

Agentic belonging: how can universities enhance student outcomes by helping students to better understand their own belonging needs and take action?

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August 2024

Abstract

Students' sense of belonging at university has been robustly connected to various positive outcomes; including engagement with studies, satisfaction, mental wellbeing and successful degree completion. Most existing literature quite rightly challenges the "find your place" narrative that places the burden of belonging onto individual students, focusing instead on what institutions can do to provide support, opportunities and cultures that foster belonging.

However, belonging requires desire, motivation and action from the individual student. A focus solely on providing the right conditions for belonging risks undermining the role of the student. Workshop interventions with students to talk about belonging and re-establish student agency have begun to be explored in the US context, but have not been tested in other higher education systems.

This thesis addresses this gap by developing and evaluating a workshop intervention to help develop student agency in building belonging. The 'agentic belonging' workshop was delivered as part of a quasi-experimental research approach with 101 participants from two English universities in the 2022/23 academic year.

A longitudinal and mixed-methods approach was developed around a Theory of Change model to assess the impact the workshop had on attendees compared to two control groups: one who attended a study skills workshop, and one that did not attend either workshop.

Results show that the agentic belonging workshop's learning outcomes were mostly met when compared to control groups. Whilst attendees reported different approaches to how they then took action to build belonging, changes in self-reported measures of belonging were not significantly different across the workshop groups. However, belonging workshop attendees had significantly higher continuation rates compared to both control groups.

This thesis provides recommendations for practice around running and enhancing such agentic belonging workshops in other contexts as well as how more student-centric approaches to building belonging can be embedded within personal tutoring, learner analytics and other institutional support programmes.

Acknowledgements

A PhD is a labour of love and as such it would not be possible without the love and support I have received from those around me over the last few years.

I owe so much to the friends and family who somehow always managed to achieve a perfect balance of support; knowing when to check in and ask how I was getting on with my thesis, whilst also knowing when *not* to ask about it and remind me that I still had other things going on in my life.

I must give thanks to my colleagues at Middlesex who made it possible for me to fit the PhD around my day job. My team members, my line manager, members of the executive, and colleagues beyond... I have always felt supported and encouraged to pursue these studies alongside my work. I know that not everyone has such support from their employer and it made the world of difference.

Thank you to colleagues around the higher education sector who have warmly welcomed me into discussions around student belonging. I often felt a great deal of imposter syndrome and self-doubt when moving into these spaces. "What do I have to contribute?" "I'm not a real academic." "People have moved on from wanting to hear about belonging." All of these self-doubts were and still are hard to silence, but kind words from others has certainly helped to quiet them. I have met so many amazing people throughout this journey (maybe the real PhD was the friends we made along the way!)

Those of us in higher education work in a beautiful and compassionate sector. To all those who have invited me into conversations, conferences, networks, I hope that I did you proud in those moments and that you can see how those opportunities have also influenced the writing of this thesis. Special thanks go to Aike Dias-Broens, Anna Jackson, Bridgette Bewick, Charlotte Verney, Emily McIntosh, Kate Lister, Kelly Edmunds, Louise Banahene, Sunday Blake, Tamara van Woezik and Will Carey.

This thesis was only possible because of support from colleagues at Middlesex University and the University of Southampton who agreed to let me run the research project with their students. A huge thanks to Lia Lawson (what a star!) at Middlesex University and Sandro Gunther, Jo Holmes and Gavin Jones at the University of Southampton for making this all happen.

I sought out Liz Thomas as my lead supervisor and felt greatly supported by her right from the beginning. When she moved from Edge Hill to the University of York, I immediately know that I wanted to transfer to stay with her. Thank you for everything, Liz. Still in that first year I was very well supported by supervisors Keith Williams and Shereen Shaw and the EdD team of Mark Crilly, Michelle Woods, Pere Beedles and programme leader Carol Robinson at Edge Hill.

Once I moved to York I was incredibly lucky to get Dan McArthur as a new secondary supervisor. Dan, you have brought so much to this project and I've learned a huge amount from you. Thank you for all the time, effort and guidance you brought. Other staff at York have been genuinely incredible and there are so many who have supported me: thank you Anna Bull, Carole Torgerson, Clementine Beauvais, Jen Brown, Zoe Baker and the rock of support that is Paisley Bryce.

Finally, to my partner, Rich, for his constant support. Thank you for helping me to "balance" between making progress to get this PhD done vs. slowing down to save my sanity and health. Thank you for inspiring me with your own PhD and subsequent academic success... and thank you for supporting me through those tough early days of learning R, where you were always happy to help with my endless queries and code errors. I love you and can't wait to have more free time to enjoy life with you.

Table of contents

Abstract.....	2
Acknowledgements.....	3
Table of contents	5
List of tables	13
List of figures.....	16
Declarations	20
Chapter 1 – Introduction and context	22
Introduction	22
Student success and retention	23
Defining and understanding student success in different contexts	23
Equitable student success.....	24
The problem of withdrawal and whether addressing it could be problematic	25
Student belonging.....	26
Practitioner positionality	27
Aims and objectives	30
Structure of the thesis and contributions to knowledge and practice	33
What has been excluded from this PhD?.....	35
Chapter 2 – literature review.....	37
Introduction	37
Conceptualising belonging – beyond the educational context.....	38
How belonging is defined across different disciplines and fields of study	38
Challenges with belonging	40
How and why to care about belonging.....	40
A systematised, critical literature review on student belonging	41
Utilising scoping review principles to develop research questions	41
Systematised critical literature review approach	42
Search strategy and inclusion / exclusion criteria	43
Inclusion of literature outside of the systematised critical review.....	46
RQ1: How is student belonging defined and measured?	46
Defining student belonging.....	47
Belonging to what? Domains of student belonging.....	47
Measuring student belonging – conceptualisations in quantitative research	49
How student belonging changes over time	50
RQ2: What factors affect students’ sense of belonging?	52

RQ3: How is student belonging connected to student success?	57
RQ4: How is belonging experienced by different students?	60
Why is belonging experienced differently by different students?	60
Unpicking the differences between historically and currently underrepresented students	62
Belonging as a route to taking asset, rather than deficit approaches	62
RQ5: How has research evaluated efforts to improve student belonging?	63
Summary of student belonging from this systematised, critical literature review	65
Conceptualisation of student belonging for use in this thesis.....	66
Bronfenbrenner’s Ecological Model of Human Development.....	67
Concluding remarks on defining and conceptualising student belonging.....	68
Conceptualising student agency	69
Approach to exploring student agency literature.....	69
Frameworks and theories underlying the concept of agency	70
Unpicking what agency means in the context of student engagement	72
Why focus on student agency and how to positively influence it?	73
Student agency – summarising comments	74
Gaps in existing literature	74
Evidence gaps.....	75
Knowledge gaps	75
Practical knowledge gaps.....	76
Methodological gaps.....	76
Empirical gaps	77
Theoretical gaps.....	78
Population gaps.....	79
Conclusion.....	79
Appendices for Chapter 2	81
Chapter 3 – Methodology	82
Introduction	82
Research paradigms.....	83
Methodological positions	84
Moving away from a randomised control trial approach	85
Theory of Change	86
Timeframes and phases of interventions and data collection.....	89
Research contexts	92
Universities which took part in the research.....	92
Funding and incentives	93

Developing the interventions	94
Participant recruitment and selection	97
Demographic data collection	99
Methods – Introduction	100
Methods utilised in Chapter 4: Intervention effectiveness	100
Process evaluation	100
Evaluating intervention effectiveness.....	101
Methods utilised within Chapter 5: Actions students take to belong	102
Longitudinal online diaries.....	103
Open text questions within surveys.....	104
Process evaluation of online diaries	104
Methods utilised within Chapter 6: Changes in belonging.....	104
Quantitative analysis of Yorke belonging scales.....	105
Inclusion of sentiment analysis from online diaries	106
Methods utilised within Chapter 7: How belonging links to retention	107
Quantitative analysis of a bespoke intention to persist scale	107
Ethical considerations	108
Participant autonomy	108
Participant beneficence	109
Data management approach	110
Conclusion.....	111
Appendices for Chapter 3	111
Chapter 4 – Intervention effectiveness	112
Introduction	112
Methodology.....	115
Models to guide the structuring of this chapter.....	115
Overview of patterns of participation	118
Process evaluation of workshop design and delivery	120
Methods.....	120
Student and researcher reflections on preparing the workshop interventions.....	121
Reflections on promotion and participant recruitment	122
Student and researcher reflections on attendance and attrition.....	123
Process evaluation summary	125
Quantitative evaluation of intervention effectiveness.....	125
Data collection for quantitative evaluation	125
Methods used within quantitative analyses.....	126

Demographic variables and belonging as predictors of workshop attendance	127
Evaluating the interventions – assessing workshop learning outcome scales	136
Evaluating the interventions – learning outcomes by workshop type	138
Evaluating the interventions – learning outcomes by demographics and baseline belonging ..	141
Discussion.....	144
Student feedback and buy-in from institutional gatekeepers are crucial for designing workshops and recruiting participants.....	144
Baseline levels of belonging did not predict attendance, but did predict learning outcomes...	145
Whilst it is hard to measure students’ understanding of their belonging needs, the learning outcome scores of the belonging workshop are promising when compared against control groups	146
Limitations and recommendations for future research.....	148
Conclusion.....	149
Appendices for Chapter 4	150
Chapter 5 – Taking action to belong	151
Introduction	151
Methodology.....	152
Context and sample	152
Data collection and measures.....	152
Approach to data analysis.....	155
Protocol for analysis.....	155
Results – introduction.....	156
Theme 1 – Students need to be able to find and connect with peers ‘like them’	157
Most students want to find similar peers, but some embrace diversity	158
Students who are not able to find peers like themselves face challenges	159
The perception of cliques is a barrier to connection	160
Belonging intervention group students discussed depth vs. breadth of peer connections	161
Theme 2 – Belonging to surroundings takes time, flexible spaces and encouragement to explore	161
Students like choosing from a variety of spaces based on their personal preferences	162
Some students explored spaces on their own, whilst others needed encouragement	163
Having sufficient time is the main barrier to building belonging with surroundings	164
Theme 3 – Mattering to staff as a pre-condition to belonging.....	164
The importance of approachability and responsiveness	166
Students really appreciate supportive and caring approaches from staff	167
Students want both their identities and voices to be valued	168
Students recognise that there are aspects outside of individual staff member’s control	168

Theme 4 – Engagement and belonging as virtuous or downward spirals	169
Engagement leads to more belonging	170
Belonging leads to more engagement	171
Theme 5 – Balancing authenticity and pushing the boundaries of one’s comfort zone	172
When students act authentically this leads to them feeling a sense of belonging	173
Students’ recognise that there are benefits to pushing the boundaries of their comfort zone	175
Summary: prior exposure to belonging interventions affects how students take action to belong	175
Process evaluation – do students perceive benefits in reflecting on their sense of belonging? ...	176
Discussion.....	177
RQ2.1: What barriers need to be addressed before students can take action to belong?	177
RQ2.2: How do students take action to belong?	180
RQ2.3: To what extent do students’ belonging reflections vary based on experience of prior belonging interventions?	181
RQ2.4: To what extent do students perceive benefits in reflecting on their sense of belonging?	182
Limitations and recommendations for future research	183
Conclusion.....	184
Appendices for Chapter 5	186
Chapter 6 – Changes in belonging	187
Introduction	187
Methodology.....	190
Participants and data collection.....	190
Measures.....	191
Data analysis	192
Results.....	194
How belonging changes over time.....	195
Belonging scores by workshop learning outcome scores.....	204
Changes in belonging amongst different demographic groups.....	207
Discussion.....	211
Limitations and future research.....	214
Conclusion.....	215
Appendices for Chapter 6	216
Chapter 7 – Belonging and retention.....	217
Introduction	217
Sub-research questions:.....	217

Methodology.....	220
Participants and data collection.....	220
Measures.....	222
Data analysis	223
Results.....	224
Preliminary analyses to validate methodological approach for remaining analyses	227
RQ4.1: To what extent is students’ sense of belonging a predictor of students’ intention to persist?.....	227
RQ4.2: To what extent is students’ sense of belonging a predictor of continuation?	235
RQ4.3: To what extent do students who attended the agentic belonging intervention differ from other students in their intention to persist?	238
RQ4.4: To what extent do students who attended the agentic belonging intervention differ from other students in their continuation rates?.....	242
RQ4.5: Was attendance of either of the workshop interventions associated with closing of institutional continuation gaps across demographic variables?	247
Discussion.....	249
Students’ sense of belonging is a strong predictor of intention to persist and eventual continuation.....	249
Students’ sense of belonging when measured in October is not a reliable predictor of continuation.....	251
Workshop status is a statistically significant predictor of continuation	252
Limitations	253
Conclusion.....	255
Appendices for Chapter 7	256
Chapter 8 – Discussions and conclusions.....	257
Introduction	257
Addressing the overarching research questions and theory of change	258
Research question 1: To what extent can workshop interventions enhance first-year undergraduate students’ understanding of belonging?	258
Research question 2: What actions do students take to build belonging during the first year of study?.....	259
Research question 3: What effect does attendance of the agentic belonging workshop have on subsequent changes in levels of belonging?.....	260
Research question 4: To what extent is sense of belonging a predictor of student retention, measured by continuation of first-year undergraduate students into their second year of study?	261
Reflecting on the Theory of Change developed for this study	261
Exploration of cross-cutting results and their implications	264

Critiquing and updating the agentic belonging intervention.....	264
When in the student journey should belonging interventions be delivered?.....	267
Learnings from the use of a quasi-experimental approach.....	269
Recommendations for practice.....	272
Recommendations for designing and delivering belonging workshop interventions.....	272
Recommendations for linking agentic belonging interventions into broader institutional activities.....	275
Recommendations for universities around conditions required for students to be able to confidently take action to build their sense of belonging.....	278
Limitations and opportunities for future research.....	279
Internal validity.....	279
External validity.....	281
Ecological validity.....	283
Construct validity.....	284
Final conclusions – a call-to-action for readers.....	285
Let’s talk about student belonging... with students.....	285
Contributions of this thesis.....	286
What next?.....	287
Appendices for Chapter 8.....	288
Appendix 2.1 – Search approach, terms and timing for all literature review searches.....	289
Appendix 2.2 – Studies included within systematised, critical review of student belonging literature.....	291
Appendix 2.3 – Belonging scales found in student belonging literature review.....	314
Appendix 2.4 – Factors that affect students’ sense of belonging.....	317
Appendix 2.5 – Belonging as a prerequisite of student success outcomes.....	324
Appendix 3.1 - Implementing the ‘Agentic Belonging’ workshop – a toolkit for practitioners.....	326
Appendix 3.2 - Expected challenges and limitations of the research design, with implemented mitigations.....	347
Appendix 4.1 – Feedback from belonging workshop pilot.....	349
Appendix 4.2 - Chapter 4 full regression model results.....	357
Appendix 5.1 – Full demographic and participation details for online diaries.....	361
Appendix 5.2 – Full coding list developed through Reflexive Thematic Analysis of online diaries....	365
Appendix 5.3 – Phases of theme development for Reflexive Thematic analysis of online diaries....	367
Appendix 5.4 – Full results of online diaries process evaluation questionnaire for participants.....	369
Appendix 6.1 – Full preliminary analyses around missing data and correlations between online diaries and survey data.....	371

Appendix 7.1 – Full preliminary analyses around scale internal consistency and missing data correlations with continuation	378
Appendix 7.2 - Chapter 7 full regression model results.....	381
Appendix 8.1 - Student belonging – research impact.....	388
Glossary – including acronyms.....	392
References	395

List of tables

Each table within this thesis is numbered after the chapter that it appears in. For instance, the third table in chapter 4 is named Table 4.3. Tables within appendices have not been included within this list, but are numbered following the same format.

3.1 – Demographic and continuation rate details for the two participating institutions (Office for Students, 2024).....	93
3.2 – Participant registration, attendance, and attrition numbers	97
3.3 – Questions asked to participants at the end of each workshop to assess whether learning outcomes had been met.....	101
3.4 – Participant numbers within online diaries and open text responses within questionnaires	103
4.1 – Participant registration, attendance and attrition figures.....	118
4.2 – Participant demographic details, split by institution. Data provided at stage of sign-up for the research project and for those who attended either of the two workshop interventions	119
4.3 – Questions asked to participants at the end of each workshop to assess whether learning outcomes had been met.....	126
4.4 – Binary logistic regression: baseline belonging as a predictor of workshop attendance rate. Average marginal effects calculated to show the percentage increase in likelihood of attending for each percentage increase in baseline belonging. (N = 101)	128
4.5 – Multiple logistic regression of averaging marginal effects for demographic variables as predictors of attendance rate. (N = 302)	135
4.6 – Correlation matrix for belonging workshop self-reported learning outcomes	137
4.7 – Multiple linear regression models exploring belonging workshop attendance as a predictor of learning outcomes.	140
4.8 – Multiple linear regressions - baseline belonging as a predictor of workshop learning outcomes.	142
4.9 – Multiple linear regression analysis exploring the extent to which belonging workshop learning outcomes are predicted by students’ demographic variables and baseline measurements of belonging. (N = 32).....	143
4.10 – Multiple linear regression analysis exploring the extent to which study skills workshop learning outcomes are predicted by students’ demographic variables and baseline measurements of belonging. (N = 23).....	143
5.1 – Prompts used within online diaries and open text questions within surveys	154

6.1 – Scales used to measure student belonging and assess learning outcomes from belonging workshop	192
6.2 – Descriptive statistics of means and standard deviations (SD) from each survey and online diary submission point, split by intervention status.....	197
6.3 – Linear regression model analysing the extent to which workshop status and survey timepoints are predictors of changes in students’ sense of belonging. (n = 137)	198
6.4 – Linear regression model analysing the extent to which standard deviations in summary descriptive data is predicted by timepoint and workshop status (n = 12)	199
6.5 – Linear regression results for workshop status as predictors of sentiment scores for the classroom and friends online diary entries.....	204
6.6 – Linear regression results for belonging workshop learning outcomes as predictors of subsequent belonging scores.	206
6.7 – Multiple linear regression analysing demographic variables as predictors of change in belonging (n = 38)	209
6.8 – Linear regression results for parents' education status as a predictor for changes in belonging (n = 43)	210
7.1 – Scales used to measure student belonging, assess learning outcomes from belonging workshop, and measure students’ intention to persist.....	223
7.2 – Descriptive data showing the count and percentage of students with a positive continuation status across the overall study population and split by institutional status	224
7.3 – Participant registration, attendance and attrition numbers	226
7.4 – Multiple linear regression analyses to explore the extent to which belonging at each measurement point is a predictor of students' intention to persist.	231
7.5 – Multiple linear regression analyses to explore the extent to which students’ average sense of belonging is a predictor of students’ average intention to persist, as measured in surveys through the first academic year. (N = 66)	232
7.6 – Multiple linear regression analyses to explore the extent to which belonging at each measurement point is a predictor of students' intention to persist at the next measurement point – e.g. belonging in December as a predictor of intention to persist scores in February. (N = 103).....	234
7.7 – Multiple linear regression analyses to explore the extent to which changes in students’ sense of belonging was a predictor of changes in students’ intention to persist [N = 26].....	234
7.8 – Multiple binary logistic regression analyses to explore the extent to which belonging at each measurement point, along with students’ demographic variables, are predictors of students' eventual continuation status.	237

7.9 – Multiple linear regression analyses to explore the extent to which workshop status (either belonging workshop, study skills workshop or non-attendance at either workshop) was a predictor of students’ intention to persist scores	241
7.10 – Binary logistic regression analysis to explore the extent to which students’ workshop status (belonging workshop, study skills workshop or non-attendance at either workshop) is a predictor of continuation. (N = 89)	245
7.11 – Binary logistic regression analysis to explore the extent to which the workshop learning outcomes scores for students who attended the belonging workshop, as well as their demographic variables, are predictors of eventual continuation. (N = 30).....	246
8.1 – Denoting the different groups of participants for a 2x2 RCT study to assess the impact of both an agentic belonging workshop intervention and online diaries prompts (as an intervention) on sense of belonging	271

List of figures

Each figure within this thesis is numbered after the chapter that it appears in. For instance, the third figure in chapter 4 is numbered 4.3. Figures within appendices have not been included within this list, but are numbered following the same format.

