      |
| 12.                                                  | Anxious     | 0     | 1         | 2     | 3      |
| 13.                                                  | Comforted   | 0     | 1         | 2     | 3      |
| 14.                                                  | Embarrassed | 0     | 1         | 2     | 3      |
| 15.                                                  | Excited     | 0     | 1         | 2     | 3      |

## Part 3: Coping with the vision

Seeing things others do not can lead people to manage in different ways. Sometimes people avoid places where they think they may be more likely to see things, or they may try to reduce the impact when they actually see the vision. They may put up defences to keep themselves safe.

Please circle the number that best describes how often you may have used each strategy to try and cope with the visions in the **last two weeks**.

| In the last two week, when I saw the vision.... |                                                  | Never | Sometimes | Often | Always |
|-------------------------------------------------|--------------------------------------------------|-------|-----------|-------|--------|
| 1.                                              | I did nothing.                                   | 0     | 1         | 2     | 3      |
| 2.                                              | I was able to stand up toward the visions.       | 0     | 1         | 2     | 3      |
| 3.                                              | I used substances or alcohol to help me to cope. | 0     | 1         | 2     | 3      |

| In the last two week, when I saw the vision.... |                                                                                            | Never | Sometimes | Often | Always |
|-------------------------------------------------|--------------------------------------------------------------------------------------------|-------|-----------|-------|--------|
| 4.                                              | I left as soon as I noticed the visions.                                                   | 0     | 1         | 2     | 3      |
| 5.                                              | I did my best to ignore the visions.                                                       | 0     | 1         | 2     | 3      |
| 6.                                              | I lost track of time.                                                                      | 0     | 1         | 2     | 3      |
| 7.                                              | I talked to the visions.                                                                   | 0     | 1         | 2     | 3      |
| 8.                                              | I always looked at it, so I knew where it was.                                             | 0     | 1         | 2     | 3      |
| 9.                                              | I watched for signs that the vision may hurt me.                                           | 0     | 1         | 2     | 3      |
| 10.                                             | I did something I enjoyed to distract me.                                                  | 0     | 1         | 2     | 3      |
| 11.                                             | I avoided being on my own in case I saw the visions.                                       | 0     | 1         | 2     | 3      |
| 12.                                             | I turned up the lights brightly.                                                           | 0     | 1         | 2     | 3      |
| 13.                                             | I avoided looking directly at the visions.                                                 | 0     | 1         | 2     | 3      |
| 14.                                             | I spent excessive time thinking about what bad things might happen because of the visions. | 0     | 1         | 2     | 3      |
| 15.                                             | I left the visions be.                                                                     | 0     | 1         | 2     | 3      |
| 16.                                             | I just accepted the visions as part of my life, allowing me to live the life I want.       | 0     | 1         | 2     | 3      |
| 17.                                             | I did something to test if the visions was really there or not.                            | 0     | 1         | 2     | 3      |
| 18.                                             | I sought reassurance from others to see if its real or not.                                | 0     | 1         | 2     | 3      |
| 19.                                             | I found myself thinking about the vision long after the visions had gone.                  | 0     | 1         | 2     | 3      |
| 20.                                             | I had to walk away from the visions.                                                       | 0     | 1         | 2     | 3      |
| 21.                                             | I reminded myself that the visions are not real.                                           | 0     | 1         | 2     | 3      |
| 22.                                             | I was unable to look away from the visions.                                                | 0     | 1         | 2     | 3      |
| 23.                                             | I was absorbed by the visions.                                                             | 0     | 1         | 2     | 3      |
| 24.                                             | I went to sleep.                                                                           | 0     | 1         | 2     | 3      |
| 25.                                             | I meditated.                                                                               | 0     | 1         | 2     | 3      |
| 26.                                             | I argued back against the visions.                                                         | 0     | 1         | 2     | 3      |
| 27.                                             | I kept my distance from the visions.                                                       | 0     | 1         | 2     | 3      |
| 28.                                             | I avoided going places where I may see the visions.                                        | 0     | 1         | 2     | 3      |
| 29.                                             | I had to keep an eye out for the vision, even when it was not there.                       | 0     | 1         | 2     | 3      |
| 30.                                             | I was able to dismiss the visions.                                                         | 0     | 1         | 2     | 3      |
| 31.                                             | I worried about the vision, even when it was not there.                                    | 0     | 1         | 2     | 3      |