1.1 – The What Works? model: improving student engagement, belonging, retention and success, taken from the ‘Building student engagement and belonging in Higher Education at a time of change’ report by Thomas, 2012.....	32
2.1 – Belonging model – including properties, prerequisites and consequences	41
2.2 – Search protocol with inclusion and exclusion criteria	44
2.3 – Publication dates of included student belonging research (studies published in 2023 were included in the review, not displayed above as the review was conducted during the year)	45
2.4 – Student belonging research visualised based on country where research took place.....	45
2.5 – Model of the domains of student belonging, building upon and critiquing the ‘Four domains of students’ sense of belonging to university’ by Ahn and Davis (2020) through inclusion of overlaps and other co–concepts of student belonging identified in other studies included for RQ1	49
2.6 – Factors affecting student belonging, sorted by degree of replication and significance of relationship established within existing research	54
2.7 – Factors affecting student belonging, thematically grouped and sorted by degree of student control over them	57
2.8 – Belonging and student success connections, visualised by significance of relationship and degree of replication.....	59
2.9 – Model depicting how belonging is experienced by different students	61
2.10 – Checklist of recommendations for evaluating student belonging interventions, compiled from critical reflections on evaluation studies included within RQ5	65
2.11 – Bronfenbrenner Model of Human Ecological Development (Bronfenbrenner, 1979), adapted for university students	68
3.1 – The three core elements of this action research project’s design: quasi–experimental, mixed–methods and longitudinal	84
3.2 – Full Theory of Change diagram for this study – suggesting how the agentic belonging workshop intervention may connect to improved retention outcomes through ‘missing middle’ steps (Centre of Theories of Change, 2022)	88

3.3 – Abridged Theory of Change diagram – showing just the core components that are tested within this study, including how each stage of the ToC relates to the project’s research questions	89
3.4 – Project timescales for data collection stages.....	92
3.5 – Adaptation of Bronfenbrenner’s ecological model of human development for the university context	96
3.6 – Summary of participant numbers at each part of the overarching study	98
4.1 – How the four sub–research questions are addressed by the process and impact evaluation aspects of this chapter	113
4.2 – The marketing funnel, developed by Elias St. Elmo Lewis in 1898 and adapted to the context of workshop attendance for university students.....	116
4.3 – The action research cycle, adapted from Lewin (1946) for the context of extra–curricular workshops for university students.....	117
4.4 – Gender split at each institution across overall new undergraduate students, those who registered for the workshops and eventual attendees. Binomial confidence intervals are set at 0.95 (for all graphics)	130
4.5 – Age split at each institution across overall new undergraduate students, those who registered for the workshops and eventual attendees. Age brackets have been grouped together for clarity of presentation.....	131
4.6 – Fee status split at each institution across overall new undergraduate students, those who registered for the workshops and eventual attendees.	132
4.7 – Parents’ educational status split at each institution across overall new undergraduate students (for Middlesex only), those who registered for the workshops and eventual attendees.	133
4.8 – workshop attendance rate (the proportion of students who attended the workshop after having initially signed up) by age. Including data from both institutions.....	135
4.9 – workshop attendance rates for other demographic variables with variances	136
4.10 – average workshop learning outcome scores by question from both the belonging and study skills workshops	139
4.11 – average workshop learning outcome scores for belonging workshop attendees and non–attendees	141
5.1 – map of categories and themes from Reflexive Thematic Analysis of student belonging online diaries data.....	157
5.2 – summary of the theme: students need to be able to find and connect with peers 'like them'	158
5.3 – summary of the theme: belonging to surroundings takes time, flexible spaces and encouragement to explore	162

5.4 – summary of the theme: mattering to staff as a pre-condition to belonging. Arrows connecting the different boxes are used to indicate how each of these terms were often used in overlapping and interchangeable ways by participants – e.g. activities that showed staff cared were often the same as those that showed value for students’ voices and identities	165
5.5 – summary of the theme: engagement and belonging as a virtuous spiral. A downward spiral is not shown in this model, but was something discussed by participants	170
5.6 – <i>Theme summary: balancing authenticity and pushing the boundaries of one’s comfort zone</i> .	173
6.1 – details of participation across the workshop interventions, online diaries and follow-up surveys used for analysis within this chapter.	190
6.2 – student belonging measured across first year of undergraduate study from survey data – split by intervention status.....	198
6.3 – Average change in belonging scores from student surveys, by workshop status and timepoint.	199
6.4 – Change in student belonging – mean against median scores.....	201
6.5 – student belonging measured across first year of undergraduate study from survey and online diaries data – split by intervention status	203
6.6 – Participants' workshop learning outcome scores plotted against subsequent levels of belonging (through survey and online diaries).....	207
6.7 – Changes in belonging (from baseline belonging survey to final survey measurement) by demographic variables.....	208
6.8 – <i>Student belonging survey measurements across the first year of undergraduate study – split by parents' education status</i>	211
7.1 – research participant and data collection journey for all aspects of data utilised within the analyses in this chapter. Colours used to denote each of the workshop statuses are utilised consistently throughout this chapter in data visualisations (belonging workshop in blue, study workshop in yellow, non-attending students in pink)	221
7.2 – Continuation rates between overall student populations of new undergraduate students and research participants, split by institutional status.....	225
7.3 – Changes in students' intention to persist and sense of belonging – including averages for all participants	228
7.4 – Changes in students' sense of belonging and intention to persist – just for Southampton participants	229
7.5 – Changes in students' sense of belonging and intention to persist – just for Middlesex participants	229

7.6 – Scatterplot showing the correlation between students' average sense of belonging scores and average intention to persist scores, as reported in surveys across the first academic year	233
7.7 – Plot showing students' sense of belonging and intention to persist across the first year of undergraduate study – split by students' continuation status	236
7.8 – Changes in students' sense of belonging and intention to persist – split by workshop status. Both scales normalised to represent values between 0 to 100.....	240
7.9 – Bar chart showing the continuation rate for all study participants by their workshop status..	244
7.10 – Bar chart showing the continuation rate for study participants by their workshop status, split by institution; first Middlesex (left) and then Southampton (right).....	245
7.11 – Bar charts depicting the demographic continuation gap for Middlesex students	248
8.1 – Original theory of change diagram, showing the core components and connections tested within this study, including how each stage of the ToC relates to the project's research questions	262
8.2 – Updated theory of change, including connections established within results chapters	263
8.3 – Updated diagram showing how additional learning outcomes could be implemented into the workshop design to support students in building agentic and authentic belonging.	266
8.4 – Photo from the delivery of a “What We Wish We’d Known’ session at Middlesex University to new undergraduate students in September 2023. Two student ambassadors are delivering the workshop.	274

Declarations

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 an award at this, or any other, University. All sources are acknowledged as references.

The word count for this thesis (excluding references and appendices) is 95,645.

Accessibility

All possible efforts have been made to ensure that this thesis document is accessible for readers. This includes the inclusion of alt text on all figures and hyperlinking throughout the document wherever reference is made to another section. Within each appendix, links are provided to sections of the thesis that referenced that appendix for ease of navigation – allowing readers to check appendices and then easily return to main text chapters. Any links to web pages outside of this thesis are presented as full URLs and will only be found within appendices and references. Depending on the browser or application that you are using to view this PDF, clicking on links may open them as a new tab or mean that you leave this PDF. All figures, except those reproduced from other sources, contain consistent colouring, which is based on colour visualisation best practice to ensure sufficient contrast.

Publications arising from this thesis

The following aspects of this thesis have either been published or submitted for publication:

- Aspects of [Chapter 2 – Literature review](#) (from the section: “A systematised, critical literature review on student belonging”) have been submitted to the Journal of Learning Development in Higher Education under the title ‘Understanding the factors and consequences of student belonging in higher education – a critical literature review’
- Aspects of [Chapter 2 – Literature review](#) (from the section: “RQ4: How is belonging experienced by different students?”) have been submitted and published: Gilani, D. (2024). Challenging simplistic and deficit perceptions of belonging amongst historically underrepresented students: Four self-reflective questions for policy makers and practitioners. *Student Engagement in Higher Education Journal*, 5(3), 17–24. Retrieved from <https://sehej.raise-network.com/raise/article/view/1223>

- Aspects of [Chapter 5 – Taking action to belong](#) (particularly around thematic results 1 – 3) have been submitted to the Journal of Further and Higher Education under the title ‘People and places – utilising online diaries to understand the prerequisites of student belonging’
- Aspects of [Chapter 5 – Taking action to belong](#) (particularly around thematic results 4 – 5) have been submitted to Pastoral Care in Education journal under the title ‘Virtuous or downward spirals – how student belonging, engagement and anxiety influence each other over time’
- Aspects of [Chapter 5 – Taking action to belong](#) (particularly around the process evaluation) have been submitted to the journal Perspectives: Policy and Practice in Higher Education under the title ‘Can we research student belonging without changing it? A case study exploring online diaries as a student voice approach’
- Aspects of [Chapter 6 – Changes in belonging](#) have been submitted to the International Journal of Inclusive Education under the title ‘Dynamic belonging – how student belonging changes over time for first-generation students’
- Aspects of [Chapter 4 – Intervention effectiveness](#), [Chapter 6 – Changes in belonging](#), and [Chapter 7 – Belonging and retention](#) (particularly quantitative analyses) have been submitted to the Student Success Journal under the title ‘The agentic belonging workshop – a quasi-experimental evaluation of a social belonging intervention in two English universities’
- Aspects of [Chapter 7 – Belonging and retention](#) have been submitted and accepted to the Trends in Higher Education journal under the title ‘The promise and limitations of student belonging as a predictor of student retention’.

More details about how work during this thesis has led to impact in the form of conference proceedings, publications, and presentations can be found in [Appendix 8.1](#).

Chapter 1 – Introduction and context

Introduction

“To the person reading this, whenever you find yourself questioning the course you chose, just remember why you chose it in the first place... Never forget that you are a strong and amazing person.” (B15 - a student’s entry in their online diaries, discussed further within [Chapter 5](#))

Higher education is a transformative, yet challenging experience. Each year in the UK, tens of thousands of students withdraw from their studies due to these challenges (Office for Students, 2024). To address this, one promising concept that has emerged in higher education student success literature over the years is how students’ sense of belonging at university may support their persistence and eventual degree completion. Students who report a higher sense of belonging often then see improved academic performance (Veldman et al., 2023), engagement (Zumbrunn et al. 2014), mental wellbeing (Kahu et al., 2022) and retention rates (Gopalan et al., 2022).

Whilst most existing research on this topic explores how universities provide the right conditions to foster belonging amongst their students, this thesis will focus on the role of student agency in building student belonging. There are promising examples, primarily from the US context, showing how interventions where staff talk with students about belonging can lead to increases in students’ sense of belonging and academic outcomes (Chrobak, 2024). The notion that underlies these ‘social-belonging interventions’ is that by addressing how belonging changes over time, and normalising the idea that students may face challenges and barriers to their belonging, participants will then be better prepared to face and persist through those challenges (Marksteiner et al., 2019; Murphy et al., 2020; Strayhorn, 2021; Chadha et al., 2024; Chrobak, 2024).

Following a thorough review of the student belonging literature ([Chapter 2](#)), an ‘agentic belonging’ intervention was developed that built on the previous belonging interventions found in the literature. The purpose of this workshop intervention is to help students to better understand and appreciate their own belonging needs and feel confident taking actions to satisfy these needs whilst at university. The workshop was delivered through a quasi-experimental research methodology at two English universities, with 101 first-year undergraduate students participating in the overall research project.

This thesis utilises a theory of change evaluative approach to explore how this intervention affected students in the short, medium and long-term. This includes a process evaluation of the organisation and delivery of the workshops and the extent to which attendees self-reported the learning outcomes

as having been met; analysis of students' reflections on the subsequent actions that they took to belong at university within their first year of study; and then quantitative analysis into how attendance affected students' sense of belonging, intention to persist and eventual continuation.

The rest of this introductory chapter sets the context for this research, briefly exploring how student success and belonging connect as concepts, before discussing how the author's positionality led to the creation of the project's aims and research questions. This introduction includes a summary of how the subsequent chapters of this thesis then come together to answer those research questions and contribute meaningfully to both knowledge and practice.

Student success and retention

Defining and understanding student success in different contexts

The literature exploring definitions, domains and factors affecting student success is expansive (Kuh et al., 2006; Thomas, 2012; Thomas et al., 2017; Tight, 2020). Different formal metrics, used by universities and governments such as continuation, completion and on-time graduation are often bundled together under the broader heading of 'success' (Austen et al., 2021; O'Shea, 2020). Meanwhile, within academic studies on student success, the focus is often on terms such as "retention" and "persistence" (Tight, 2020). A mature policy context has developed around these metrics within the UK, showing the importance of student outcomes to successive governments. Exercises such as the Teaching Excellence Framework and Access and Participation Plans (for English universities), as well as policies of the Quality Assurance Agency and regulatory requirements of the Office for Students, have been developed to measure and scrutinise universities' efforts to ensure student success (Atherton et al., 2023).

Within the UK context, universities are measured by higher education regulators – such as the Office for Students within England – on student continuation: the proportion of students who remain enrolled after their first year of undergraduate study (Office for Students, 2024). This focus on continuation into the second year is based on well-documented patterns of student withdrawal that show that students are most at risk during the first year of study (Hillman, 2021; Office for Students, 2024), and therefore this is a crucial time for supporting students. More precisely, students often decide whether to continue at university by the end of their first term (Christie et al., 2004; Webb and Cotton, 2018). Given this higher risk, universities are encouraged to prioritise support at the beginning of students' time in higher education (Austen et al., 2021).

Beyond these regulatory and reputational drivers towards encouraging student success (Weston and McKeown, 2020), individual institutions are also motivated financially to maximise the proportion of students with successful outcomes. Within the UK context, a substantial proportion of universities' income comes from students' tuition fees and other government grants related to numbers of students being taught. This means that universities who can successfully retain their students to completion will benefit financially for doing so. This is especially important within the context of UK higher education, where real term cuts to the income that universities receive for each domestic student, along with other external factors, are placing extreme pressure on university finances (Universities UK, 2023; Williams, 2024). This overbearing pressure of austerity on universities may lead to institutions placing more importance on successfully retaining students, however, it may also lead to cuts or reductions in support provisions which leads to reductions in students' successful degree completion.

Whilst there is a risk that these formal metrics may mask students' personal motivations and definitions of success, research with students suggests that at a broad level, there is an alignment between government, university, and student priorities. Within O'Shea's qualitative research with students about how they define success, the topic of persistence and degree completion are frequently cited: "Not giving up." (O'Shea, 2020, p. 30), "having that piece of paper" even if it takes a long time to get it (O'Shea, 2020, p.30), "The ability to keep going despite any challenges" (O'Shea, 2020, p. 31). Whilst each student's definition of success may be different, they are mostly built around this idea of completing the degree that they started. In that sense, degree completion seems a laudable goal that aligns the interests of individual students, the institutions that teach them, and governments that fund them.

Equitable student success

Policy contexts play a key role in understanding student retention, with different higher education systems varying significantly on this topic. For example, in the United States, recruitment to higher education institutions, especially those denoted as 'Community Colleges' is a lot less selective; meaning that students are often not tested on their ability to succeed until they have already started their programme of study (Fike and Fike, 2008). Within other European countries beyond the UK, retention is considered differently. Withdrawal rates across Europe are hard to compare when it is quite common in some countries for students to be studying for up to 10 years – taking breaks, extensions and even changing universities during this time (Thomas and Hovdhaugen, 2014; Vossensteyn et al., 2015). This higher degree of fluidity and choice makes it difficult to compare

statistics around retention to the UK context, where there is much more importance placed on degrees being only three years in duration, and where there is not a culture of partial awards allowing students to change between institutions easily (Brennan, 2021). This makes comparisons around student retention difficult across higher education systems.

There are also challenges in comparing student retention rates within higher education systems. The term ‘widening participation’ has persisted throughout higher education discourse to denote the overall social justice ambition to better align university student demographics with those of the overall population (Kettley, 2007). Whilst the agenda of widening participation is something for all universities to pursue, it has often been less prestigious institutions who have made the most progress in terms of improvements in access for non-traditional students (Gale and Parker, 2013; Gibson et al., 2016; Weedon and Riddell, 2016; Blackman, 2017). As mentioned, English universities are required to complete Access and Participation Plans which evidence their progress towards widening participation (Office for Students, 2022b). However, this presents a tension in how universities are driven through the regulatory environment. Across many demographic groupings – including ethnicity, disability, Index of Multiple Deprivation, age at entry and entry qualification tariff – minoritised students are consistently more likely to withdraw from university (Rose-Adams, 2013; Office for Students, 2024). This means that institutions who are successfully contributing to widening participation efforts may be making it harder for themselves to meet regulatory thresholds around student retention.

The problem of withdrawal and whether addressing it could be problematic

As already noted, the literature around student success is expansive and it is not the purpose of this thesis to explore it in-depth. This includes research that has explored why students withdraw from university, often finding that these factors tend to be “multiple and interconnected” (Russell and Jarvis, 2019, p. 496). These factors include financial challenges, lack of fit with the course, not coping with academic workload, feeling unsupported, wanting to pursue other opportunities, as well as family and personal reasons, among many other aspects (Webb and Cotton, 2018). Factors affecting withdrawal vary depending on the research design, with some research focusing more on ‘push factors’ – aspects of students’ experiences at university that led them to decide to leave – and other research focusing on ‘pull factors’ – other opportunities outside of university that students prioritised ahead of staying in higher education (Department for Business, Innovation and Skills, 2014). These factors will not be mutually exclusive; students will be more likely to prioritise other opportunities such seeking full-time paid employment if they begin to perceive their university experience as less relevant to their hoped-for future career than they originally expected when applying for university.

Formal data on the reasons that students withdraw from UK higher education is not published by the Higher Education Statistics Agency, so it is hard to objectively compare whether students are more affected by either push or pull factors when deciding to leave university. It could be argued that it is problematic for universities to try to reduce student withdrawal if this means interfering with students' decisions to prioritise other options that may be more meaningful or beneficial to themselves. However, universities' efforts to reduce student withdrawal almost entirely focus on addressing push factors – missing or negative aspects of the student experience that lead to students choosing to withdraw. There are also students who do not choose to leave university, but are deregistered, either due to non-payment of fees, lack of sufficient engagement with their studies, or lack of successful completion of assessments. Efforts to address these push factors at their source are increasingly being linked to the promising concept of students' sense of belonging, which will be discussed in the next section.

Student belonging

The concept of student belonging as a potential means to enhance students' experiences and success has been increasingly popular over the last few years, both within the UK and internationally (Gilani, 2023). There has been a sharp increase in the amount of published academic research (see [Chapter 2 – Literature Review](#)), prominent sector reports (Blake et al., 2022; Naughton et al., 2024), conferences dedicated to discussing the topic (RAISE, 2023; Foundation Year Network, 2024), a slew of books and edited collections (Carruthers Thomas, 2018; Strayhorn, 2019; Nunn, 2021; Bentrin and Henning, 2022; Rueda and Lowe Swift, 2024), and the emergence of communities of practice (Edmunds, 2023).

The increased interest in student belonging is for good reason; existing research has shown how student belonging has a significant connection to many aspects of student success; from improved academic performance (Veldman et al., 2023), engagement (Zumbrunn et al. 2014), mental wellbeing (Kahu et al., 2022) and retention rates (Gopalan et al., 2022). Work to address students' sense of belonging may also help to alleviate the current inequalities seen across retention rates. Students from minoritised backgrounds tend to report significantly lower levels of belonging than their majority counterparts (Read et al., 2003; Strayhorn, 2008; Thomas et al., 2017; Murphy et al., 2020). This is not to suggest that these lower levels of belonging and continuation should be blamed on students from these widening participation demographics, as that would be letting universities "off the hook" (Thomas, 2012). Instead, it forms a hopeful premise: that attempts to improve student belonging may also have a disproportionately beneficial impact on students who are most likely to withdraw.

Given these promising connections between student belonging and success, the [literature review chapter](#) of this thesis more thoroughly explores how this concept has been understood and studied, both inside and outside of the higher education context. From this review of the existing literature, gaps are identified which then drives the approach for this thesis, discussed within [Chapter 3 – Methodology](#). For the purposes of this chapter, similar to the previous section on student success, it is worth briefly exploring how efforts to enhance student belonging may be a problematic aim.

For an individual to develop a sense of belonging – either at university or beyond – requires some level of capacity and energy for involvement, motivation and action to belong, shared or complementary characteristics, and welcoming conditions (Hagerty et al., 1992; Malhotra and Pérez, 2005; Yuval-Davis, 2006; Lähdesmäki et al., 2014; Kuurne and Vieno, 2022). In the context of higher education student belonging, the latter two prerequisites could be seen as the responsibility of universities; this is how institutions provide the right opportunities and build a welcoming institutional culture. Whereas the first two prerequisites ask something of the individual student. It is important to recognise that to develop a sense of belonging requires energy and action on behalf of students. Of course, there are many benefits when students do feel that sense of belonging, but initially students are being asked to trust that this investment will be worth it for them. To take a “leap of faith” (Ajjawi et al., 2023, p.9). If institutions are putting pressure on students to feel that they should belong, without providing the appropriate conditions and enablers, then this could lead to students feeling an even greater sense of alienation than if they had never attempted to develop that sense of belonging (Ahmed, 2008). This careful balance between the responsibility of the individual student and responsibility of higher education institutions is explored further through a review of the literature around student agency in the following chapter.

Practitioner positionality

Whilst most of this thesis is written in third person, discussing my own positionality as a practitioner and researcher seems more appropriate within first person. This section explores how I have leaned into my positionality throughout the process of designing, conducting, and writing up this research project. It is becoming increasingly common and even expected that those conducting research will reflexively explore their own positions that they bring to their work (Holmes, 2020; Savin-Baden and Major, 2023). This section begins to unpick my positionality, and I have purposefully utilised research methods in later chapters which centre my positionality, such as process evaluation within [Chapter 4](#), Reflexive Thematic analysis in [Chapter 5](#), and a focus on recommendations for practice within [Chapter 8 – Discussions and Conclusions](#). The reason for this focus on practitioner positionality is because my

main motivation for undertaking this PhD is to meaningfully contribute to practice within my context – student engagement efforts in higher education.

I currently work as Head of Student Engagement and Advocacy at Middlesex University, a post-1992, widening participation institution based in London. Middlesex University, like many other widening participation institutions, has a higher than average percentage of Black students (25%) and higher than average proportion of students from deprived areas (64%) as defined by the Index of Multiple Deprivation (Office for Students, 2024). Over 40% of Middlesex students – a higher proportion than all other UK universities – were eligible for free school meals in earlier stages of education, which is an indicator of having grown up in households with lower family incomes (Middlesex University, 2020). Furthermore, at my university, a disproportionately high number of first-year students withdraw from university each year compared to other UK institutions – 17.9% compared to a UK average of 9.5% (Office for Students, 2024).

Through my professional practice, I have seen how important belonging is to successfully ensuring a positive student experience. Students will often talk about belonging and other similar terms when discussing their personal experience as a student – mirroring research from other universities (Thomas, 2012). When a student feels a sense of belonging, I can see that they have a stronger conviction that they are meant to be here at university. They are much more likely to have support networks, through their positive relationships with peers and staff members, which they can reach out to for help when it is needed. This is especially important for students from minoritised backgrounds who may feel that universities were not designed with their identities or needs in mind. One of the things that I love about my job is being able to see how the support provided by our university helps students to persist through challenging times and get them all the way to their graduation ceremony. Each year I get to hear how proud their parents are to see them graduate from Middlesex University. Also, in many cases, our students are parents themselves and I get to see how proud their children are that their parent has successfully finished their degree.

In my role at Middlesex University, I am also responsible for our institution's student communications approach. Over the last decade, many universities have recognised the potential benefits of having an institutional approach on how to communicate essential information, support, and opportunities to current students (Gilani, 2024). Through my experience, I have seen that especially near the start of students' time at university, they are presented with so much information and so many opportunities that it can be challenging for them to navigate what is most relevant. There is a risk that our work around student belonging may lead to making students feel overwhelmed. As I explore within [Chapter 2](#), most existing research around the factors that influence student belonging focuses on aspects that

are outside of students' control. I therefore believe that there could be a gap in exploring what is within students' control and how open conversations with students about belonging may better prepare them to navigate the opportunities available to them at university. It was this belief that led to the creation of the 'agentic belonging' intervention, which is delivered and evaluated through the central research questions of this thesis (explored in the following section of this chapter).

The term 'agentic belonging' was coined only after analysis of students' online diary entries in [Chapter 5](#). It reflects when students feel able and motivated to take action towards building their sense of belonging in ways authentic to them. This requires both an understanding about their own belonging needs, as well as the presence of the right conditions for them to meet those needs. Within this thesis, the term is used to refer to both this wider concept and the name of the workshop intervention that sought to provide students with agency in pursuing a sense of belonging at university. A full definition of this term, among others used in this thesis can be found in the [Glossary](#).

Finally, to explore how my positionality has affected my approach to this thesis, it is worth briefly exploring the nature of my role as a professional services member of staff. This means that my team and I contribute to efforts to engage and communicate with students across the whole of our university. Many of the engagement programmes or events that we organise to support our students are extracurricular or co-curricular, rather than being a core part of students' timetabled teaching. Through the undertaking of this research project and scholarly evaluating my practice, I have reflected on how my positionality has adapted over time (Holmes, 2020). Whilst I started as a professional services staff member – and this is still true from a contractual perspective of how my day-job is defined – I have found myself slowly creeping into what is described as a third space professional (Whitchurch, 2013; McIntosh and Nutt, 2022).

There have been many aspects of my experience through conducting this PhD that have blurred the boundaries of my initial professional identity. Firstly, the process of learning how to and then actually conducting research has moved me into a contested space that traditionally belongs to academics (Lock, 2022). Stepping into this space has led to the development of several new partnerships with academic colleagues (Shotts and Shaw, 2022). This is partly through the nature of moving more generally into these third spaces and due to the growing interest from academic colleagues around how students' sense of belonging can be developed within the academic domain. My original conceptualisations of what it would mean for this thesis to contribute to practice focused primarily on what could be learned and implemented by staff in professional services roles like my own. However, as I have renegotiated my own identity (Shelton, 2022), I have felt more confident to consider how

practical recommendations could be directed towards academic staff as well (see [Chapter 8 – Discussions and conclusions](#)).

To stride outside of my professional services identity and into this third space – or even more directly academic domains – has been incredibly rewarding, but also requiring a lot of vulnerability. Some of my highest and lowest moments through this PhD have come at the end of presentations to academic members of staff; where I either felt welcomed and valued for bringing useful insights, or challenged for daring to tell academics what they should do to help ‘their’ students to belong. Not everyone is appreciative of those who are trying to “actively subvert processes which enforce individuals into knowing their fixed place” (Jones-Devitt, 2022).

In summary, my positionality has shifted and broadened throughout the process of conducting this PhD. Whilst this section has begun to explore how my positionality as a researcher has impacted my approach to this project, I will return to this theme throughout the thesis. In doing so, I hope that this degree of reflexivity will contribute to producing a story that is both relatable and honest.

Aims and objectives

Following on from the previous sections that have introduced the concepts of student success and belonging, and how these are shaped through the author’s positionality, this section will now address the overarching objective of this thesis and how this translates to research questions.

The overall aim of this research is to test whether a new area of focus for UK higher education institutions can improve levels of student belonging and retention rates. Existing research and practice around the topic of belonging has consistently found a promising correlation between interventions that seem to build student belonging then resulting in positive student outcomes in the form of continuation rates (Tinto, 1997; Brooman and Darwent, 2012; Thomas, 2012; Murphy et al., 2020; Austen et al., 2021). Most approaches, so far, have focused almost entirely on better provision of opportunities for students to build belonging (Thomas, 2012; van Gijn-Grosvenor and Huisman, 2020; De Sisto et al., 2021). It’s clear why this might be the case given the importance of belonging to student success – discussed earlier within this chapter – and thus universities wanting to ensure that they were providing adequate opportunities for students to develop a strong sense of belonging. Whilst the provision of opportunities for belonging is important, this study will explore a potentially missing element around helping students to understand their own belonging needs and subsequently take action to fulfil those needs.

The idea of enhancing student capacity building as part of work around belonging and student success is not new. In fact, this was explicitly identified within the seminal What Works research into student engagement and belonging (Thomas, 2012; Figure 1). However, despite this early recognition of the importance of considering students' capacity in their development of belonging, it has remained largely unexplored in subsequent research. As is discussed in the [literature review chapter](#) of this thesis, the vast majority of existing empirical research with students on sense of belonging focuses on factors that are outside of their control, rather than related to their own capacities and agency. Where research has explored belonging interventions to develop students' capacity, which have almost entirely taken place in the US context, their implementation has been robustly linked to improvements in students' sense of belonging and outcomes, such as retention (Murphy et al., 2020; Chrobak, 2024).

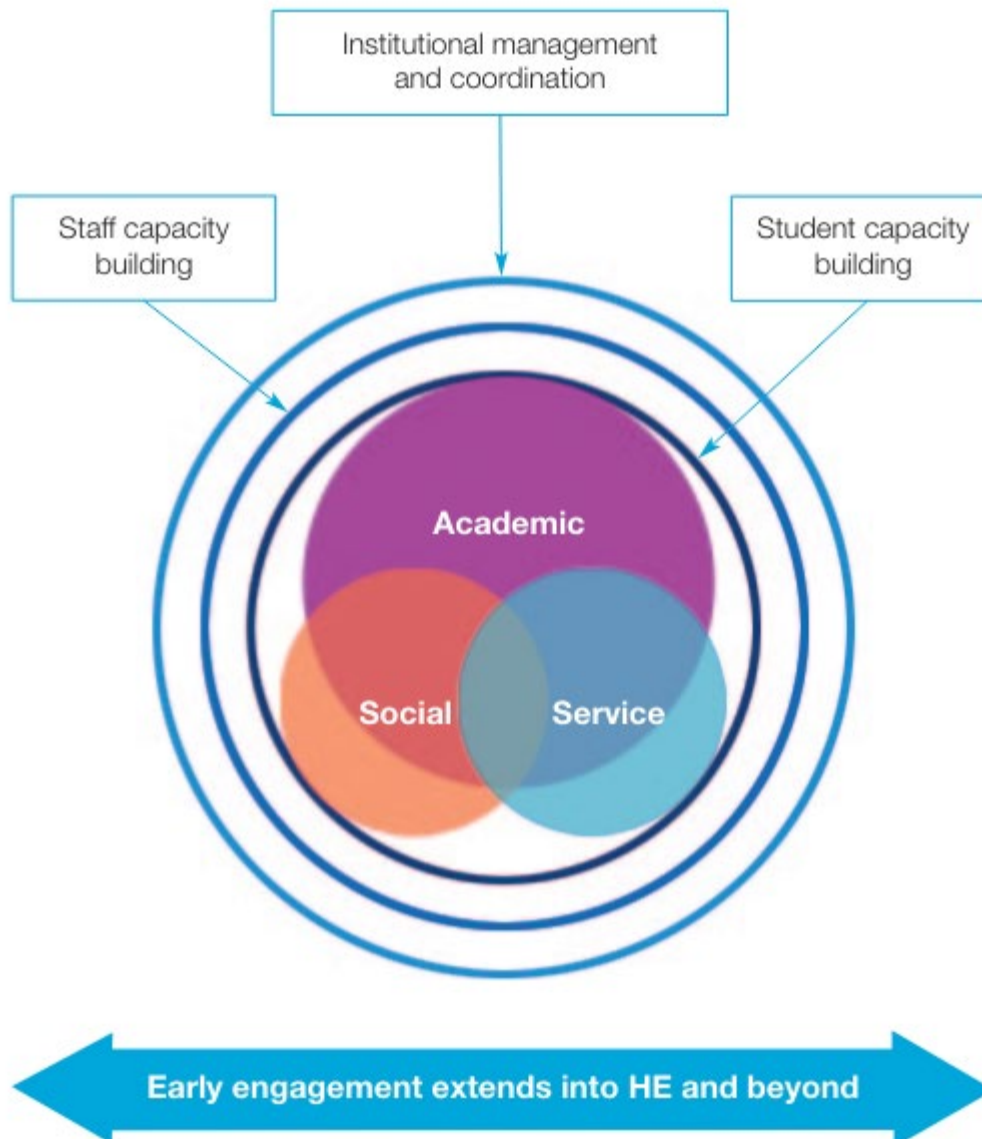


Figure 1.1 – The What Works? model: improving student engagement, belonging, retention and success, taken from the ‘Building student engagement and belonging in Higher Education at a time of change’ report by Thomas, 2012

To build on and further explore the promise of such interventions, a new agentic belonging workshop was developed utilising findings from existing research around students’ sense of belonging ([Chapter 2](#)) and delivered for first-year undergraduate students at the start of their studies. More details about how these workshops were designed and delivered, including how decisions were made for the contexts in which they ran and the inclusion of control groups, can be found in the [methodology chapter](#). The design of this longitudinal, mixed-methods and quasi-experimental study will then utilise four research questions to evaluate the effectiveness of this intervention in the short, medium, and long-term:

1. To what extent can workshop interventions enhance first-year undergraduate students' understanding of agentic belonging?
2. What actions do students take to build belonging during the first year of study?
3. What effect does attendance of the agentic belonging workshop have on subsequent changes in levels of belonging?
4. To what extent is sense of belonging a predictor of student retention, measured by continuation of first-year undergraduate students into their second year of study?

Structure of the thesis and contributions to knowledge and practice

The remainder of the chapters in this thesis focus on establishing the rationale for why these research questions have been selected, developing a methodological approach to evaluate them, presentation of results and discussions of their implications. This section outlines each of these chapters in turn, including brief reflections on how each chapter contributes to the overall significance of this thesis to the student belonging literature.

[Chapter 2 – Literature Review](#) – Establishing a thorough understanding of existing literature is a fundamental part of any research project. This chapter utilises a combination of different review approaches to critically engage with the literature around belonging and a related concept of student agency. A semi-structured review of research on the wider concept of belonging – outside of higher education – is first conducted to establish the foundations of belonging as a concept. Following this, the largest section of the chapter utilises a systematised, critical review approach to analyse and synthesise 200 studies related to how student belonging is defined, affected, affecting student outcomes, context-dependent, and measured through action research. This section, which utilises visual models to summarise findings, contributes to knowledge by providing readers with a comprehensive yet accessible entry-point to the student belonging literature. The concept of student agency emerged as intricately connected to belonging within the above review, so further exploration, utilising a citation-linking approach, was carried out around this connected concept. The chapter concludes with a rigorous assessment of gaps in the literature to direct how the rest of the thesis can contribute to filling these gaps.

[Chapter 3 – Methodology](#) – The methodology chapter begins with a discussion on the reflexive journey towards identifying how the author's ontological and epistemological position developed alongside the designing of this research project. The chapter explores relevant theoretical frameworks, such as

the use of a theory of change approach to link together research questions. Project timeframes and details of methods used within each results chapter are then justified, along with a discussion around ethical implications.

[Chapter 4 – Intervention Effectiveness](#) – The first results chapter provides a case study of designing, delivering, and evaluating the experimental belonging intervention that sits at the heart of this thesis. The chapter splits into two halves. Firstly, through a reflexive process evaluation of recruiting participants and delivering the workshops, learnings are captured that can be utilised by other practitioners. Secondly, through quantitative analyses on participants' self-reported workshop learning outcomes, the chapter discusses how the belonging workshop was able to enhance participants' understanding of belonging in the short term.

[Chapter 5 – Taking action to belong](#) – The second results chapter utilises reflexive thematic analysis of longitudinal online diaries to provide rich, qualitative reflections into the actions that students take at university to develop their sense of belonging. The chapter explores what conditions and enablers students reported needing to be in place before they felt able to take action to belong – agentic belonging. The longitudinal nature of the study also allowed identification of thematic findings around how students take action to belong, including contributions around the two-way connections between engagement and belonging, as well as a richer understanding of what it means to belong authentically. The chapter is also able to explore how reflections from students who received the belonging workshop intervention differ from comparison groups of students.

[Chapter 6 – Changes in belonging](#) – Chapter 6 returns to a quantitative approach, using linear regression models and data visualisation to explore how students reported changes in their sense of belonging over the first academic year and whether these changes were significantly different for those who attended the agentic belonging intervention. Findings of this chapter show that students' sense of belonging slightly decreases throughout the first academic year. Furthermore, whilst students who attended the agentic belonging intervention ended up with higher sense of belonging than comparison groups, the difference was not statistically significant. This study also contributes methodologically, through its approach of utilising both survey data and sentiment analysis data from students' online diaries together in quantitative analyses.

[Chapter 7 – Belonging and retention](#) – The final results chapter builds on the previous chapter, by exploring the connections between students' sense of belonging measurements and their eventual continuation into their second year of study. The chapter contributes to knowledge by building on our understanding from previous research around the close relationship between belonging and retention. Furthermore, the chapter compares continuation data between agentic belonging

workshop attendees and the control groups, finding that students who attended the belonging workshop were significantly more likely to continue in their studies, even once demographic factors were accounted for.

[Chapter 8 – Discussions and conclusions](#) – Whilst each results chapter will include a discussion section and address any limitations of that part of the study, recommendations for practice will be collated and shared within this concluding chapter of the thesis. The discussion begins with a summary of the extent to which each research question has been answered and how this then relates to the theory of change model first proposed in [Chapter 3](#). Thematic findings that cut across the previous results are discussed in this chapter, as well as an exploration of limitations and opportunities for future research. The chapter ends with a call-to-action for next steps around student belonging.

What has been excluded from this PhD?

This chapter concludes with an important section identifying what is *not* being investigated within this thesis. The design of any research project involves prioritisation, compromises, and trade-offs (Roe and Just, 2009). Whilst some of these absences may be addressed later within this thesis – either through sections of the [methodology chapter](#) that explore *why* certain approaches were chosen over others, or through discussions around limitations within the results chapters and final discussions – this section, situated here in the introduction chapter, is intended to manage readers’ expectations from the outset.

Firstly, this thesis is not a theoretical critique of belonging as a concept. The literature review ([Chapter 2](#)) does include discussions around problematic aspects of how sense of belonging is defined and idealised, however these critiques do not continue into the heart of how the study is designed and carried out. As already noted, the practitioner positionality of the author means that such discussions would have steered the thesis away from the underlying principle of asking how it could contribute meaningfully to practice. Challenges and nuances are explored throughout the thesis, but not at the expense of retaining a focus on practical outputs.

Secondly, this thesis, like many others, sits in the shadow of the Covid-19 pandemic. Indeed, the prominence of student belonging in higher education sector conversations may be at least partially related to the concerns around student loneliness that emerged through this period. However, whilst other research has specifically examined student belonging in the context of the pandemic (Mulrooney and Kelly, 2020; Cruz and Grodziak, 2021; Potts, 2021; Blignaut et al., 2022; Gopalan et al., 2022; Napper et al., 2022; Tang et al., 2022; Versteeg et al., 2022), that is not the focus of this

study. All data collection for this research project was carried out after lockdown restrictions had been lifted. The institutions at which I carried out my research had returned primarily to on-campus teaching by this point, which allowed in-person delivery of the workshop interventions in autumn 2022. Due to this, no Covid-19 impact statement has been created for this thesis. Similarly, whilst the study has a longitudinal design ([Chapter 3 – Methodology](#)), there is no focus on explicitly comparing students' sense of belonging before and after the pandemic (Jones and Bell, 2024).

Thirdly, whilst this chapter has established that the motivation for enhancing student belonging is to lead to improved likelihood of students completing their degrees, this will not be fully explored within this thesis. As already discussed, most undergraduate students who withdraw from university do so within the first academic year (Christie et al., 2004; Webb and Cotton, 2018; Hillman, 2021; Office for Students, 2024), so this study will focus on measuring continuation into second year as the longer-term impact variable. The reason for this is explored further within [Chapter 3 – Methodology](#) but relates to practicalities around the length of time that could be dedicated to data collection within the duration of a doctoral research project. Whilst insights into whether belonging interventions would lead to measurable improvements in eventual degree completion would be ideal, they are beyond the scope of this thesis.

The following chapter explores the existing literature around belonging – both inside and outside of the higher education context. This review of the literature helps to further focus the design of this thesis through its identification of gaps in existing knowledge on the topic of student belonging.

Chapter 2 – literature review

Introduction

This chapter provides an understanding of the key concepts that are utilised throughout this thesis by exploring the existing literature that conceptualises and examines them. Three separate literature reviews were carried out and are discussed in this chapter; belonging outside of the higher education context, student belonging, and student agency. The chapter ends with a discussion of key gaps that have been identified through these reviews.

The chapter begins with the results of a semi-structured critical review of how belonging has been discussed outside of the higher education context to establish a foundational understanding of the concept. Whilst this section is not intended to address all existing literature systematically or comprehensively around the concept of belonging, it focuses on how belonging has been defined across different disciplines. This review also addresses some of the challenges with belonging and how some authors have problematised the idea that this is an inherently positive concept, whilst also discussing the ways in which belonging is still seen as important. In concluding this review, a visual model is produced to summarise the key properties, antecedents, and consequences of belonging.

Most of this chapter is dedicated to a systematised, critical review of the literature around student belonging in the higher education context. Exactly 200 studies were included within this review to address five research questions around how student belonging is defined and measured, its factors and links to student success, as well as how research has looked at belonging across different student groups and efforts to enhance student belonging. The results of this literature review help to highlight how student belonging is understood by students as a feeling of connectedness and meaningful inclusion within the university community. Findings also show how belonging is developed across multiple, overlapping domains over time and influenced by a very wide array of factors, most of which are not within their control. Efforts to enhance belonging have begun to be researched, which is important given the close connections identified between belonging and various aspects of student success. In addressing each of these research questions, an ‘absence of threats-to-validity’ approach was utilised to assess included studies and provide critical reflections as well as visual models to summarise findings. As the search for these studies took place in 2023, more recent studies have also been reviewed and included within this section where appropriate. The results of this review are then discussed through an ecological lens, to provide a final conceptualisation of student belonging that is utilised throughout the rest of this thesis.

A third literature review then explores the concept of student agency, which emerged as a term intricately linked to student belonging within the existing literature. Studies that discussed both student belonging and student agency were utilised as a starting point for this review, with a citation chaining or ‘snowballing’ review approach to connect underlying theories and terms. This review unpicks how agency links to these various underlying theoretical frameworks before exploring agency in the context of student engagement and its links to student success.

Following these three, related literature reviews, this chapter closes with an assessment on research gaps. Gaps in the existing research are presented against each of the research gap types theorised by Müller-Bloch and Kranz (2015) and built upon by Miles (2017): evidence gaps, knowledge gaps, practical gaps, methodological gaps, empirical gaps, theoretical gaps, and population gaps. Following the presentation of each of these research gaps, the conclusion of this chapter begins to identify how the research design of this study is able to address these gaps.

Conceptualising belonging – beyond the educational context

Prior to the literature review approach to investigate student belonging, a semi-structured review was conducted to explore how belonging is conceptualised outside of higher education, as this broader context is often missing from studies that focus on student belonging. This section is not meant to provide a comprehensive or systematic approach to broader literature on belonging; it provides context for the subsequent student belonging review, which may be useful for educational researchers and student success practitioners who may be less familiar with the concept of belonging. The search approach for this section utilised Google Scholar to search “belonging” and any derivatives of the terms “define”, “concept”, etc. 145 unique articles were screened with ten eventually being included in the review (see more details in [Appendix 2.1](#)). Common references within identified texts were then also explored to better understand how different fields or philosophical positions have influenced discussions around sense of belonging.

How belonging is defined across different disciplines and fields of study

Many studies have argued that the concept of belonging remains “vague and ambiguous” (Lähdesmäki et al., 2014, p.86) and that there is “no apparent consensus” within existing literature (Mahar et al., 2013, p.2); suggesting that the only consensus is that there is no consensus. However, this is far from the case. There is a significant consistency and overlap between how belonging is defined across existing literature. For instance, there is a widespread recognition of the ways in which belonging is

fluid – changing over time (Santy-Tomlinson, 2014; Peers, 2020). Language cannot fully describe a relationship of belonging because it is incomplete and constantly shifting. Furthermore, most literature focuses on belonging from an internally-defined perspective (Girard and Grayson, 2016), distinguishing it from formal, externally defined categorisations– such as citizenship. Finally, many different authors discussed how belonging was connected to identity, whilst recognising that these two concepts are distinct (Yuval-Davis, 2006; Lähdesmäki et al., 2014). Whereas identity focuses on sameness, belonging can be found in contexts of difference where characteristics are seen as complementary (Hagerty et al., 1992). Where diverse interpretations or approaches to defining belonging exist, this is often due to the topic being addressed across such a wide variety of research disciplines: psychology (Maslow, 1943; Hagerty et al., 1992)), sociology (Yuval-Davis, 2006), anthropology (Gammeltoft, 2018), geography (Baranay, 2017), history (Girard and Grayson, 2016), philosophy (Peers, 2020) and politics (Golden and Sabbagh, 2005; Iqbal, 2019).