| In the last two week, when I saw the vision.... |                                                                                   | Never | Sometimes | Often | Always |
|-------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------|-------|--------|
| 32.                                             | I looked out for the vision, even when it was not there.                          | 0     | 1         | 2     | 3      |
| 33.                                             | I often thought about what the visions were doing.                                | 0     | 1         | 2     | 3      |
| 34.                                             | I took medication to calm me down in the moment.                                  | 0     | 1         | 2     | 3      |
| 35.                                             | I tried to distract myself from the visions.                                      | 0     | 1         | 2     | 3      |
| 36.                                             | I used the visions as an indicator that I need to look after my mental wellbeing. | 0     | 1         | 2     | 3      |
| 37.                                             | I could not rest until I find out what the vision is.                             | 0     | 1         | 2     | 3      |
| 38.                                             | I prayed or read religious texts.                                                 | 0     | 1         | 2     | 3      |

***PLEASE CONTINUE TO THE NEXT PAGE.***

## Hamilton Questionnaire – Adapted for Visions (HViQ)

### Instructions:

*Please tick or cross one option that best describes your experience of visions during the **past week, including today.***

1. How frequently did you see visions?

|                          |                           |
|--------------------------|---------------------------|
| <input type="checkbox"/> | No visions                |
| <input type="checkbox"/> | Less than once a day      |
| <input type="checkbox"/> | Once or twice a day       |
| <input type="checkbox"/> | Several times a day       |
| <input type="checkbox"/> | All the time / constantly |

2. How negative is the content (e.g. the physical appearance) of the visions?

|                          |                     |
|--------------------------|---------------------|
| <input type="checkbox"/> | Not negative at all |
| <input type="checkbox"/> | Not that negative   |
| <input type="checkbox"/> | Fairly negative     |
| <input type="checkbox"/> | Very negative       |
| <input type="checkbox"/> | Horrible            |

3. How attention grabbing or noticeable are the visions?

|                          |                                          |
|--------------------------|------------------------------------------|
| <input type="checkbox"/> | Not intrusive at all                     |
| <input type="checkbox"/> | Very discreet (not very noticeable)      |
| <input type="checkbox"/> | Average                                  |
| <input type="checkbox"/> | Fairly intrusive                         |
| <input type="checkbox"/> | Very intrusive (very attention grabbing) |

4. How long do the visions usually last?

|                          |                                                  |
|--------------------------|--------------------------------------------------|
| <input type="checkbox"/> | Visions not present                              |
| <input type="checkbox"/> | A few second to one minute                       |
| <input type="checkbox"/> | A few minutes                                    |
| <input type="checkbox"/> | More than 10 minutes but less than an hour       |
| <input type="checkbox"/> | Longer than one hour / they just seem to persist |

5. How much do the visions interfere with your daily activities?

- |                          |                       |
|--------------------------|-----------------------|
| <input type="checkbox"/> | No interference       |
| <input type="checkbox"/> | A little bit          |
| <input type="checkbox"/> | Moderately            |
| <input type="checkbox"/> | Quite a bit           |
| <input type="checkbox"/> | Extremely interfering |

6. How distressing are the visions?

- |                          |                               |
|--------------------------|-------------------------------|
| <input type="checkbox"/> | No visions are distressing me |
| <input type="checkbox"/> | A little bit                  |
| <input type="checkbox"/> | Moderately                    |
| <input type="checkbox"/> | Quite a bit                   |
| <input type="checkbox"/> | Extremely distressing         |

7. How bad (worthless/useless) do the visions make you feel about yourself?

- |                          |                                      |
|--------------------------|--------------------------------------|
| <input type="checkbox"/> | No visions make me feel bad          |
| <input type="checkbox"/> | A little bit                         |
| <input type="checkbox"/> | Fairly bad                           |
| <input type="checkbox"/> | Very bad                             |
| <input type="checkbox"/> | Extremely bad (as bad as I can feel) |