From a psychological perspective, Maslow’s theory of human motivation identified belonging as a core human need to be satisfied (1943). His work is mainstream and so is referenced within a wide variety of other works on the topic of belonging. This idea of belonging as an inherent human need has been built upon extensively by other psychologists (Hagerty et al., 1992; Baumeister and Leary, 1995). Whilst the psychologist interpretation of belonging focuses on the individual, their feelings and growth, sociologist interpretations of belonging focus more on the relational aspects of belonging (Lähdesmäki et al., 2014), often asking the question “belonging to what”?

Belonging is defined through a wide variety of co-concepts – that is, belonging within a specific context or domain; such as school belonging, national belonging or politics of belonging (Yuval-Davis, 2006; Lähdesmäki et al., 2014). A concept mapping analysis from Lähdesmäki et al. (2014) found 35 different co-concepts of belonging and that over 70% of their included articles focused on belonging as a co-concept. No studies looked specifically at the variations in definitions of belonging across these different co-concepts comprehensively, but many addressed some of the variances – for example how belonging can be about attachment to spaces or to others (Gammeltoft, 2018). Other authors have addressed how some co-concepts of belonging – for instance, temporal (belonging to a generation or age group), cultural (religious group) or natural (blood group) – are within our control to change, whilst others are not (Girard and Grayson, 2016).

Challenges with belonging

Substantial existing literature has focused on the politics of belonging (Yuval-Davis, 2006) and how this can be especially challenging for those with minoritised, oppressed, or vulnerable identities. People may not feel that they belong if they cannot feel a sense of safety or a recognition of where they live as their home, due to a hostile political or cultural environment (Golden and Sabbagh, 2005; Berger, 2015; Iqbal, 2019; Harewood, 2021). This can be especially challenging during times of change, such as when migrating to a new country (Keegan, 2017) or even a new job (McClure and Brown, 2008). In these times of change, individuals may rely on 'bridgework' – welcoming actions from those with existing power in the community or environment (Malhotra and Pérez, 2005). Even with sufficient bridgework efforts, feelings of alienation can still arise if we perceive ourselves to be too different from others around us (Ahmed, 2008).

Due to the multiple identities with which we may try to belong, there can often be conflicts or a need to prioritise. Within David Harewood's book – *Maybe I Don't Belong Here* (2021) – he shares his example of struggling to both identify as Black and English once he started experiencing racism. This aligns with the contentious definitions of Britishness that began to be discussed more prominently in the UK following the country's decision to leave the European Union (Farrell et al., 2022). In another context, those immigrating to a new country may struggle to fully develop a sense of belonging to their new country whilst also attempting to maintain ties to their old (Keegan, 2017). There is a risk of lost identities when attempting to build relationships of belonging that either do not overlap, or risk coming into conflict (Baranay, 2017).

How and why to care about belonging

Despite this potential for conflict, belonging is frequently defined as being inherently positive for the individual who experiences it. Hagerty et al.'s (1992) approach to defining belonging focuses on the causes and consequences of belonging. They argue, within the context of belonging and mental health, that belonging requires a capacity or energy for involvement, desire, and shared or complementary characteristics. Other studies add to this list of antecedents, suggesting that some action or work is required to build belonging (Kuurne and Vieno, 2022), due to its dynamic and ever-changing nature. If we accept that desire is a prerequisite for belonging, then belonging will always be desirable by definition and thus inherently positive. This inherently positive definition of belonging is why many studies referenced Maslow's (1943) characterisation of belonging as a basic human need. It also clearly explains why the consequences of belonging – such as involvement, meaning and new

emotional and behavioural responses – are consistently defined as positive. Akyıldız and Olğun (2020) build on this by arguing that the consequences of belonging help lead to more belonging. However, as already discussed above, belonging can lead to conflict if relationships of belonging are incompatible (Baranay, 2017). This questions definitions of belonging that frame the concept as inherently positive.

In summary, belonging is a basic human need that requires an individual's capacity, motivation, and action, as well as an environment that provides complementary characteristics and welcoming bridgework. It appears in a variety of contexts, changing over time based on our multiple and intersectional identities, which can sometimes come into conflict. Whilst subjective, it is inherently positive for the individual who experiences it and leads to a sense of meaning, involvement, new emotional and behavioural responses and to greater potential for future belonging. This is represented visually in Figure 2.1.

Belonging model - including properties, prerequisites and consequences

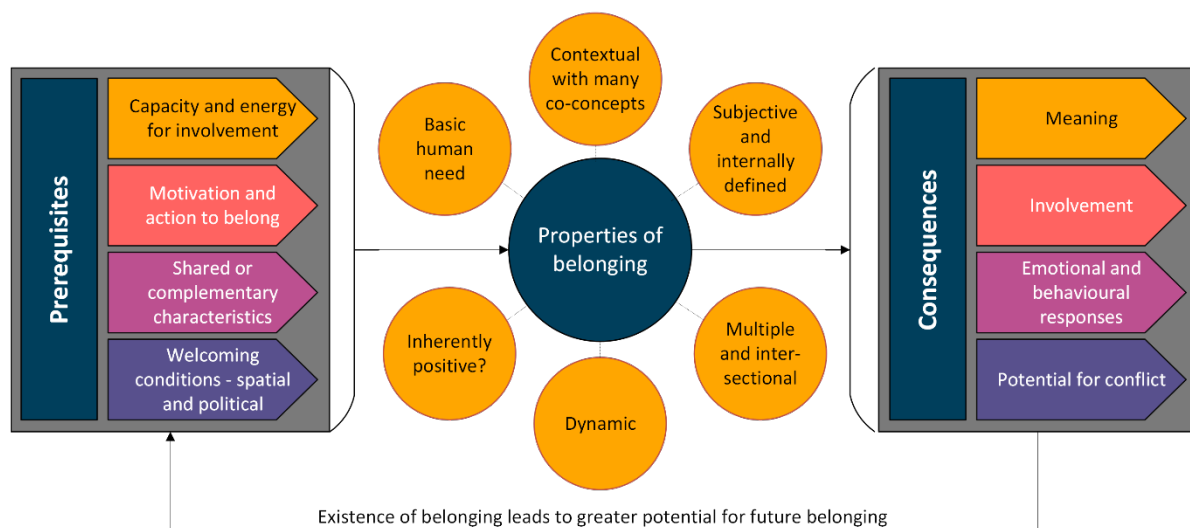


Figure 2.1 – Belonging model - including properties, prerequisites and consequences

A systematised, critical literature review on student belonging

Utilising scoping review principles to develop research questions

Following the broader review about conceptualising belonging, and prior to beginning this critical literature review on student belonging, a non-exhaustive and unsystematic search of the student belonging literature was conducted. The purpose of this approach was to better understand the scope and focus of existing literature around student belonging, which is like the purpose of a scoping review

(Grant and Booth, 2009). However, scoping reviews are more commonly systematic, so that they are replicable, whereas this initial search was unstructured. Papers were reviewed, focusing on the research questions each study was attempting to answer, until theoretical saturation had been reached (Saunders et al., 2018). No appraisal of study quality was conducted at this stage. The purpose of this stage was to assess the scope of existing literature and develop research questions to be addressed in the subsequent critical review. These research questions are:

1. How is student belonging defined and measured?
2. What factors affect students' sense of belonging?
3. How is student belonging connected to student success?
4. How is belonging experienced by different students?
5. How has research evaluated efforts to improve student belonging?

These research questions (RQs) represent the most frequent questions being addressed within existing literature around student belonging: what it is, how to influence it, why influencing it can be beneficial for students, and how it is experienced by different students. RQ5 was introduced recognising that understanding how attempts have been made to influence students' sense of belonging would be valuable in the context of the practical focus within this thesis.

Systematised critical literature review approach

A systematised protocol was then utilised to search studies and make inclusion and exclusion decisions against relevancy to the research questions. This was chosen to provide a transparent and replicable approach for finding literature, which can often be lacking in critical literature reviews (Grant and Booth, 2009). Whilst this study has been systematic in its search and appraisal of studies, a critical approach was chosen for synthesis and analysis. This hybrid approach was selected to mitigate common criticisms of the unstructured search and appraisal aspects of critical reviews (Samnani et al., 2017).

To assess the methodological quality of studies, an 'absence of threats-to-validity' approach was utilised; assessing truthfulness, applicability, consistency, and neutrality as measures of trustworthiness (Wells and Littell, 2009). This approach was taken instead of attempting to rank studies based on their designs, as this is often problematic in reviews that contain both qualitative and quantitative methods (Hong and Pluye, 2019). Reporting quality has also been assessed, given its inherent links to assessing methodological quality (Carroll et al., 2012). A thematic synthesis approach was selected to help in classification of themes, as it allows clear identification of commonality within

existing literature, which is necessary for the development of models and hypotheses expected within a critical review (Barnett-Page and Thomas, 2009).

Following the standard approach for a critical literature review, this review does not attempt to refer individually to all studies included. Instead, thematic findings across the available literature are discussed against each of the RQs. For each RQ, a summary of the nature of studies is presented, along with critiques of inconsistencies and conflicts within the existing literature. Some discussion around gaps has also been included at this stage, however this is more rigorously addressed within a later section of this chapter. Where possible, models have been produced to visually summarise the findings.

Search strategy and inclusion / exclusion criteria

The initial scoping exercise for the purpose of developing research questions and a subsequent systematised research protocol took place from September 2021 to March 2022. Google Scholar searches were conducted on the term “student belonging” with 106 articles being reviewed before theoretical saturation was reached (Saunders et al., 2018).

The subsequent searches for the systematised, critical review were conducted in January 2023 through the Google Scholar and British Educational Index (EBSCO) databases. Exact timings and terms used can be found in [Appendix 2.1](#). After removal of duplicates, a title review stage and an abstract review stage were carried out to analyse the relevance of the studies against the identified research questions. Studies were excluded if they were not peer reviewed, if full-text could not be accessed (such as purchase-only literature) or if they were not available in English. Studies were also excluded if they did not include primary research methods with students. This approach was taken to ensure that critical analyses could be conducted in a consistent manner, so that visual representations of existing research findings are focused on contributions from students about their experiences of belonging.

Whilst a defined protocol in search and appraisal of studies has been utilised, there is an increased risk of bias in searching, screening and data selection when these stages are carried out by a single author (Uttley and Montgomery, 2017). This is why the search and appraisal of studies should be considered systematised, rather than systematic. Another limitation is that whilst the review was global in its approach, the exclusion of studies not available in English limits this.

Initial searches found over 3000 studies. This was reduced to 694 once removing duplicates, non-peer-reviewed journal articles, non-English studies and a review of relevancy based on article titles. This

was further reduced to 200 once abstract reviews against the research questions had been conducted. More context about how relevancy against each RQ was assessed has been included within the respective results section for each RQ. Full details of the search, inclusion and exclusion stages are represented in Figure 2.2, with a full list of studies included in [Appendix 2.2](#).

Stages of search protocol, with inclusion and exclusion criteria

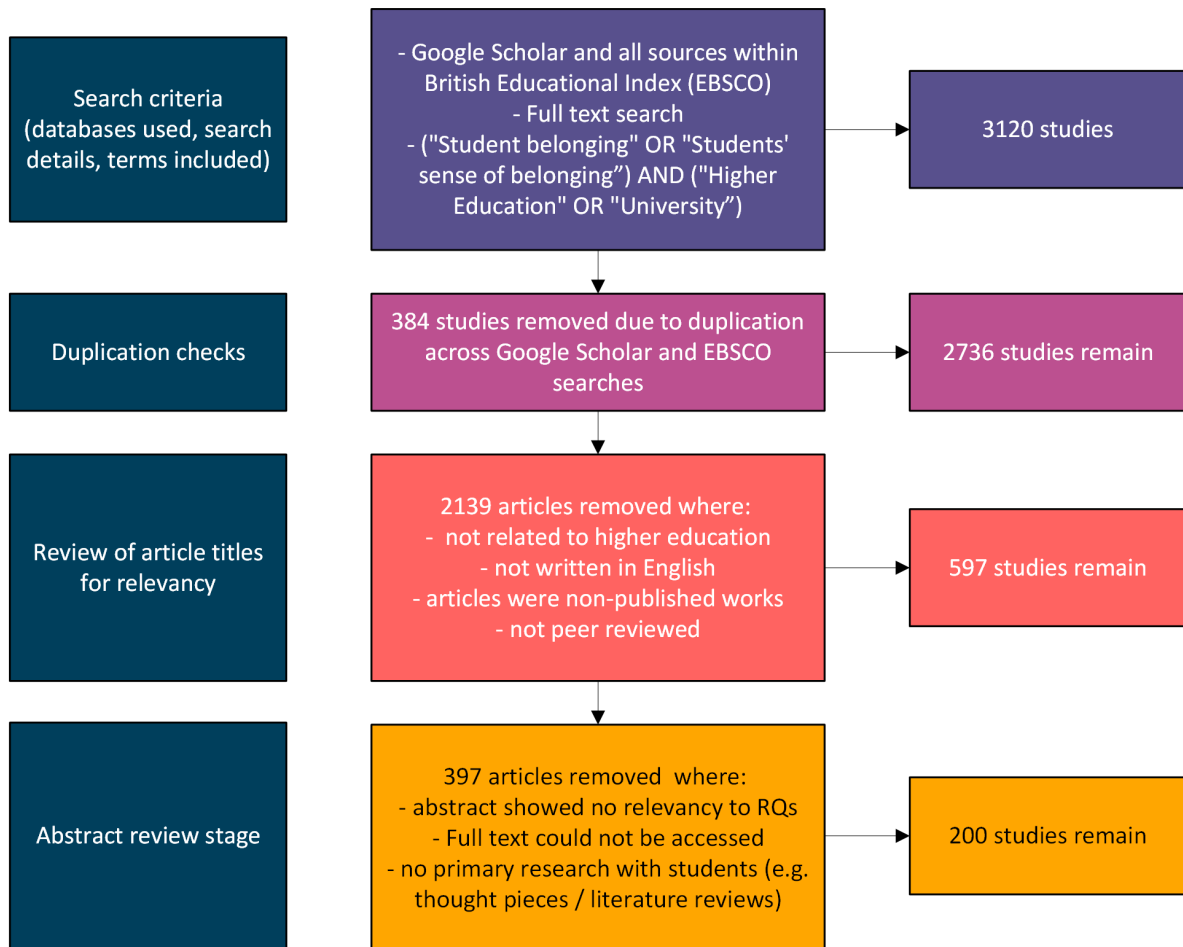


Figure 2.2 – Search protocol with inclusion and exclusion criteria

Most research around student belonging has been carried out in the last few years (Figure 2.3). This is to be expected, given the close relationship between student belonging and student engagement (Strayhorn, 2022), which has also rapidly increased its research prominence in recent years (Tight, 2020). Furthermore, most of this research (54%) has been carried out within the United States (Figure 2.4). This presents a question around the generalisability of findings in other higher education systems, given the disproportionate weighting of US-based studies.

Publication dates of student belonging research included within this review

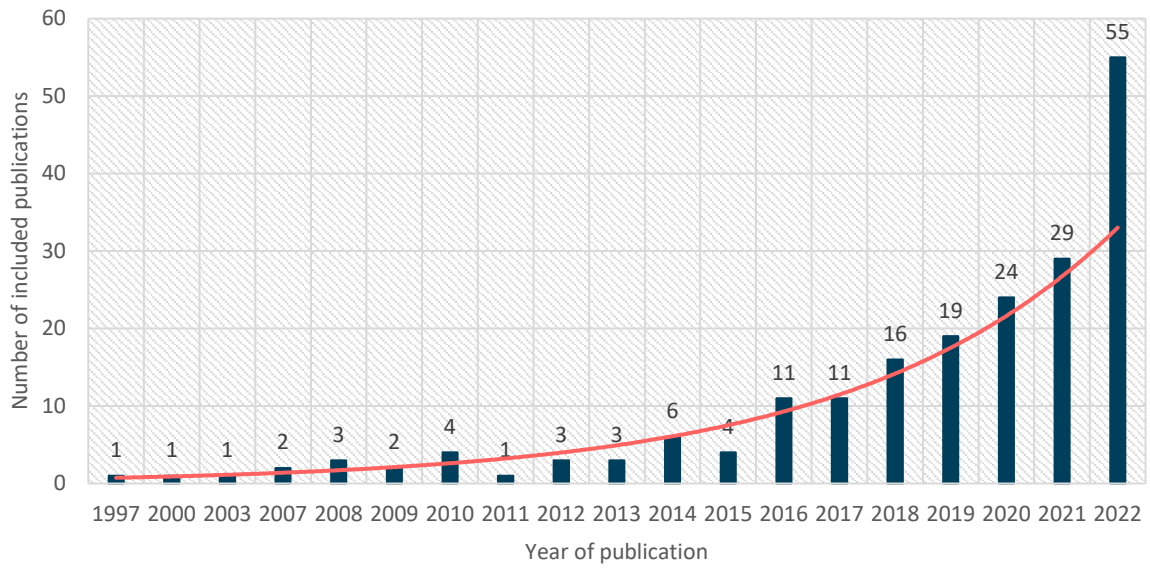


Figure 2.3 - Publication dates of included student belonging research (studies published in 2023 were included in the review, not displayed above as the review was conducted during the year)

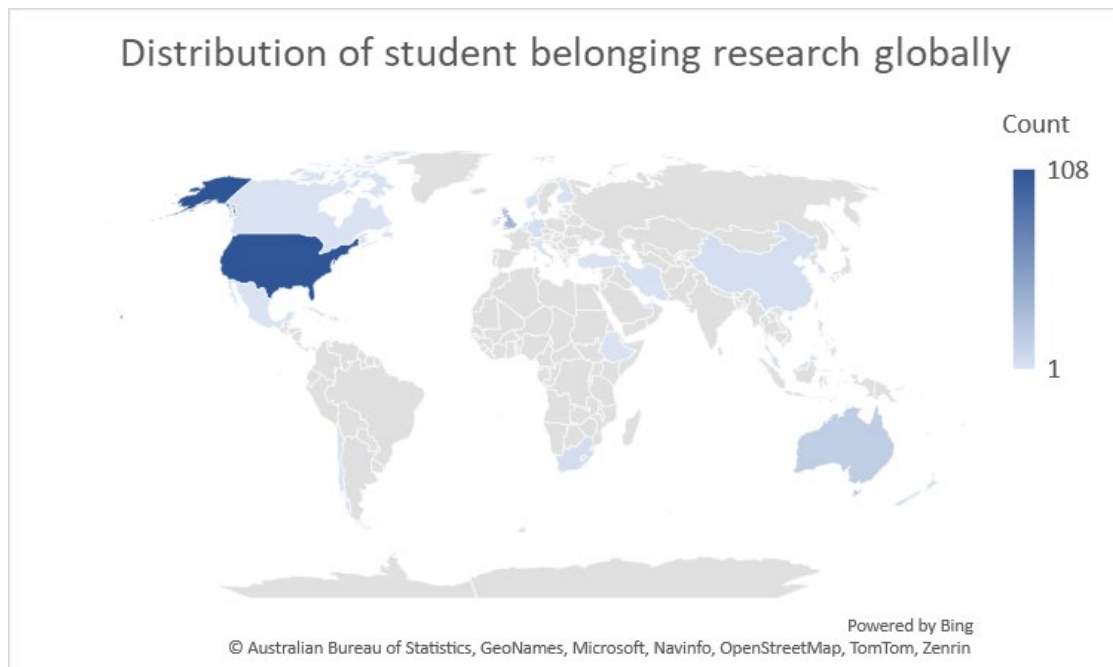


Figure 2.4 - Student belonging research visualised based on country where research took place

Inclusion of literature outside of the systematised critical review

The recent increase in research around student belonging, shown within Figure 2.3, did not stop as soon as this systematised critical review was conducted. Research around student belonging seems to have only increased in the last few years. Therefore, this chapter does also include references to research that has been published since the systematised review was conducted. It would have been unfeasible to conduct an updated systematised review multiple times throughout the creation of this thesis, but a partially systematic protocol was implemented to include relevant recent research. For this, Google Alerts were set up on any new research that contained the terms either “student belonging” or “students’ sense of belonging.” For each term, there were roughly three new alerts every week; with each alert containing 10 new articles, reports or published content related to the alert terms. However, it should be noted that there was a large amount of duplication between the two alert terms and that many of the items included within these alerts were not relevant – see similar reasons for excluding papers given within Figure 2.2. Given the extent of this emerging literature, it was not possible to review all new articles; however, article titles that appeared especially relevant to the gaps identified within the initial critical review were read and referenced where appropriate. Furthermore, whilst the systematised search criteria focused on peer-reviewed articles, sector reports and other note-worthy literature have been referenced alongside the critical review summaries where relevant. However, these grey literature pieces have not directly contributed to the development of visual summaries of existing literature, unless they met the criteria of containing primary research with students.

RQ1: How is student belonging defined and measured?