8. How clearly do you see the visions?

- |                          |                                |
|--------------------------|--------------------------------|
| <input type="checkbox"/> | Visions not present            |
| <input type="checkbox"/> | Very blurry and unclear        |
| <input type="checkbox"/> | Fairly blurry and unclear      |
| <input type="checkbox"/> | Fairly clear and vivid visions |
| <input type="checkbox"/> | Very clear, vivid visions      |

9. How often does the vision control you and what you do?

- |                          |                  |
|--------------------------|------------------|
| <input type="checkbox"/> | None of the time |
| <input type="checkbox"/> | Rarely           |
| <input type="checkbox"/> | Sometimes        |
| <input type="checkbox"/> | Most of the time |
| <input type="checkbox"/> | All of the time  |

10. How often does the vision feel real?

|                          |                  |
|--------------------------|------------------|
| <input type="checkbox"/> | Never            |
| <input type="checkbox"/> | Rarely           |
| <input type="checkbox"/> | Sometimes        |
| <input type="checkbox"/> | Most of the time |
| <input type="checkbox"/> | All of the time  |

***YOU HAVE NOW COMPLETED THE ASSESSMENT PACK.***

***THANK YOU FOR YOUR TIME.***

## Appendix 9: Final version of Hamilton Visions Questionnaire (HViQ)

### Hamilton Visions Questionnaire (HViQ)

#### *Instructions:*

*Please tick or cross one option that best describes your experience of visions during the **past week, including today.***

1. How frequently did you see visions?

|                          |                           |
|--------------------------|---------------------------|
| <input type="checkbox"/> | No visions                |
| <input type="checkbox"/> | Less than once a day      |
| <input type="checkbox"/> | Once or twice a day       |
| <input type="checkbox"/> | Several times a day       |
| <input type="checkbox"/> | All the time / constantly |

2. How negative is the content (e.g. the physical appearance) of the visions?

|                          |                     |
|--------------------------|---------------------|
| <input type="checkbox"/> | Not negative at all |
| <input type="checkbox"/> | Not that negative   |
| <input type="checkbox"/> | Fairly negative     |
| <input type="checkbox"/> | Very negative       |
| <input type="checkbox"/> | Horrible            |

3. How attention grabbing or noticeable are the visions?

|                          |                                          |
|--------------------------|------------------------------------------|
| <input type="checkbox"/> | Not intrusive at all                     |
| <input type="checkbox"/> | Very discreet (not very noticeable)      |
| <input type="checkbox"/> | Average                                  |
| <input type="checkbox"/> | Fairly intrusive                         |
| <input type="checkbox"/> | Very intrusive (very attention grabbing) |

4. How long do the visions usually last?

|                          |                                                  |
|--------------------------|--------------------------------------------------|
| <input type="checkbox"/> | Visions not present                              |
| <input type="checkbox"/> | A few second to one minute                       |
| <input type="checkbox"/> | A few minutes                                    |
| <input type="checkbox"/> | More than 10 minutes but less than an hour       |
| <input type="checkbox"/> | Longer than one hour / they just seem to persist |

5. How much do the visions interfere with your daily activities?

- ☐ No interference
- ☐ A little bit
- ☐ Moderately
- ☐ Quite a bit
- ☐ Extremely interfering

6. How distressing are the visions?

- ☐ No visions are distressing me
- ☐ A little bit
- ☐ Moderately
- ☐ Quite a bit
- ☐ Extremely distressing

7. How bad (worthless/useless) do the visions make you feel about yourself?

- ☐ No visions make me feel bad
- ☐ A little bit
- ☐ Fairly bad
- ☐ Very bad
- ☐ Extremely bad (as bad as I can feel)

8. How clearly do you see the visions?

- ☐ Visions not present
- ☐ Very blurry and unclear
- ☐ Fairly blurry and unclear
- ☐ Fairly clear and vivid visions
- ☐ Very clear, vivid visions

9. How often does the vision control you and what you do?

- ☐ None of the time
- ☐ Rarely
- ☐ Sometimes
- ☐ Most of the time
- ☐ All of the time