One hundred and twenty-three studies were relevant to this research question by either contributing results to how student belonging can be defined, often through qualitative means, or by attempting to measure belonging quantitatively. As noted previously, only studies that contained primary research with university students were included. Subsequently, the approach to answering this RQ has focused on contributions to conceptions of belonging from the results – centring the contributions of students, often through qualitative methodologies – rather than authors’ definitions within literature review sections of the studies. The main issue of trustworthiness arose when studies blurred discussions of belonging with broader notions of the ‘student experience;’ such contributions were excluded from the synthesis below. Studies were also excluded from this analysis if they claimed to be offering definitions or conceptualisations of belonging, but instead only included results about factors that affect belonging – as this is already captured within RQ2. Beyond initial discussions of how

students have defined belonging in existing literature, this research question is further addressed through three subsequent sections: the different domains or co-concepts of student belonging, how student belonging is measured through quantitative scales, and how research explores how belonging changes over time.

Defining student belonging

When asked about defining belonging, students often talk about feelings and perception (Chadha et al., 2024). "Perception is at the heart of belonging" (Cook-Sather and Seay, 2021, p.740). This is often described metaphorically as feeling at home (Ahn and Davis, 2022) or a feeling of being part of a community (Peacock et al., 2020). The feeling of comfort was also prevalent (Vaccaro and Newman, 2016) and of being able to be one's true, authentic self (Picton et al., 2017). "Fitting in" was sometimes described as being part of belonging and other times antithetical to belonging, as it could suggest being inauthentic. In these contexts, the term authenticity is used to denote when a person is acting in accordance with their identities, goals and needs; as opposed to fitting in, where one hides part of themselves or pretends to be someone that they are not.

Students invariably described belonging as important (Mulrooney and Kelly, 2020; Tang et al., 2022), but disagreed over whether it was something that the individual or the university was responsible for building (Bettencourt, 2021). Whilst the ways in which belonging is experienced differently is discussed in more detail through RQ4, students' identities may influence the importance that they place on various aspects of what it means to belong. For instance, research with Black students returned many responses from students about belonging being a feeling of safety (Chandler, 2024). International students may also place more importance on belonging being defined as subjective and internal, as a way of rejecting negative labels placed on them (Gao, 2024).

The above reflections summarise how students describe what belonging means to them in existing literature. However, many other authors have built upon this empirical research to write theoretically on how student belonging should be conceptualised. This is discussed further within the later section on how student belonging is conceptualised for use in this thesis.

Belonging to what? Domains of student belonging

The many co-concepts of belonging were discussed within the earlier section of this chapter focusing on belonging outside of the HE (Higher Education) context, however it also appeared frequently within

this analysis, suggesting that student belonging itself has multiple co-concepts, domains, and modalities. One of the seminal contributions to this discussion is the Four Domains of Student Belonging by Ahn and Davis (2020), which separates belonging into social, academic, surroundings and personal domains following their qualitative study with students. Whilst a helpful conceptual starting point, findings from other studies challenge whether these domains of belonging are comprehensive and whether they can be separated.

For instance, social relationships within the academic domain – socio-academic belonging – may contribute to belonging in a separate way than other social relationships (García et al., 2019). One's sense of belonging in the academic domain may also overlap with surroundings based on whether students feel confident or stressed out by the physical features of the classroom setting (Zumbrunn et al., 2014). The academic domain may also hide several belonging co-concepts itself, such as the difference between course vs. departmental belonging (Knekta and McCartney, 2018) and relationships with academic staff as a source of belonging (Newman et al., 2015). The nature of these co-concepts of belonging may also be further subdivided depending on whether students see them as formal or informal relationships within the academic domain (Meeuwisse et al., 2010).

Whilst a lot of belonging research seems to focus on relationships, there are several studies that have focused on belonging in terms of students' surroundings. Innovative visual methodologies, utilising maps or photos, have allowed students to explore how different spaces on campus either contribute to or detract from their sense of belonging (Carruthers Thomas, 2019; Shefer et al., 2018; Napper et al., 2022). However, research into belonging to physical spaces often links back to interpersonal relationships associated with those spaces (Mulrooney and Kelly, 2020; Foxx, 2021); again, recognising how overlapping and interconnected the different domains of student belonging can be.

Students' sense of belonging at university is also influenced by their relationships of belonging outside of the university context, such as one's sense of belonging to their hometown (Cicognani et al., 2007). In much of the qualitative research around student belonging the idea of non-belonging was often present (Ahn and Davis, 2020; Viola, 2021). Finally, multiple studies suggest that when students develop a sense of belonging within one domain, this then extends or contributes to a wider sense of belonging (Freeman et al., 2007; Cook-Sather and Seay, 2021), often described as campus-level or university-wide belonging. These different domains of belonging are visualised in Figure 2.5, building on the previous significant work on this topic by Ahn and Davis (2020).

Domains of student belonging

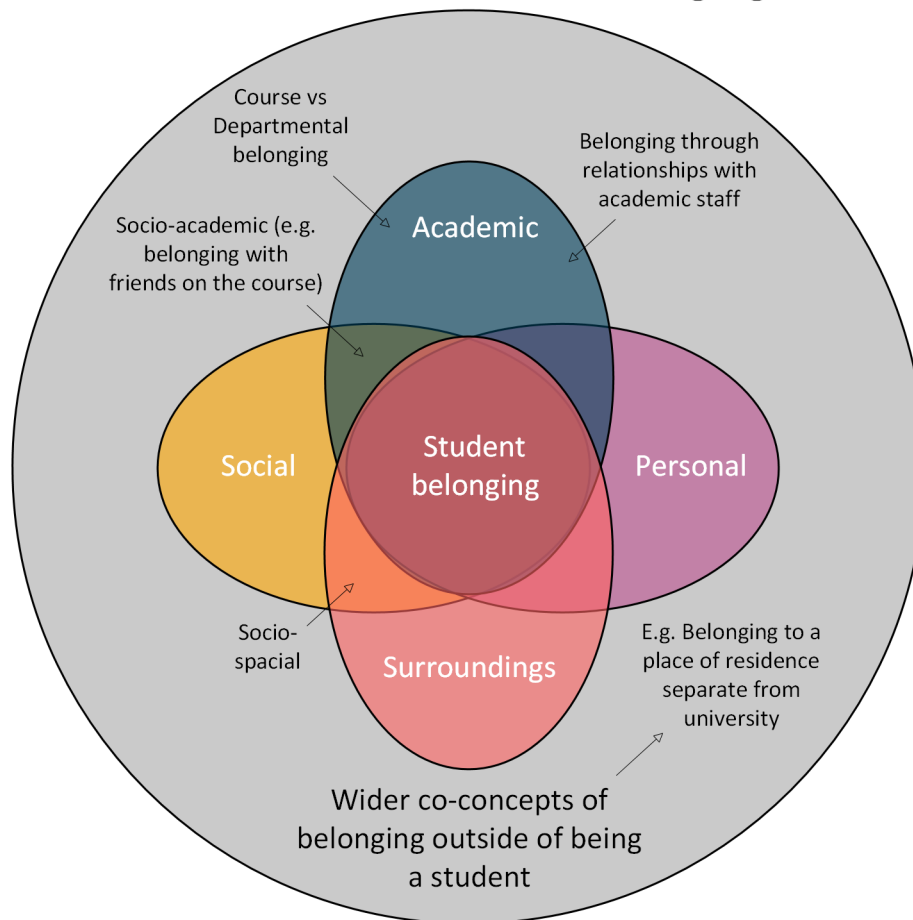


Figure 2.5 - Model of the domains of student belonging, building upon and critiquing the 'Four domains of students' sense of belonging to university' by Ahn and Davis (2020) through inclusion of overlaps and other co-concepts of student belonging identified in other studies included for RQ1

Measuring student belonging – conceptualisations in quantitative research

To complement the subjective, internally defined nature of student belonging, many studies have attempted to utilise quantitative measures to connect students' feelings of belonging to prerequisite factors and consequential outcomes, as well as allowing comparisons between different demographic factors and assessing changes over time to evaluate interventions (RQ2-5). Evidently, understanding how belonging is measured is fundamental to the remaining RQs of this study. Given the subjective nature of belonging, it could be argued that belonging itself cannot be measured in a directly empirical way. However, whilst actions or behaviours can at best be considered proxies for belonging, this is different from a sense of belonging, based on feelings. Scales are best suited for measuring belonging

when they focus their questions around participants' subjective feelings – such as “I feel at home in this university” (Yorke, 2016).

There are 28 named scales ([Appendix 2.3](#)) that have been used to measure belonging, however half of these scales have only been used in one study each. The most well-used is the Psychological Sense of School Membership Scale (Goodenow, 1993), which was adapted by Zumbrunn et al. (2014) for the higher education context. In fact, most of the popular scales have been adapted and changed in studies after their original development (Hurtado and Carter, 1997; Johnson et al., 2007; Tovar and Simon, 2010). The risk in student belonging research, given the wide variety of scales used, is that we are not measuring like-for-like, which hinders comparisons across studies. Twenty-seven studies used bespoke or unattributed scales, which could vary significantly in the elements or co-concepts of belonging that they are capturing.

How student belonging changes over time

Despite belonging being recognised as fluid and transient in nature (Gravett and Ajjawi, 2021), most existing research looks at belonging at a single point in time. Where longitudinal research does exist looking into students' sense of belonging it usually contributes to one of two purposes: the majority explore the dynamic nature of belonging, through investigation how students report changes in their sense of belonging over time; other studies, with an action research design, evaluate the impact of interventions designed to enhance students' sense of belonging (addressed in RQ5).

Longitudinal qualitative research has been utilised to explore how a factor or aspect of belonging is likely to affect students at different points throughout their studies (Picton et al., 2017; Viola, 2021). Whilst many studies that took this qualitative longitudinal approach did not explore how belonging changed over time, they are still useful in considering how institutions may need to support students in diverse ways across their higher education journeys (Means and Pyne, 2017; Kahu et al., 2020; Buckley, 2022). Where longitudinal, qualitative research did explicitly examine how various aspects of students' sense of belonging changed throughout their studies, this was especially welcome. For example, Kahu et al.'s (2022) approach to their longitudinal qualitative research allowed them to explore how academic aspects of students' sense of belonging was more precarious – prone to fluctuation – than interpersonal and social aspects of belonging, which increased more steadily across time. The multidimensional nature of belonging means that we cannot fully separate these different domains; students are more likely to develop their academic sense of belonging if they already feel that they belong socially (Axxe, 2023).

Students' understanding of how belonging changes over time has been further explored by Rattan et al. (2015), building on existing research from Carol Dweck on the topic of growth mindsets. They argue that helping students to see belonging through the lens of growth mindsets will aid students in taking more autonomy over developing their own sense of belonging and resilience to times of non-belonging, confident in the knowledge that those challenges may pass with time. This is supported by qualitative research from Buckley (2022), who argues that university students often enter with a growth belonging mindset – viewing social groups at university as more permeable than at high school. However, given the well-established literature exploring how students from certain backgrounds face different barriers to belonging, any efforts to encourage growth mindsets must be cautious to not gaslight students into thinking that they can overcome systemic barriers through mindsets alone.

In some cases where quantitative longitudinal research has taken place belonging is only measured at one point and then compared to other variables (Veldman et al., 2023) – such as perceived social support from other students – at another timepoint to investigate whether those other variables were predictive of higher levels of belonging (Brunsting et al., 2019). Where studies have been conducted that measure belonging at multiple points, results show that belonging tends to decrease during the first year of study (Hausmann et al., 2007; O'Sullivan et al., 2019), but that it is stable from year-to-year (Barringer et al., 2023; Ruedas-Gracia et al., 2023). Each of these studies have often warned that these general trends vary when examining students from different demographics and contexts. Students who entered university through contextual admissions routes and those from racial minority backgrounds saw declines in sense of belonging relative to cohort averages (O'Sullivan et al., 2019; Barringer et al., 2023; Ruedas-Gracia et al., 2023). Gillen-O'Neel's work (2021) is one of the only studies that has measured belonging multiple times in a brief period. Their research looked at changes in belonging and engagement levels daily over a week and did find an antecedent correlation: increases in belonging led to subsequent increases in engagement.

Through these existing studies, multiple challenges have been identified in how to adequately measure changes in belonging. Studies have questioned how early we can begin reliably asking students to self-report their sense of belonging at university in a meaningful way, with little agreement. While some studies purposely excluded any measurements of belonging that were gathered within the first term of the first year of study (Ruedas-Gracia et al., 2023), others decided to measure students' sense of belonging even before they had formally begun their teaching (O'Sullivan et al., 2019). One of the other challenges presented in assessing the existing longitudinal research and how belonging changes over time is the variety of scales or measures used to quantitatively assess students' sense of belonging, discussed above. Despite critiques of assessing complex concepts of belonging with single question items (Lingat et al., 2022), there is a pressure on longitudinal studies

to use abridged versions of belonging scales (Hausmann et al., 2007) or single-item measurements of belonging (Gopalan and Brady, 2019) to reduce survey fatigue from participants.

In summary, belonging is recognised by students as a set of subjective feelings related to community membership, comfort, safety, being at home and being able to be one's authentic self. Given the subjective nature of belonging, what each student needs to feel this sense of belonging may vary. Student belonging develops in many overlapping domains, which influence each other and cannot be separated. Many different studies have developed quantitative approaches to measuring students' sense of belonging through the validation of belonging scales. Proliferation of scales poses a challenge on the ability to synthesise findings across the student belonging literature. Finally, researchers have recognised the dynamic and fluid nature of belonging (Allen et al., 2024) and so some research has begun to measure belonging longitudinally. However, this is still a small proportion of all studies on student belonging.

RQ2: What factors affect students' sense of belonging?

One hundred and eighteen studies met inclusion criteria for this research question by investigating one or more factors that might affect students' sense of belonging through a mixture of quantitative, qualitative, and mixed methodologies. An 'absence of threats-to-validity' approach was utilised to assess methodological quality of these studies, which found a few emerging themes as issues of trustworthiness within the existing literature. Firstly, the findings of many studies used terms such as 'predictor' or 'cause' relating to belonging factors when directional relationships had not been established. Many other studies recognised in their own limitations the lack of appropriate methods to measure causality, such as randomised control trial or quasi-experimental methods. This limits the ability of this study to distinguish between the prerequisites, consequences, and confounders of student belonging. Secondly, results of some quantitative studies could have been more explicit about factors that had been tested and found to have no significant connection with belonging (Schumm, 2021). Finally, as research on this topic becomes saturated, this author perceived a more general risk that the themes chosen in results of qualitative studies may have been biased based on themes already identified in previous student belonging research – a bias of expertise.

In conducting this thematic synthesis, factors affecting student belonging have been categorised against two dimensions: 1) degree of replication 2) nature of relationship (Figure 2.6). A full list of these factors and the research studies that explored them can be found in [Appendix 2.4](#). Factors from some studies were not included in this appraisal if judged to be of questionable methodological quality

using the ‘absence of threats-to-validity’ approach, discussed above. Nature of relationship has been split into three categories: factors where some connection to belonging has been established in qualitative research, factors that have been shown to have some connection to belonging in quantitative studies that used tests of statistical significance, and factors where a significant predictive relationship was able to be established. A recognised limitation of this approach is that statistical significance is often an arbitrary threshold, and no critique was made through this analysis to assess how each study was determining statistical significance. Studies were only considered to have found significant predictive relationships when they utilised appropriate experimental methodologies – such as randomised control trials or quasi-experimental approaches (TASO, 2020).

In determining the degree of replication within studies, the principal determinant of placement within the grid was the number of published studies that had found an association between sense of belonging and the factor in question. However, studies were also ranked higher on this axis when studies found positive associations across a broad range of contexts – such as across multiple institutions, higher education systems and student demographics within study populations. This approach should not be confused with a meta-analysis that could determine the strength of association and help to prioritise which factors have had the biggest impact on students’ sense of belonging. Furthermore, it is recognised that this approach cannot account for priming effects and other biases that affect study counting techniques (Vadillo et al., 2016). However, study counting within literature reviews is still recognised as a valid approach for recognising the extent to which certain topics have been identified within existing literature (Allen et al., 2024).

Given the wide variety of studies that relate to this research question, it is not surprising that there are many identified factors that affect students’ sense of belonging. Existing research has identified how many factors can either positively or negatively impact student belonging. To support readers in being better able to summarise what affects students’ sense of belonging, Figure 2.7 groups together all factors thematically. In the plotting of all initial factors, it was recognised that the vast majority of studies and factors are not within students’ control. To visualise this, Figure 2.7 has sorted grouped factors based on the degree of influence that students have over them. The remainder of this section summarises those grouped findings:

1. **Transition periods present challenges to belonging** (Tang et al., 2022). This can include when students start university, but also when changes in academic workload led them to feeling overwhelmed and unable to cope at university (Carales and Nora, 2020; Jones et al., 2018). Clear communications that lay out what is expected of students can help during these periods (Read et al., 2003).

Factors affecting student belonging sorted by degree of replication and nature of relationship established within existing research

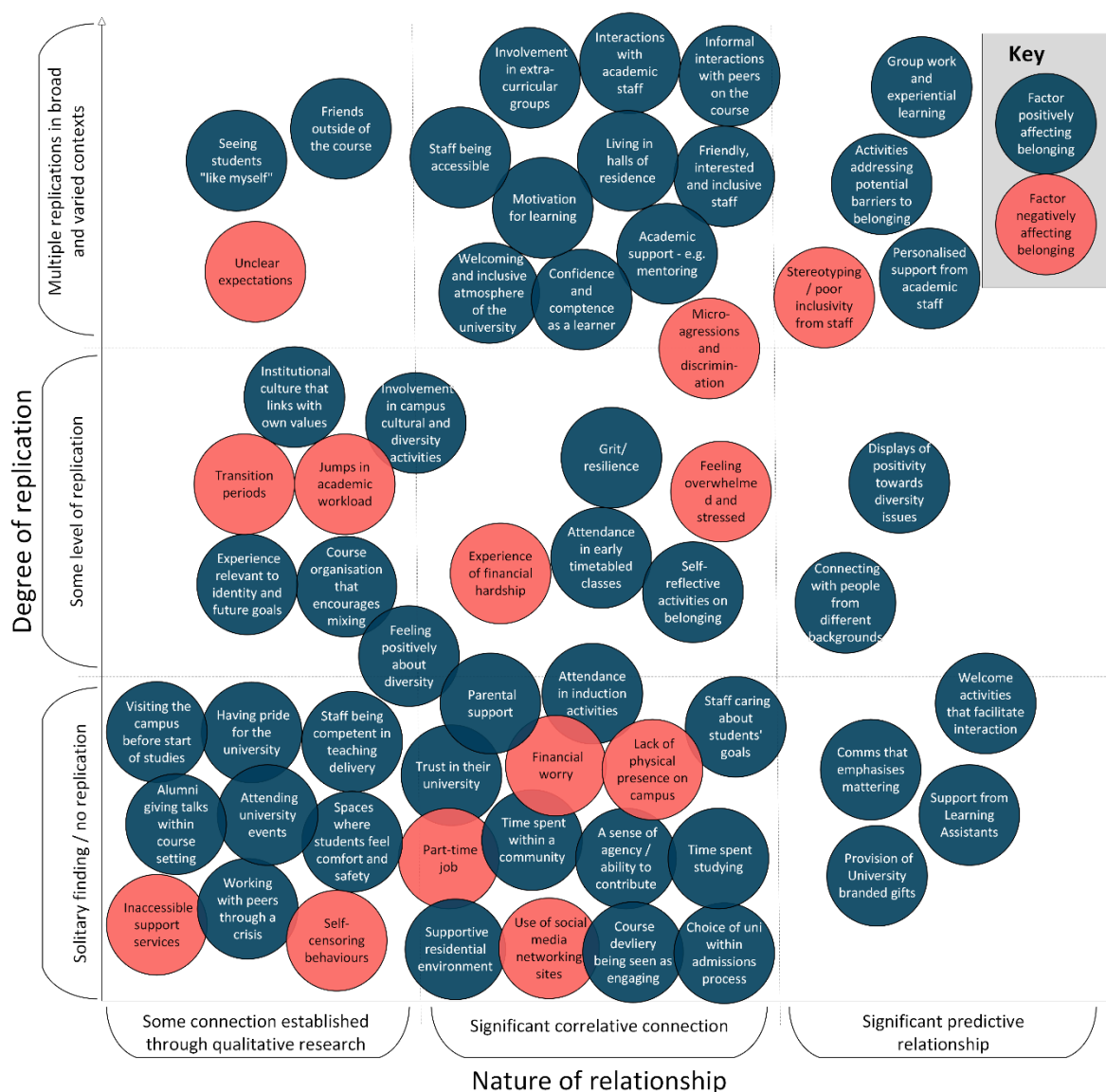


Figure 2.6 - Factors affecting student belonging, sorted by degree of replication and significance of relationship established within existing research

2. **Students' commitments outside of university may compete** with activities to belong (Tao et al., 2008). Some of these commitments – such as those related to students' financial security (Taylor et al., 2022) – may not be within their control, so students should not be reprimanded for them. Instead, institutions can help students to plan how other commitments can fit alongside their studies.

3. **Building relationships with academic staff** was the factor of belonging covered more than any other in existing academic research (Smith and Watson, 2022). It is crucial that students see staff members as accessible, friendly, and caring about their goals as a student (Zhang et al., 2022; Boswell, 2024).
4. However, when students are asked about what makes them belong, it is **building connections with peers** that occurs most commonly in their answers (Ahn and Davis, 2020; Stephens and Morse, 2022), so facilitating this should be a priority for practitioners. The most relevant of these is the socio-academic relationships that students build with peers on their course of study (Thomas, 2012); however, opportunities to connect through extra-curricular groups (Harrel-Hallmark et al., 2022) and in living spaces (Duran et al., 2020) are important as well.
5. **Interactive pedagogies provide opportunities for students to connect** (Thacker et al., 2022). Teaching and learning approaches that include group work (Masika and Jones, 2016), formative assessments that involve interactions with both staff and peers (Harben and Bix, 2019) and other experiential learning pedagogies (Matheson and Sutcliffe, 2016), were all found to be positive enablers for students' sense of belonging.
6. **Inclusive institutional cultures** that competently address diversity matters to students. Students from marginalised backgrounds are likely to face discrimination (Lewis et al., 2019) that leads to self-editing behaviours (Joubert and Sibanda, 2022) – both barriers to building a strong sense of belonging. A welcoming and inclusive institutional culture can help minimise such negative experiences and ensure students feel supported (van Gijn-Grosvenor and Huisman, 2020).
7. Whilst other factors of belonging may be outside of students' control, **students who make efforts to engage** by attending timetabled sessions (Kane et al., 2014) and extra-curricular university events (Cruz and Grodziak, 2021) often report higher levels of belonging (Jie et al., 2023). However, it should be recognised how students' ability to complete these actions is affected by other factors. Most studies that have examined these factors have not utilised experimental methodologies that can assess whether increasing efforts to engage links to increases in students' sense of

belonging. It is likely that the students who already find it easier to belong, due to various other factors, are also those who find it easier to make efforts to engage.

8. Students and university staff can partner in the **development of growth belonging mindsets**. By proactively addressing potential barriers to belonging and providing space for self-reflective activities, students can build resilience, which has a virtuous, reciprocal relationship with belonging (Grüttner, 2019; Murphy et al., 2020).
9. **Self-confidence in studies helps to build belonging** (O’Shea, 2020). Students also need to see how what they are studying links to their own long-term goals (Thomas, 2012; Rainey et al., 2018). This can be achieved through regular, positive feedback with students about their progress (Lim et al., 2022).
10. **Students’ being able to access wrap-around support from multiple sources** contributes to their sense of belonging. Students look for reassurance and support in many different places – such as utilising peers as classroom learning assistants (Clements et al., 2022), alumni returning to classes to provide talks (Stephens and Morse, 2022) and accessible support services (Holley et al., 2014). Any of these can be a positive enabler to students’ developing a positive sense of belonging.

In summary, many factors can influence students’ sense of belonging – either in a positive or negative way. For most of the discovered factors, students rely on universities to provide the right conditions, as they are not within the control of the individual student to implement. However, some factors are more within students’ control, such as taking actions to engage and the fostering of a growth mindset for belonging. The analyses used to address this research question have been able to show how prominently each factor has been addressed within existing research and the nature of the association between belonging and that factor. However, further research utilising meta-analysis techniques would be needed to prioritise which factors have the greatest influence on students’ sense of belonging.

Grouped factors affecting student belonging sorted by degree of student control over them

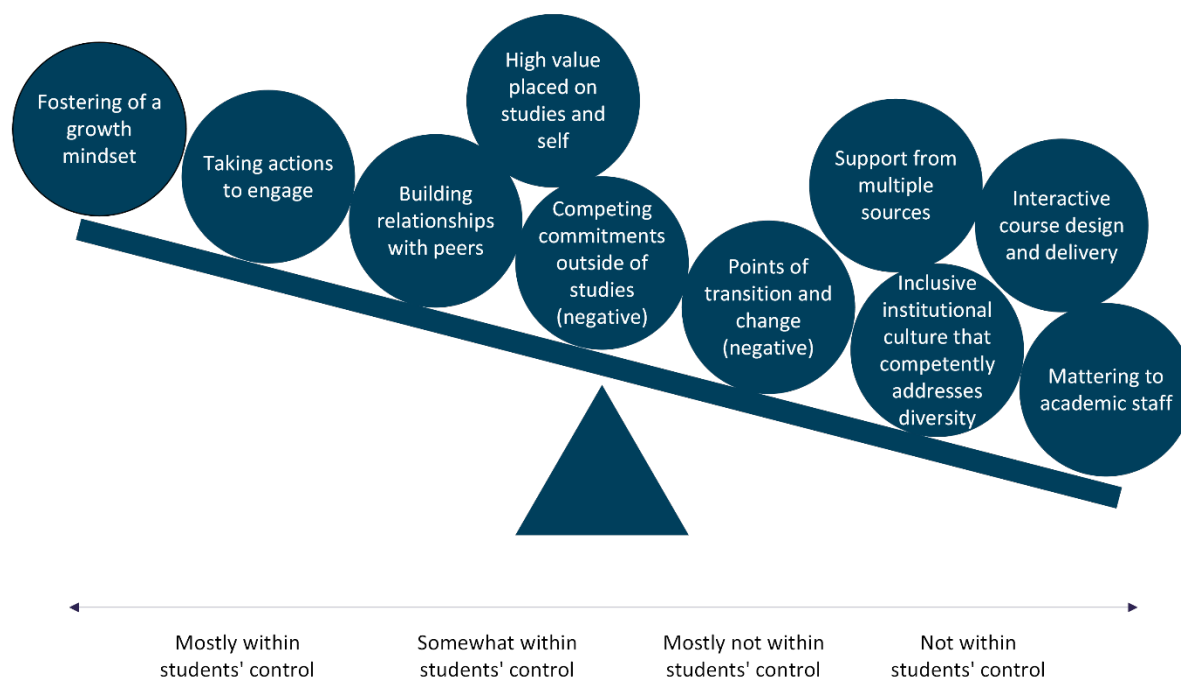


Figure 2.7 - Factors affecting student belonging, thematically grouped and sorted by degree of student control over them

RQ3: How is student belonging connected to student success?

Forty-seven studies met the criteria for this research question by addressing how belonging connects to different measures of student success. This was achieved through a variety of qualitative and quantitative methodologies, and across all the included studies 16 different student success outcomes were identified as having a connection with students' sense of belonging ([Appendix 2.5](#)). Whilst within RQ1, this study recognised the variations in co-concepts of belonging, this analysis did not distinguish between these co-concepts when investigating links to student success attributes. The analysis focused on whether studies had identified a qualitative connection, significant connection or even a significant predictive relationship between student belonging and the attribute of student success in question.

Whilst some studies did focus on qualitative connections (Mulrooney and Kelly, 2020; Kahu et al., 2022), all student success attributes were also assessed within at least one quantitative study where a significant relationship could be established. However, only some studies utilised methodologies

that could address the directional relationship and therefore posit belonging as a predictive factor. This analysis cements that student belonging is a significant prerequisite of retention (Davis et al., 2019; Murphy et al., 2020; Fink et al., 2020; Russell et al., 2022), both directly and in terms of improved intention to persist (Hausmann et al., 2007), increased student engagement (Gillen-O’Neel, 2021), improved academic performance (Cwik and Singh, 2022; Sotardi, 2022) and positive mental health (Veldman et al., 2023).

Some attributes of student success have already been identified as factors that contribute to student belonging – for example motivation and task value. This suggests that some relationships may be two-way directional, representing the possibility of virtuous or negative spiral effects. For instance, students who feel lower levels of belonging are significantly less likely to utilise help-seeking strategies (Won et al., 2019), which could then result in them feeling even lower levels of belonging if they are not able to find appropriate support (Holley et al., 2014). Many studies did not use methodological designs that allowed them to explore directionality of causation. However, more recently some studies have begun to address this gap. For instance, through the use of direction dependence analysis, Slaten et al. (2024) were able to report a strong indication that belonging causes academic motivation, rather than the other way around. These connections have been visualised in Figure 2.8, alongside speculative connections between different success outcomes, referenced in the included studies.

Connections between belonging and student success, addressing existence of predictive relationships and degree of replication within literature

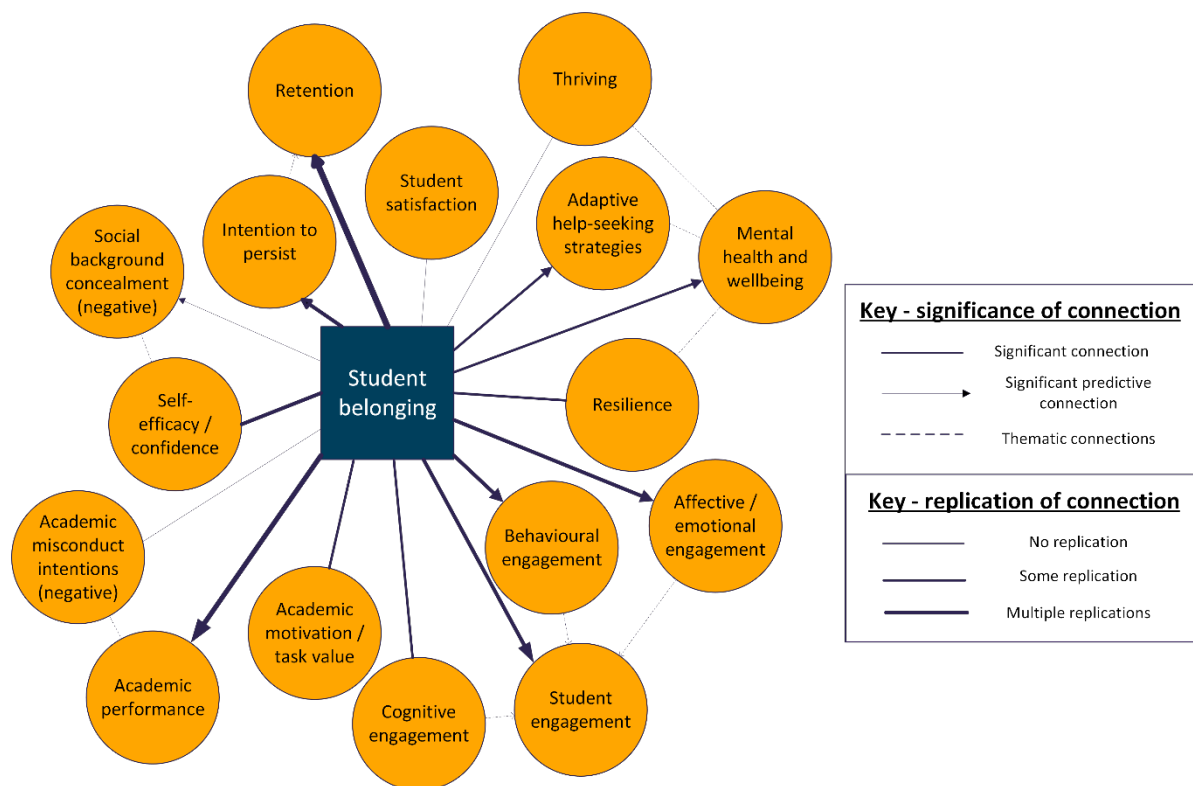


Figure 2.8 - Belonging and student success connections, visualised by significance of relationship and degree of replication. Dotted lines are used to denote thematic connections between different student success outcomes discussed within included studies, to emphasise that these outcomes should not be seen in isolation.

However, existing research has found that well-documented relationships between students' sense of belonging and associated student outcomes are not always replicated, especially when looking at different demographics of students (Meeuwisse et al., 2010; Gopalan et al., 2022). It is therefore important to consider the ways in which student belonging varies when explored through the experiences of different groups of students (RQ4).

In summary, existing research has shown how student belonging has a significant connection to many aspects of student success; from improved academic performance (Veldman et al., 2023), engagement (Zumbrunn et al. 2014), mental wellbeing (Kahu et al., 2022) and retention rates (Gopalan et al., 2022).

RQ4: How is belonging experienced by different students?

Eighty-five studies met the criteria for this research question by focusing some element of their study on investigating how belonging is experienced differently by different groups of students. Articles focusing on a single group of students have *only* been included within this analysis if they reported findings which are different from established belonging research looking at other groups. Conversely, studies that focused solely on the experiences of traditionally underrepresented or marginalised students were included in previous research questions' analysis. This approach was taken to ensure that traditionally underrepresented students' experiences of belonging contributed to previous analyses and to reject inherent 'othering' of these students.

Why is belonging experienced differently by different students?

Given that being able to interact with peers similar to oneself is a factor in belonging (Kahu et al., 2022), it's unsurprising that many studies find that minority students have lower levels of belonging than their majority counterparts (Johnson et al., 2007; T. Strayhorn, 2008; Gopalan et al., 2022). Thematic synthesis of these studies suggests there are two primary factors to explain this: 1) individual belonging needs based on experiences and co-concepts of belonging outside of the university context and 2) individual experiences of factors that affect belonging within the university context.

Students' approaches to belonging may be influenced by their experiences and identities outside of the university context. For example, if a student prioritises belonging within the academic domain, then they are likely to prioritise friendships with coursemates over non-coursemates (Slaten et al., 2016). Furthermore, international students may prioritise relationships with co-national peers if they wish to maintain a strong sense of belonging to their home country (Moore-Jones, 2022). This may differ for other international students who are hoping to stay in their 'host' country, emphasising the limitation of generalising groups – such as international students – as homogenous in their belonging needs (Mohamad and Manning, 2024). Studies also found that students may also have different belonging needs due to their involvement in religious communities (Holloway-Friesen, 2018), distance that they live from university (Pokorny et al., 2016), other demographic factors (Means and Pyne, 2017; Fernández et al., 2023) and types of personality (Stahl and McDonald, 2024; Stubblebine et al., 2024). Numerous studies have conceptualised this aspect of individualised belonging needs through the Bronfenbrenner Ecological Model of Human Development, which recognises the various spheres of influence that we all have as potential places to build relationships and identities, and how these all interact (Mendoza et al., 2016; Vaccaro and Newman, 2017; Buckley, 2022).

Within the university context, certain negative factors of belonging – such as microaggressions (Lewis et al., 2019), stereotyping (Froehlich et al., 2022) or sexual harassment (Fernández et al., 2023) – are disproportionately experienced by certain demographics of students. These negative experiences can lead to students adopting social concealment strategies as an attempt to hide their ‘othered’ identity, which in itself can result in a lower sense of belonging (Harrel-Hallmark et al., 2022; Veldman et al., 2023). Being authentic is an important part of belonging, but this may be easier for some students than others (Vaccaro and Newman, 2017). Other students may face unique barriers to positive factors of belonging – such as financial and time sacrifices required by commuter students to engage on campus (Mendoza et al., 2016).

These two elements combine to mean that factors of belonging are experienced and processed by each individual; explaining why engagement with the same factors of belonging lead to different levels of belonging for different student demographics. This explains why we see different levels of belonging amongst different students and even why the links between belonging and student success can vary depending on the student. For example, one study exploring the connection between student belonging and academic performance found that this link was only substantiated for ethnic majority students (Meeuwisse et al., 2010).

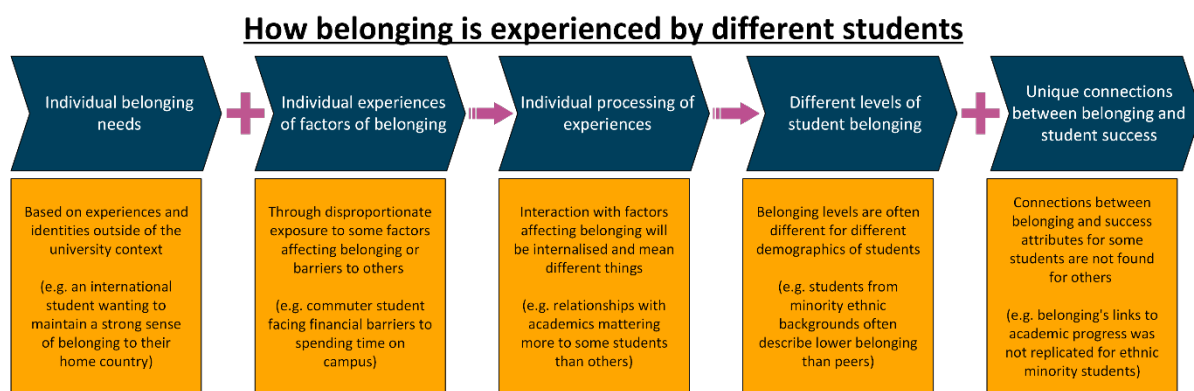


Figure 2.9 - Model depicting how belonging is experienced by different students

Whilst examples have been used within Figure 2.9 for illustrative purposes, it is important to avoid assumptions about entire demographics of students, as such binary demographic splits are often oversimplistic. Across age (Erb and Drysdale, 2017), generational status (Pedler et al., 2022) and gender (Cwik and Singh, 2022), differences in belonging levels across demographic groupings are often context specific (Mohamad and Manning, 2024). In addition, belonging has also been shown to be

significantly different for students found at the intersections of multiple demographics (Rainey et al., 2018; Kreniske et al., 2022).

Unpicking the differences between historically and currently underrepresented students

As discussed above, students from backgrounds that are either historically or currently underrepresented in higher education are both likely to face challenges in building belonging, but perhaps different challenges; thus, requiring different solutions. For example, most studies that have measured students' sense of belonging and gender find that women – a group historically underrepresented in higher education – do not have significantly lower levels of belonging; however, this is not the case in subject areas such as STEM (Science, Technology, Engineering and Maths) where women are still currently underrepresented (Rainey et al., 2018; Cwik and Singh, 2022). The same study by Rainey et al. (2018) also found that Black women students, who were often in the minority based on both their gender and ethnicity, had the lowest levels of belonging; highlighting the importance of considering intersectional identities.

Students from demographic groups that are currently underrepresented are inherently less likely to be able to find other students like themselves, which means that they may struggle to build meaningful peer connections (Kahu et al., 2022) and face stereotyping by other students and staff (Froehlich et al., 2022). Meanwhile, students from demographic groups that were historically underrepresented may experience institutional cultures that were developed and cemented without their needs in mind (Thomas, 2022), resulting in a campus climate that could be, or at least be perceived to be, less welcoming (Maramba and Museus, 2013). In both cases, students may need to exert extra effort to develop their sense of belonging, but for different reasons and therefore needing different support.

Belonging as a route to taking asset, rather than deficit approaches

Deficit-based approaches focus on the weaknesses within individuals or groups and how interventions may be able to correct for these weaknesses. This is contrasted with asset or strengths-based approaches, which focus more on helping individuals to recognise and best utilise their strengths. One risk of deficit approaches is that, by focusing on the individual's weaknesses, they enable perpetuation of stereotypes, alienation of students and disregard for wider systemic issues (Smit, 2012; Zhao, 2016). Such approaches frame these students solely in terms of how it may be more challenging for them to build a strong sense of belonging because of obstacles that they may have faced. As provocatively

written by author Isabel Wilkerson in her book *Caste*, “individuality is the first distinction lost to the stigmatised” (Wilkerson, 2020).

There is a close connection between students’ self-efficacy and their sense of belonging (Freeman et al., 2007; Zumbunn et al., 2014; Kahu et al., 2022). Greater acknowledgement of the strengths and advantages possessed by students from marginalised backgrounds may support positive building of belonging, if they can be supported to recognise and utilise these strengths. For instance, autistic students may perceive themselves as having advantages over their peers in certain aspects, such as when working on detail-oriented projects (Pesonen et al., 2020). LGBTQ+ students may find university to be a space where they can finally be their authentic selves (Fernández et al., 2023; Alexander, 2024). Similarly, refugee students have noted experiencing university as a place of relative diversity and feeling welcomed compared to their refugee experience up to that point in time (Dereli, 2022).

In summary, A well-developed body of research around this topic has looked specifically at belonging amongst minoritised or historically underrepresented groups of students; with many of these studies documenting how minority students have lower levels of belonging than their majority counterparts (Johnson et al., 2007; Strayhorn, 2008; Kane et al., 2014; Barnes et al., 2021; Shaheed and Kiang, 2021; Gopalan et al., 2022). As the studies referenced above show, this pattern of lower sense of belonging amongst underrepresented students is well-documented. However, it is far from an absolute rule. Positioning whole groups of students as homogenous and in need of support due to perceived deficits, risks “overlook[ing] the diverse skills, knowledge, and perspectives that [those] students bring to the learning environment (Mohamad and Manning, 2024, p. 26).

RQ5: How has research evaluated efforts to improve student belonging?

Thirty six studies were classified as relevant to this research question, as they had some aspect of action research or attempt to evaluate efforts to improve student belonging. The focus of this analysis is to summarise topics that have been evaluated most commonly and critique the approaches used in evaluation, drawing on guidance from TASO (2023), to develop a checklist of evaluation features for future researchers.

Five thematic areas were identified as the focus of these belonging interventions: 1) Implementing more interactive pedagogy 2) Growth mindset fostering and reflective activities 3) Provision of broader support, activities or communications outside of the classroom 4) diversity related interventions 5) summer school and pre-arrival activities.

Some studies utilised qualitative measures to understand how their belonging interventions had been experienced by students (Masika and Jones, 2016), which was helpful for providing a richer understanding of how students associated those types of interventions with their sense of belonging. Most studies utilised pre-and-post-test evaluation of students' belonging levels (Keating et al., 2020) to be able to understand whether belonging levels improved, however this in itself is not able to establish impact, as belonging is known to fluctuate over time (Gravett and Ajjawi, 2021). Some studies were able to overcome this methodological barrier with either a randomised-control trial (Murphy et al., 2020) or quasi-experimental approach that compared changes in belonging to some sort of non-participatory group (Caligiuri et al., 2020; Liu et al., 2022). Many studies recognised the challenges in adopting a fully randomised approach to their study within the education context (Strayhorn, 2021), but were still able to include measures to reduce the possibility of self-selection bias.