10. How often does the vision feel real?

|                          |                  |
|--------------------------|------------------|
| <input type="checkbox"/> | Never            |
| <input type="checkbox"/> | Rarely           |
| <input type="checkbox"/> | Sometimes        |
| <input type="checkbox"/> | Most of the time |
| <input type="checkbox"/> | All of the time  |

## Appendix 10: Examples of different leaflets as advised by people with lived experience

**Figure C** – Example of a more detailed poster for VISION-QUEST developed with people with lived experience



**DO YOU  
SEE THINGS THAT  
OTHERS DON'T?**

**Visions (visual hallucinations) are common in people with psychosis. They can be distressing and difficult to talk about.**

**We find that visions are not often spoken about in people's care.**

**We want to change this by developing better treatments.**

**To do so, firstly, we must listen to and learn from people's experiences. So, we are running VISION-QUEST: a questionnaire study about visions in psychosis.**

**You get £10 for taking part and it takes about an hour.**

**If you experience visions and psychosis, we would love to hear from you.**

**Please contact [INSERT TRUST RESEARCH STUDY LEAD] on [TELEPHONE NUMBER] (by calling or text!) or [EMAIL ADDRESS] or speak to your care team who can contact our researchers.**

For more information, scan here:



Recruitment ends on 31<sup>st</sup> March 2026

IRAS ID: 332680  
V2 29.11.2024

INSERT SITE LOGO

FUNDING BY  
**NIHR** | National Institute for  
Health and Care Research

**NHS**  
Cumbria, Northumberland,  
Tyne and Wear

**UNIVERSITY  
of York**

**Figure D** – Example of a less detailed poster for VISION-QUEST developed with people with lived experience



**DO YOU  
SEE THINGS THAT  
OTHERS DON'T?**

If so, we would like to hear about your experiences to help us to develop better treatments for these.

If you experience visions (visual hallucinations) and psychosis, you may be able to take part in our questionnaire study.

If you would like to hear more, please contact [INSERT TRUST RESEARCH STUDY LEAD] on [TELEPHONE NUMBER] (by calling or text!) or [EMAIL ADDRESS] or speak to your care team who can contact our researchers.

For more information, scan here:



Recruitment ends on 31st March 2026

## Appendix 11: Comparison of clinical and non-clinical groups in free text responses to what visions they see

| Content category | Nonclinical                                                                                                                                                                                                                                                                                                                                          | Clinical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| People           | <p>I saw a person who was staring at me.</p> <p>A man walking up the road that suddenly just disappeared.</p>                                                                                                                                                                                                                                        | <p>I see a man I have never seen before, dark hair, hollow eyes and creepy smile. Always staring at me from around a corner. Very real and clear and movements are swift. The vision just stares and smiles at me.</p> <p>See newborn baby hanging with blue lips, also a little toddler body hanging.</p>                                                                                                                                                                                                                                                                                         |
| Figures/shadows  | <p>I usually see shadow figures that seem very familiar, although I am always terrified by them, but they never speak to me.</p> <p>Saw shadow at end of bed.</p> <p>I kept seeing shadows of things and wondering if someone was there or not.</p> <p>What I could identify them to be at the time were just figures. It was unclear and blurry</p> | <p>Mainly shadow people - they are people, but with no true features, you can see shadows of where eyes and details are supposed to be, with a sort of TV static effect going through it.</p> <p>Naked male figure with sharp teeth, orange/red eyes. Tells me evil things, to kill myself. Tells things are coming, negative things. Very condescending and evil with the things it says.</p> <p>Shadows in the dark of horrible events e.g. beheadings (shadows beheading other shadows); kidnapping (a big male figure kidnapping a female victim). No colours, just movements and shadows.</p> |