In study limitations, many recognised that the team carrying out the interventions were the same as those carrying out the analysis, posing the potential risk of bias. Only one study ran their intervention in multiple contexts separately – first and second-year students – so that effects could be investigated for generalisability (Lui et al., 2018). Whilst many studies utilised validated scales to measure belonging, some developed their own scales and others asked participants single questions about whether the intervention improved belonging levels (O'Farrell and Wu, 2020; Cook-Sather and Seay, 2021). Finally, there were also examples of studies where belonging levels did improve, but those students did not see the improvements in student outcomes that would have been expected given previous research results (Chen et al., 2020). A checklist of recommended approaches for future evaluations of belonging interventions has been created from this analysis (Figure 2.10).

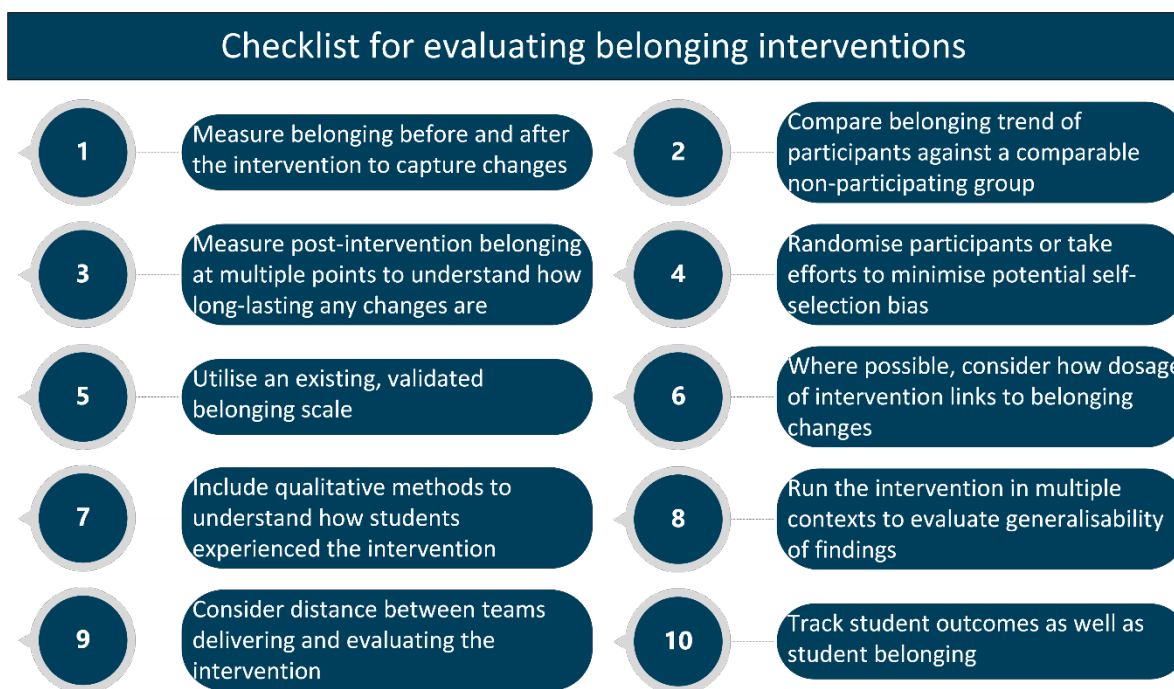


Figure 2.10 - Checklist of recommendations for evaluating student belonging interventions, compiled from critical reflections on evaluation studies included within RQ5

Summary of student belonging from this systematised, critical literature review

In the context of higher education, students understand belonging as a set of feelings. Feeling at home; feeling part of a community; feeling comfortable and able to be one’s true, authentic self (Picton et al., 2017). Belonging is also important in a wide variety of contexts for students (Mulrooney and Kelly, 2020). There are many domains of belonging that students recognise as helping them to navigate relationships with peers, staff, their surroundings and themselves (Ahn and Davis, 2020). These co-concepts of belonging overlap and co-exist with co-concepts of belonging that students hold from their lives beyond their identity as a student (Cicognani et al., 2007). From an academic perspective, many scales have been developed in an attempt to quantitatively measure students’ levels of belonging (Goodenow, 1993). Whilst these scales are useful in helping us to better understand how students’ belonging relates to potential factors and consequences, the wide variety of scales in existence hinders comparability between existing research. Through the substantial literature on this topic, a wide variety of factors have been connected – positively and negatively – with building student belonging. There is clear motivation for universities to address these factors, given the extensive research connecting belonging and different aspects of student success (Figure 2.8). Action research studies, evaluating efforts to enhance students’ sense of belonging are becoming increasingly

common study approaches. Lessons can be learned from these existing studies around methodologies that can most rigorously and appropriately evaluate this work.

A substantial proportion of existing studies have explored the belonging of students from traditionally underrepresented groups. Students from these groups typically report lower levels of belonging (Strayhorn, 2008), but there are often nuances when these results are considered across different contexts. Binary demographic splits are often over-simplistic when evaluating experiences of belonging (Erb and Drysdale, 2017). However, there are particular barriers to belonging that students from some backgrounds face; these may be related to demographic factors such as ethnicity (Lewis et al., 2019), or other factors, such as whether they are a commuter student (Mendoza et al., 2016). Identities and priorities that students hold outside of their experiences as a student will shape their belonging needs (Slaten et al., 2016). This means that no single factor of belonging can be reliably assumed to be relevant to every student.

Conceptualisation of student belonging for use in this thesis

The previous sections of this literature review have explored conceptualisations of belonging outside of higher education, as well as empirical research with students to explore different aspects of student belonging within the higher education context. Whilst this is critical for understanding the theoretical underpinnings of belonging and how it is described by students, there is also much to be considered from other authors who have written about conceptualisations of student belonging. Contributions from many of these researchers have not been included within the systematised critical review because of the inclusion criteria requiring studies include primary research with students. This section briefly summarises other seminal contributions to how student belonging has been conceptualised in the higher education context and then concludes with the definition of student belonging that is adopted for use in this thesis.

Student belonging was arguably first introduced to the higher education literature through Tinto's work around student retention and persistence (1987); theorising that what best supported students to persist in their higher education endeavours was feeling part of a community within their classrooms (1997). In a similar way, the 'What Works? Student Retention and Success' programme, run in the UK in the 2010s set out to investigate the factors that lead to successful student completion of their degrees. This research identified the importance of: supportive peer interactions, meaningful interaction between students and staff, developing confidence and identity as learners, and an experience that is relevant to students' interests and future goals (Thomas, 2012; Thomas et al., 2017).

It was only once these findings had been gathered that they were tied together and positioned under the concept of belonging.

The importance of belonging to student success had also been further developed outside of the higher educational context by Goodenow (1993) who defined the concept as feelings of being connected to, included within and accepted by a student's school. As already discussed, the Goodenow scale of school membership has since been used in many higher education studies to measure students' sense of belonging (Holley et al., 2014; Kane et al., 2014; Zumbrunn et al., 2014; Gillen-O'Neel, 2021). A recent systematic literature review on higher education sense of belonging grouped how studies defined belonging under similar headings: Connectedness to peers, staff and the institution; feeling safe, at home and a part of the community; being valued and accepted; diversity in inclusion (Allen et al., 2024). Strayhorn is also frequently cited for his work on conceptualising student belonging (2019), arguing that the core elements of student belonging include: belonging as a basic human need, sufficient to drive behaviour, time dependent, related to mattering, influenced by one's identity, that changes over time and with the potential to lead to positive outcomes.

Bronfenbrenner's Ecological Model of Human Development

Strayhorn also builds on others by arguing that student belonging should be understood as being different for every student, "What works for helping one to belong may not work for someone else" (Strayhorn, 2019, p.99). As already discussed, multiple studies have conceptualised this subjective and individualised nature of belonging through the lens of the Bronfenbrenner Ecological Model of Human Development (Mendoza et al., 2016; Vaccaro and Newman, 2017; Buckley, 2022). Whilst the Bronfenbrenner Model places the individual at the centre, it recognises how the individual is shaped by various social, environmental, cultural and political factors over time (Bronfenbrenner, 1979; Figure 2.11). These are all domains through which student belonging could be enabled or thwarted, and these vary depending on the individual (Hamwey et al., 2019). Utilising the Bronfenbrenner model as a route to exploring belonging has the advantage over utilising a purely psychological framework, which risks separating students from their lived contexts and experiences (El Zaatari and Maalouf, 2022). Whilst research has already explored how to map the different system levels of the Bronfenbrenner model to secondary education levels (Allen et al., 2016 and 2023), it is currently under-utilised as a conceptual model for exploring student belonging within the higher education context. Where higher education research on student belonging has utilised an ecological systems approach, it has reported findings which add nuance to previous understandings of the topic (Irwin et al., 2023).

Bronfenbrenner Model of Human Bioecological Development

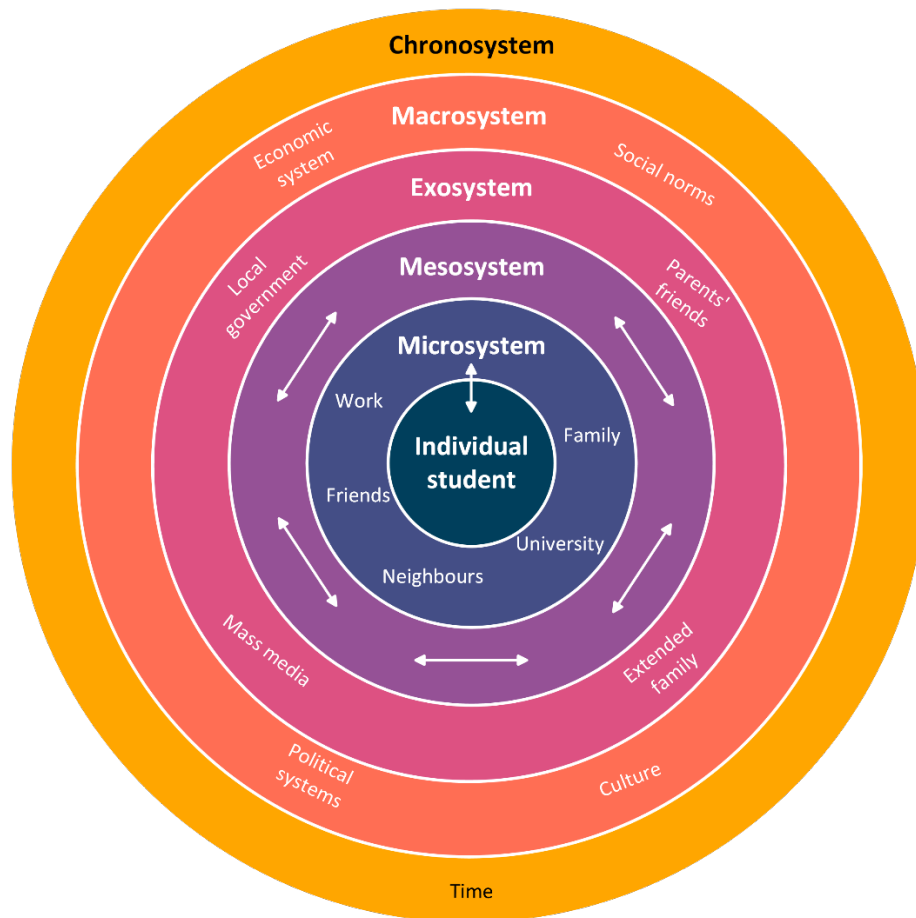


Figure 2.11 – Bronfenbrenner Model of Human Ecological Development (Bronfenbrenner, 1979), adapted for university students

Concluding remarks on defining and conceptualising student belonging

So far, this chapter has provided an exploration of the theoretical underpinnings of belonging, a deep understanding of the student belonging literature through a review of empirical studies with students, and consideration of other seminal contributions to the conceptualisation of student belonging. Following this groundwork, this chapter can now summarise and confirm the lens through which student belonging is explored through the remainder of this thesis.

Understanding student belonging from an ecological perspective centres the needs and experiences of the individual student, whilst recognising that belonging is inherently relational; about connectedness and being accepted within a community or communities at university. Students have a *sense of belonging* when they feel at home, welcomed, mattering to peers and staff, and able to act as their authentic self. Each individual student has different belonging needs, based on their

experiences of belonging outside of being a student and their motivations for studying at university. Furthermore, each individual student has different experiences of the factors that enable or thwart their sense of belonging. Students' sense of belonging changes over time as they experience and reflect on these belonging experiences. There are multiple overlapping domains in which students may develop a sense of belonging, which then contributes collectively to their overall sense of belonging at university. These key aspects of student belonging are returned to throughout the remainder of this thesis.

Conceptualising student agency

Approach to exploring student agency literature

The notion of agency emerged through the systematised, critical student belonging literature review from a few different perspectives. Primarily, through the exploration of factors that affect students' sense of belonging, it was recognised that most existing research has explored factors that are either entirely or mostly outside of students' control. Despite this, literature conceptualising belonging talks about how it requires motivation and action (Hagerty et al., 1992; Kuurne and Vieno, 2022). Therefore, belonging seems inherently linked to notions of agency. If students do not have a clear understanding about their own belonging needs, have no awareness of opportunities that may help them to develop a sense of belonging, or have no resilience when facing barriers to belonging, they are unlikely to feel any sense of agency.

This section provides a review of existing literature around student agency. The starting point for this review were the studies assessed within the systematised student belonging review that also mentioned agency (Turner and Fozdar, 2010; Bamford and Pollard, 2018; Coetzee et al., 2022). This identified 3 distinct aspects of how agency is currently discussed within the student belonging literature:

- Agency as related to capabilities or competencies (Bamford and Pollard, 2018)
- How agency is perceived as individually or community focused depending on cultural context (Turner and Fozdar, 2010)
- Agency in the context of hope (Coetzee et al., 2022)

From here, a citation chaining – or 'snowball' – approach (Lecy and Beatty, 2012) was used, where references within these studies focusing on agency were explored further. This approach, when repeated multiple times, helps to eventually link back to early theorists on a topic. Once different

theories relating to agency had been discovered, a subsequent search using these updated terms was utilised to find more recent studies applying those theories in a higher education context. More details about the search approach and terms used can be found in [Appendix 2.1](#).

Frameworks and theories underlying the concept of agency

Like belonging, agency has been explored through both sociology and psychology lenses within existing literature. Within social theory, agency is conceptualised alongside structure. This is seen through Bourdieu's conception of the habitus (1977), Giddens's structuration theory (1984) or Archer's notion of the internal conversation (2003). Whilst distinct, all these social theories discuss the ways in which an individual's agency is shaped or limited by societal structures around them, as well as how society is shaped by individuals; conceptualising agents as informed by society and transforming society (Archer, 2002). From a more social psychologist perspective, Bandura's work on Social Cognitive Theory also recognises how "people are producers as well as products of social systems" but begins to set foundations for how agency can be broken down and explored at an individual level (Bandura, 2001).

Social cognitive theory argues that agency exists in three modes: direct personal agency that an individual can exercise, proxy agency where one relies on others, and collective agency exercised through interdependent effort (Bandura, 2001). Elsewhere in the literature, these modes of agency have been characterised as disjoint agency – based on individuals – and conjoint agency – based on the interconnectedness of others towards goals (Markus and Kitayama, 2003). One can once again see the close connections between conceptions of agency and belonging in how they both can be understood individually or relationally depending on theoretical underpinning. Context is also particularly important in considering how agency may be conceptualised. Societal cultures and even socio-economic background may be strong determinants for whether people are naturally disposed to conceptualise agency through an individual (disjoint) or collective (conjoint) lens (Markus and Kitayama, 2003; Hamedani, 2008; Turner and Fozdar, 2010; Sharps and Anderson, 2021). This can lead to challenges if individualistic, often western, conceptions of agency are assumed to be relevant across all cultural contexts (Markus and Kitayama, 1991). This limitation is relevant to many individualistic concepts related to agency which are hitherto discussed; such as hope theory (Snyder et al., 1995), student-centred learning (Klemenčič, 2017), self-regulation and motivation (Seifert, 2004; Zimmerman, 2008), self-efficacy (Bandura, 1977 and 1982) and self-determination theory (Ryan and Deci, 2000).

Agency in the context of hope theory and how this connects with student belonging was evaluated by Coetzee et al. (2022), however hope is notably absent from recent mappings of the student agency literature (Castro and Pineda-Báez, 2023). Given the wide range of terminologies that are used within this topic and different theoretical frameworks that underpin it, it is to be expected that divergent strands of the literature using different terms would emerge (Inouye et al., 2023). Hope has been defined as, “the perceived capability to derive pathways to desired goals and motivate oneself via agency thinking to use those pathways” (Snyder, 2002, p. 249). Agency is therefore conceptualised as a necessary, but not sufficient aspect of hope. Conceptualisations of hope note similarities with notions of self-efficacy (Bandura, 1977 and 1982); however, hope is argued to be much more strongly connected to emotional responses (Snyder et al., 1995). One other aspect of hope theory is that it has argued that both the pathways and agency aspects of the concept are measurable, thus scales have been developed for general and domain-specific usage (Snyder, 1995; Sympson, 1999). Usage of such scales has shown the importance of hope in positive educational and wellbeing outcomes (Feldman et al., 2009; Feldman & Kubota, 2015; Coetzee et al., 2022; McLaren et al., 2022; Hansen et al., 2023

Whilst hope is conceptualised as being able to be measured for an individual (Snyder et al., 1995), use of goal or domain-specific measures of hope have been shown to be better predictors of goal attainment (Feldman et al., 2009; Feldman and Kubota, 2015). Furthermore, studies evaluating the connections between hope and goal attainment have shown that agency plays a more significant role than pathways thinking (Feldman et al., 2009; Crane, 2014). Whilst hope theory suggests that agency thinking and pathways thinking provide additive benefits towards goal pursuit (Snyder et al., 1995), at least in some contexts, empirical research has shown that this is not the case (Crane, 2014).

Another closely related concept is self-determination theory (SDT) (Deci and Ryan, 2000), which explores the development of motivational drives based on basic psychological needs: competence, autonomy, and relatedness. The latter of these three is very closely conceptualised with a sense of belonging. SDT suggests that existing within all of us is an intrinsic motivation to fulfil these psychological needs. The theory explores how distinct types of motivation – split between extrinsic and intrinsic, but each of these have further sub-divides – affect behavioural responses. Whilst at a top-level, SDT suggests that intrinsic motivation is a more reliable driver of action than extrinsic motivation (Ryan and Deci, 2000), in practice motivation is better understood as a multi-dimensional construct with several types of intrinsic and extrinsic motivations, rather than a unidimensional continuation (Howard et al., 2021). Self-determination theory itself links to several other underlying psychological theories, once again showing the challenge in how this topic can be explored from many different, sometimes conflicting, perspectives (Krapp, 2002; Csikszentmihalyi, 2014). SDT is suggested

as being part of the fundamental principles that underpin student engagement through how it helps us to understand both student autonomy and proactivity (Hakim and Lowe, 2020).

Unpicking what agency means in the context of student engagement

Within the context of student engagement, Klemenčič (2017 and 2023) suggests that agency encompasses agentic possibility (power) and agentic orientation (will). The former is intricately linked to notions of students' academic freedom (Macfarlane, 2012), whereas the latter is based on both students' self-efficacy (Bandura, 1977 and 2001) and their self-regulation (Zimmerman, 2008). Within her work, she contends that student agency must sit between the theoretical underpinnings of both sociology and psychology, and it cannot be fully understood by either socio-structural conditions or psychological factors separately: "A full understanding of student agency indeed requires an integrated causal, but not deterministic system" (Klemenčič, 2017). From these foundations, she argues that there are six premises through which student agency should be understood:

1. Context-dependent, rather than something individuals can possess abstractly
2. Stronger or weaker depending on the given situation
3. Temporarily embedded – linked to reactivation of past thoughts and actions and imaginations of potential future selves
4. Constrained or enabled by educational, political, social economic and cultural contexts
5. Relational – in that students' goals and self-beliefs are constantly shaped by those around them
6. Multi-dimensional – linking to the different modes of agency argued for by Bandura (2001) in social cognitive theory – personal, proxy and collective (Klemenčič, 2017)

Once again, these premises for understanding agency have many overlaps with how previous literature, and sections of this chapter, have conceptualised student belonging. Klemenčič builds on previous authors in arguing for an understanding of agency as dynamic (Emirbayer and Mische, 1998).

Other research into student agency within the context of student engagement has explored the concept through the angle of whether students feel comfortable to act in authentic ways. If students are not able to find peers like themselves or a broader institutional culture that aligns with their identity, they then face a difficult choice between acting authentically or concealing some of themselves to attempt to 'fit in' (Vaccaro and Newman, 2017; Hunter et al., 2019; Fernández et al.,

2023; Veldman et al., 2023). As already discussed within the context of student belonging literature, students from minoritised backgrounds may need to exert additional effort to find students like themselves, so that they are able to act authentically; whereas students from well-represented groups can immediately begin to focus on building relationships based on shared priorities and goals, which then support their approaches to studies, self-development and wider extra-curricular activities (Vaccaro and Newman, 2017). This recognises that acting authentically to build belonging may be easier for some students than others.

Why focus on student agency and how to positively influence it?

Building on these theoretical underpinnings, other authors have begun to research how to develop students' agency within the higher education context and how this can support different elements of student success. One common limitation of higher education research on this topic is that agency is often used without definition, suggesting a risk that it could be being adopted as a buzzword (Inouye et al., 2023). Despite, or through these limitations, student agency has been linked to enhanced engagement in learning – both for the individual and others around them (Stenalt and Lassesen, 2022). Developing agentic citizens has also been discussed as a broader societal objective for universities (Meyer and Jepperson, 2000; Bromley et al., 2011), suggesting that the benefits of student agency continue beyond graduation. “Higher education is expected to prepare students to become agentic individuals” (Klemenčič, 2017). A more recent study has explored belonging together with agency – through the lens of students' intrinsic motivation – and found that both concepts supported enhanced student outcomes in the form of academic persistence (Mtshweni, 2024).

Many factors have been explored as positively contributing to student agency (Stenalt and Lassesen, 2022), including the role of technology-enhanced learning (Marín et al., 2020) and technology more broadly (Czerniewicz et al., 2009) to engender greater student autonomy. One emerging area of research is around how to embrace and enable student agentic engagement – the proactive, collaborative, student-initiated contributions to learning (Reeve and Tseng, 2011; Reeve, 2013; Montenegro, 2017; Reeve and Shin, 2020). This centres around activities that foster co-creation between students and staff as a route to building a culture that normalises students' involvement in shaping their educational environment (Cook-Sather and Loh, 2023). Despite these positive approaches within student engagement work, more recent research has suggested that the increasing costs of living, which are mostly outside of students' and universities' control, are negatively affecting students' agency (UPP Foundation, 2024).

Student agency – summarising comments

Agency, like belonging, has been explored through both sociological and psychological theoretical frameworks. The literature around this concept links to and relies upon many different theories and concepts, which influence how agency is defined and integrated into student engagement practices. Key theories which have shaped understanding and practice around agency include social cognitive theory, hope theory and self-determination theory, and these have been explored through this section. Some of these theoretical underpinnings often conceptualise agency as an individualistic pursuit, however it is argued that this is due to heavy western influence in the development of theories related to agency. It is important to consider how agency can also be considered as a collective pursuit, focused on interconnectedness and achievement of shared goals, which may be more relevant in collectivist social contexts. Within the higher education context, this suggests that conceptualising student agency only through an individualistic lens may be limiting. Student agency may depend, at least to some extent, on aligning one's goals with those of staff and other students. Again, this draws comparisons to belonging; whilst students may have individual needs to belong, fulfilling these needs will depend on others around them; including peers and staff.

Student agency is the extent to which students feel able and motivated to take action towards their goals in the educational context. As a concept, it can be understood as context-dependent, temporarily embedded, constrained by societal contexts, relational and multi-dimensional. Research has shown how student agency is connected to positive outcomes both during and after students' time at university. Finally, whilst agency can be limited by outside factors such as financial hardship, university approaches to pedagogy, technology and co-creation can foster agency amongst students.

Gaps in existing literature

Whilst some emerging research gaps have begun to be discussed within the above literature reviews of belonging, student belonging and student agency, to ensure that gaps are clearly presented, this chapter has mainly taken a sequential presentation approach (Müller-Bloch and Kranz, 2015); thus all identified gaps are contained within this section of the chapter, rather than presented alongside literature syntheses. This is especially important for literature reviews within doctoral theses, where a main aim of a literature review is to clarify how the subsequent research approach helps to address gaps in existing research. To ensure completeness, gaps within the existing literature were identified against each of the research gap types discussed by Müller-Bloch and Kranz (2015) and built upon by Miles (2017): evidence gaps, knowledge gaps, practical gaps, methodological gaps, empirical gaps,

theoretical gaps, and population gaps. This section of the literature review discusses identified gaps across each of these types in turn.

Evidence gaps

Evidence gaps represent findings from existing research that may be contradictory across different studies, therefore resulting in an absence of consensus within the topic. Within sense of belonging literature, this seems to exist mainly in the way that different studies have measured belonging amongst different demographic groups of students. For instance, first-generation students are defined as students who had neither of their parents attend universities and research argues that they have lower levels of belonging than their non-first-generation counterparts (O'Shea, 2020). However, recent research has suggested that belonging is only significantly different for students who had *both* of their parents attend university (Pedler et al., 2022) and another study found that first-generation students had a *higher* sense of belonging than their counterparts when measured in their final year of undergraduate study (Hunt et al., 2017).

Examinations of students' sense of belonging across gender has resulted in contrasting findings. Whilst some studies have found that male and female students have the same levels of belonging (Ali et al., 2018; Harben and Bix, 2019; Abbasi and Hadi, 2022; Hotchkins et al., 2021; Ahn and Davis, 2022), others have found variances (Middleton et al., 2021), especially when also looking at ethnicity or subject areas where women are less-well represented – e.g. STEM (Fink et al., 2020; Cwik and Singh, 2022). In some other contexts, belonging levels were initially higher for women, but then averaged out over time (Lui et al., 2018).

Knowledge gaps

Knowledge gaps are often considered the default research gaps, as they are used to discuss instances where desired research findings do not exist (Miles, 2017). As discussed within the section identifying factors that affect sense of belonging, most existing research has identified or purposely focused on factors which are outside of students' control. Whilst there are some studies which have examined how students' actions and behaviours impact their sense of belonging (Strayhorn, 2008; Kane et al., 2014; Cruz and Grodziak, 2021; Byl et al., 2022), these are a small minority of the overall existing research. There is a lack of action research to explore whether interventions can help students to develop a richer sense of agency in their approach to developing a sense of belonging.

Related to this, a further gap exists around research that has investigated how institutional approaches to belonging may lead to students not wanting to belong. Whilst belonging overall is widely recognised as a fundamental human need (Maslow, 1943), there are many different environments, relationships and communities to which students are able to belong. Some students, especially when seeing belonging positioned as tangential to successful degree outcomes, will be content with merely 'getting on' (Brodie and Osowska, 2021). When belonging is narrowly defined as socially fitting in, some students may reject this, instead taking a sense of pride in being self-sufficient (Pesonen et al., 2020). Further research could be useful in exploring this in practice – in essence, whether utilising broader definitions of belonging in conversations with students can reduce the chance that students perceive belonging as being tangential to their higher education goals.

Practical knowledge gaps

Also known as action-research knowledge gaps, these research gaps identify instances where practical work on a topic has deviated from research (Miles, 2017). This has been explored in relation to the examples of action research, evaluated through RQ5 of the student belonging literature review, which seem to have deviated from the lessons learned in other aspects of research about student belonging. The main example of this is action research studies that evaluate interventions or efforts to enhance student belonging purely using pre-and-post-test measurements. Given that belonging has been known to fluctuate over time (Gravett and Ajjawi, 2021; Allen et al., 2024), these studies are therefore unable to properly attribute whether changes in belonging are due to the intervention or through natural fluctuations. However, this is not a full gap, as there are some studies which have utilised control or comparison groups in their study design to account for natural changes in sense of belonging over time (Caligiuri et al., 2020; Murphy et al., 2020; Liu et al., 2022).

Methodological gaps

This section identifies a few areas where changes to research methods in belonging research could help lead to useful insights. Firstly, and following on from the previous section, there is a notable absence of longitudinal research around sense of belonging. This is especially curious, given the recognition of belonging changing over time (Hausmann et al., 2007; Strayhorn, 2019; Gillen-O'Neel, 2021). Further research that explores whether there are consistent or predictable patterns of how students' sense of belonging changes throughout the student journey could be useful to provide a baseline for practitioners and future action research. Very few studies have quantifiably measured

students' sense of belonging at multiple points (Hausmann et al., 2007; O'Sullivan et al., 2019; Barringer et al., 2023; Ruedas-Gracia et al., 2023). Such longitudinal research is necessary to explore the directional relationship between factors that affect student belonging and seem to be subsequent outcomes from student belonging: such as help-seeking behaviours (Holley et al., 2014; Won et al., 2019), academic motivation (Slaten et al., 2024) and student engagement (Gillen-O'Neel, 2021).

Another methodological gap exists in the challenge of comparing research that has measured students' sense of belonging through different scales. The systematised, critical review of student belonging literature identified 28 different named scales that have been developed to measure various aspects of students' sense of belonging. Some studies have also adapted existing scales when measuring belonging (Hurtado and Carter, 1997; Johnson et al., 2007; Tovar and Simon, 2010; Zumbrunn et al., 2014). In most cases, this has been done to improve the relevancy of questions to a slightly different educational context, but it still introduces a risk that these scales are measuring something subtly different than originally intended. An additional 27 studies used bespoke or unattributed scales, which could vary significantly in the elements or co-concepts of belonging that they are capturing. There are then also many studies which use single-question items to attempt to measure student belonging, which are often considered less reliable measures (Lingat et al., 2022). Overall, this presents a substantial challenge for those exploring the concept of student belonging, as it limits synthesis across studies which use different measurement approaches. Future research cannot resolve these challenges, but where possible using an existing, validated scale can at least minimise further proliferation of measurement approaches on this topic.

Finally, very few studies that have explored interventions to enhance student belonging have then also assessed whether desired changes in student outcomes were also achieved. This is concerning due to the existing research that has found that connections between belonging and associated student outcomes vary by student demographics (Meeuwisse et al., 2010; Gopalan et al., 2022). Furthermore, some action research that has led to improvements in student belonging did not lead to expected improvements in other student outcomes (Chen et al., 2020). Whilst it can be practically challenging to measure both changes in students' sense of belonging and hopeful outcomes, such as improved student retention, due to time constraints; this is important to address the above findings.

Empirical gaps

Empirical research gaps exist where research on a topic has progressed theoretically, but there is a lack of empirical research designs to verify such proposals. This is harder to assess for student

belonging research, as the design of this literature review specifically excluded studies that did not contain empirical elements. The rationale for this is explored within the methodology section of this chapter. Due to this review approach, it is less possible to assess the extent to which theoretical or conceptual literature on student belonging exists that has not also been tested empirically. No aspects of empirical gaps have been identified through this review.

Theoretical gaps

Theoretical gaps exist when a field has a lack of research applying theory to the topic to generate new insights (Müller-Bloch and Kranz, 2015; Miles, 2017). There is a substantial amount of existing research on the topic of higher education student belonging that is focused on practical efforts to build belonging and therefore sometimes lacks a focus on theory. However, this would not indicate a theoretical gap, as not all research needs to have a theoretical focus. As previously discussed, given the ample literature exploring agency as a route to enhancing student engagement and outcomes, it is surprising that so little of student belonging research explores this topic through a lens of student agency. Whilst some studies do begin to explore agency when investigating sense of belonging (Turner and Fozdar, 2010; Bamford and Pollard, 2018; Coetzee et al., 2022), only one of these studies has begun to explore any of the theoretical underpinnings of student agency (Turner and Fozdar, 2010).

There has been a growing acceptance within student belonging literature that we should focus less on what students can do differently and instead look at what institutions can do differently to foster belonging (Nunn, 2021; Rueda and Lowe Swift, 2024). Students may not want to belong within our universities if they must make unreasonable sacrifices to do so, such as for commuter students (Thomas, 2019) or religious students (Islam et al., 2018) who must balance competing time commitments and the potential for conflicts in their identities and values. For such students, interventions to build belonging may be perceived as trying to get students to change who they are to fit within a university system that is not designed for them. A well-established body of literature has critiqued this, suggesting that instead of prioritising the development of 'college-ready students', focus should be given to building 'student-ready colleges' (Burke and Burke., 2005; McNair et al., 2022). However, even if universities provide the appropriate conditions, belonging requires some level of action (Kuurne and Vieno, 2022). With this tension in mind, further research that explores student belonging through the lens of student agency would be welcomed.

Population gaps

Finally, population gaps identify how existing research may have missed different demographics or contexts. Broadly, student belonging research is very inclusive. This could be due to its close links to equality, diversity, and inclusion work (Rueda and Lowe Swift, 2024). It could also be because of early research that began to explore how students from minoritised backgrounds tended to have lower levels of belonging than their peers (Johnson et al., 2007; T. Strayhorn, 2008). As was explored in addressing RQ4 in this chapter, many studies have since explored how belonging is experienced differently by different demographics of students. Some research has also contributed to conceptualising how belonging is different for minoritised students (Vaccaro and Newman, 2022). Whilst there are undoubtedly some experiences of students that are underexplored within the student belonging literature, it is very representative compared to other topics of research.

Population research gaps on student belonging exist based on the geographic contexts in which research has taken place. As identified earlier in this chapter, most existing belonging research has been carried out in the US. This leaves an opportunity for future student belonging research in other higher education contexts to explore whether findings are replicated. Within the UK context specifically, most existing research has taken place in single-institution studies, which limits the ability of such research to generalise their findings to other institutional contexts.

Conclusion

This chapter has been constructed through the exploration of three, connected literature reviews on the topics of belonging, student belonging and student agency. The initial review around belonging outside of higher education has shown how this concept has been discussed across a wide variety of academic disciplines, especially across psychology and sociology. The challenge with this concept is that everyone has a need to feel that sense of belonging, and yet capacity, motivation and action from the individual is not sufficient in developing it. Belonging also requires welcoming conditions, whether they be social, environmental, cultural, or political. However, for the individual who develops this sense of belonging, it can provide them with incredible benefits, including meaning and involvement.

This concept was then explored further in the higher education context, through a systematised, critical literature review around student belonging. Through this review of 200 empirical studies, this chapter has explored how students define belonging as an important feeling of comfort, safety, and being able to be one's true, authentic self. Student belonging takes place across many overlapping domains within the university ecosystem and attempts to measure belonging have shown how it

changes over time. The factors that influence belonging are numerous, as are the links between belonging and several aspects of student success. However, simplistic approaches to understanding or influencing student belonging needs to recognise how belonging is experienced in individual ways by students based on their needs and exposure to factors that affect belonging. Emerging action research to explore efforts to enhance student belonging is promising and this review has provided a set of recommendations to facilitate future action research.

The final review of literature within this chapter addresses the concept of student agency. Like belonging, agency has been conceptualised across both psychological and sociological disciplinary research. Due to this diverse spread of research that links to the concept, there are many, disparate theories that have been developed to underpin or sit alongside agency. Within the student engagement context, agency is a key part of understanding how students participate in and emotionally reflect on their participation in their studies. Whilst student agency can be limited by external influences, universities can have a role in developing student agency.

Finally, this chapter explores what research gaps exist across these topics. A research gaps type approach has been utilised to explore the distinct categories of research gaps that could be addressed by future research. In particular, the study within this thesis hopes to contribute to addressing the following gaps by:

- Resolving contradictory findings across different demographic variables; particularly first-generation status and gender, through further exploration of these variables
- Exploring what actions students take to belong and what conditions they require before they feel agency in developing a sense of belonging
- Investigating how avoiding narrow definitions and conceptualisations of belonging may better enable students to build their sense of belonging
- Involving comparison or control groups to more rigorously assess whether belonging interventions can be causally linked to subsequent changes in students' sense of belonging
- Utilising a longitudinal approach to contribute to gaps in understanding around how student belonging changes over time
- Avoiding development of new belonging scales or use of single-item measures, so that findings can be compared to other studies using the same existing, validated scale
- Including measurement of the student outcome – such as student retention – that any intervention is hoping to address

- Exploring the theoretical concept of student agency and how this links to belonging
- Conducting the research outside of the US context, where most research and social-belonging interventions have taken place to date
- Designing the study as a multi-institution project.

Further detail about how these research gaps are addressed is discussed within the next chapter around the methodological approach of the study.

Appendices for Chapter 2

[Appendix 2.1](#) – Search approach, terms and timing for all literature review searches

[Appendix 2.2](#) – Studies included within systematised, critical review of student belonging literature

[Appendix 2.3](#) – Belonging scales found in student belonging literature review

[Appendix 2.4](#) – Factors that affect students' sense of belonging

[Appendix 2.5](#) – Belonging as a prerequisite of student success outcomes

Chapter 3 – Methodology

Introduction

This chapter explores the overarching methodological approach that was used for this thesis. This piece of action research has three distinctive methodological features: it is mixed-methods, quasi-experimental and longitudinal in design. These aspects were utilised together to assess the impact of belonging workshop interventions for new undergraduate students in two UK universities. The study followed three groups of students: 1) those who attended a newly developed agentic belonging workshop, 2) students who attended a study skills workshop and 3) students who signed-up to one of the workshops, did not attend, but still opted in to remain part of the study.

This chapter begins by developing the ontological and epistemological rationale behind the overarching methodological choices in this study, as well as drawing upon the gaps in literature that this study seeks to address. Within this, a discussion is included around the use of randomised control trial methods within education research and how this study moved away from this approach to its quasi-experimental design. The theory of change that was developed to link together the various aspects of this study is presented, along with how this connects to the overarching research questions of the project.

Beyond these overarching methodological positions, this chapter discusses the timescales for when this project was conducted and practicalities that were considered to ensure that the thesis could be feasibly completed. Given that this is an action research project, the context for the two institutions where the research was conducted is also summarised.

Whilst each content chapter in the remainder of this thesis does include its own methodology section, more deeply contextualising the exact approach used in each part of the study, this overarching [methodology chapter](#) summarises the methods used in subsequent chapters and how these fit together. This includes: the process evaluation and quantitative methods used to evaluate the effectiveness of the workshop interventions and their delivery ([Chapter 4](#)), the qualitative longitudinal diaries methods used to evaluate the subsequent actions students took to build belonging ([Chapter 5](#)), the quantitative regression methods used to evaluate students' changing belonging throughout the remainder of the academic year ([Chapter 6](#)) and finally the quantitative regression methods used to evaluate the connections between belonging and continuation ([Chapter 7](#)).

Finally, limitations of the chosen methodological approaches are explored, as well as the ethical considerations and approval that went into the design of the research project.

Research paradigms

Critically exploring otherwise hidden assumptions about ontology – the nature of reality – and epistemology – the nature of knowledge – is a fundamental part of transparent research design (Holmes, 2020; Savin-Baden and Major, 2023). Researcher positionality has already begun to be explored within the previous chapter, and this section builds on this by discussing how that positionality relates to the ontological and epistemological positions that have informed this project’s methodology.

The topic of student success from a practitioner and policy perspective lends itself to realist ontological perspectives – an objective reality independent of human observation. Students withdraw from university regardless of whether this phenomenon is observed. Furthermore, there may be things that universities can do to reduce student withdrawal rates, but there is also the possibility that interventions have no effect or even increase student non-continuation. Without a realist approach, there is no objective measure to evaluate our efforts against (Sayer, 2000). However, the realist position seems inadequate by itself when considering the topic of student belonging.

As discussed within the previous chapter, belonging is personal and dynamic (Gravett and Ajjawi, 2021; Allen et al., 2024). It is constantly shifting based on a person’s experiences and reflections in relation to their own needs. A purely realist perspective risks reducing participants in this research project to mere “objects” (Assalahi, 2015), rather than agents crucial for creating their own understandings of, and paths to, belonging. This goes beyond an interpretivist position – where student belonging research is just concerned with “understanding the subjective world of the human experience” (Cohen et al., 2011, p. 22) – to a constructivist position, exploring “the deliberate, intentional, agentic actions of participants” (Cohen et al., 2011, p. 34). Whilst data around student continuation and the actions that students take to belong at university may be able to be defined and measured, the effect of those actions in terms of generating a *sense* of belonging are individual and subjective to each student. Constructivism is well suited to explore the aspects of “agency, choice, possibility and complex dynamics” that scaffold the pursuit of belonging (Mahoney, 2001, p.749).

Whilst it could be tempting to leap into a rejection of typologies to avoid arbitrary conflict between them (Hammersley, 2012), instead this thesis’s research paradigm leans into the compatibility between realist and constructivist viewpoints (Barkin, 2020). Constructivism provides a way to study and understand the nature of students’ sense of belonging, which is compatible with realist paradigms of the way students’ sense of belonging impacts reality (Barkin, 2020). Such a constructivist realist

perspective holds the potential to balance use of qualitative methods that “tap all perspectives” from within a community, whilst also utilising quantitative approaches that can enable precision if it is recognised that any models are a “pale shadow of the original phenomenon” (Cupchik, 2001). It is this constructivist realist perspective that is utilised in the development of more detailed approaches to methodological design in the subsequent sections.

Methodological positions

Building on the discussion of the author’s positionality and how this relates to the critical realist position utilised for this project, this section explores the study’s methodology design and reasons for these choices. Given the keen focus on being able to practically assess efforts to enhance students’ sense of belonging, and ultimately retention, this project has been designed as an action research study (Lewin, 1946; Dickens and Watkins, 1999; Ip, 2017; Levitt, 2019). This thesis evaluates the impact of a newly-developed agentic belonging intervention that addresses how belonging changes over time and how it is intrinsically linked to students’ individual motivations and psychological needs. To appropriately explore this, the action research contains three core elements in its design: quasi-experimental, longitudinal and mixed-methods (Figure 3.1).

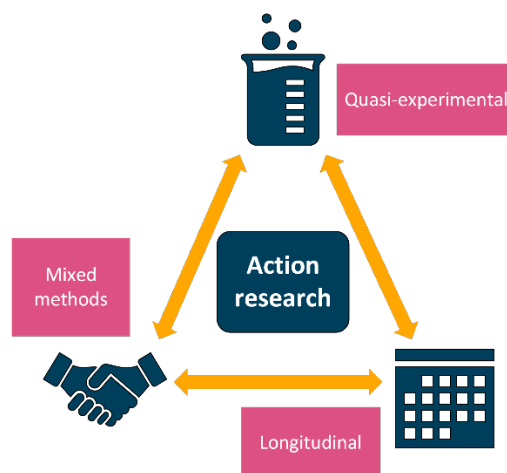


Figure 3.1 – The three core elements of this action research project’s design: quasi-experimental, mixed-methods and longitudinal

The quasi-experimental design of the project sees participants’ outcomes – in the short, medium, and long term – from the belonging intervention compared with outcomes from two distinct types of control groups: a group of students who attend a workshop on study skills, and a group of students who signed up for either workshop but did not attend. More information about the rationale behind

the quasi-experimental design is explored in a subsequent section discussing how the project was originally planned to run as a randomised control trial, but then moved away from this approach. The longitudinal