|                                                                                                                                                                          |                                                                                                                    |                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Face                                                                                                                                                                     | I just saw faces of people I haven't seen before.                                                                  | Faces and smoke come out of the walks. Grey/black colour, very vivid. Mostly happens at night. Been seeing them for years, have moved around with me. They come a stare, stay for a long time.                             |
|                                                                                                                                                                          | Lots of different faces morphing into different faces.                                                             |                                                                                                                                                                                                                            |
|                                                                                                                                                                          | I saw a scary face.                                                                                                | Mainly faces, rarely the full person, sometimes half a person and I hear their voices at the same time.                                                                                                                    |
| Humans, faces with eyes that change colour                                                                                                                               |                                                                                                                    |                                                                                                                                                                                                                            |
| Animals                                                                                                                                                                  | See my cat, that recently died, walking beside me.                                                                 | Lots of spiders I usually see them and feel them at same time and there crawling on me. It's very stressful and I scratch at my skin badly until the spiders disappear.                                                    |
|                                                                                                                                                                          | Had a wolf visit me and it was trying to show or tell me something                                                 |                                                                                                                                                                                                                            |
|                                                                                                                                                                          |                                                                                                                    | Swarms of insects 'as if there is a dead body'                                                                                                                                                                             |
| Rats crunching and eating the walls. Big rats can be up to the size of a dog. Often brief. Appear dirty. They follow me around the house, I want to know what they want. |                                                                                                                    |                                                                                                                                                                                                                            |
| Objects                                                                                                                                                                  | A block was floating in front of me.                                                                               | Vehicles that are not there when I am driving, sometimes it is a fully formed but I can see through so that I can see it's not real, or it will disappear or it will be a funny shape, so I can tell it's a hallucination. |
|                                                                                                                                                                          | Sometimes I see objects for a sec like vases or ornaments but the next second they aren't there, they just vanish. |                                                                                                                                                                                                                            |
|                                                                                                                                                                          |                                                                                                                    | Objects moving, for example water bottle moving that is actually stationary.                                                                                                                                               |
| Unusual creature                                                                                                                                                         | I see strange looking animals chasing me down the road.                                                            | A tall creature with two sets of arms and two sets of legs and abnormal head with many eyes.                                                                                                                               |
|                                                                                                                                                                          | An unexplained creature on the wall, filled with darkness, with a flashy bright eyes like a torch light.           | Creatures with horses heads with humans bodies.                                                                                                                                                                            |
|                                                                                                                                                                          |                                                                                                                    | At night, The Grim Reaper making a stabbing motion. Realistic. Male, skeleton face, does not talk.                                                                                                                         |
| Religious character                                                                                                                                                      | God                                                                                                                | I see demons. Tall and Black. Red eyes. White teeth.                                                                                                                                                                       |
|                                                                                                                                                                          |                                                                                                                    | See the devil and talks to me.                                                                                                                                                                                             |

|                 |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | I saw a priest describing my problem to me and telling me solution for it                                                                                                                                     | I see demons. Dark figure. Has a face which looks bad. Looks scary and makes a mocking laughing sound.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Scenery         | Was a scene of fighting<br><br>I sometimes see flashes of light or vivid scenery, kind of like a vision or daydream, even when I'm not consciously thinking about anything and I'm not sure of what it means. | Saw the A&E area as if it were an airport - it appeared busy, it looked like everyone was at the airport                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Uncanny Valley  | Like a faceless person who is very pale.                                                                                                                                                                      | <p>People with no faces which are very vivid. Obviously human but faceless. Stand still and look at me and reach out sometimes but don't touch me. Usually clothed smartly. Feeling that they're always male.</p> <p>People with no faces, carrying weapons. They move and walk towards me. They move like people up to no good. The face are always blurry, they wear distinct hats on their heads. The bodies are clear, the weapon is clear and visible. They appear threatening.</p> <p>I see a military man with an injury. He has a bandage on and wearing uniform.</p> <p>I tend to see a man who looks like me but with a level of disfigurement who is always telling me to end my life.</p> |
| Flashing lights | Light moving in the bedroom<br><br>Strange, colourful flashing lights, they look like fire flies.                                                                                                             | Like Orbs. Follows my hand. I guide it. I hold it.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Other           |                                                                                                                                                                                                               | <p>I see random words appear on surfaces.</p> <p>Writing on the wall and floor. Horrible words linked to experiences.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |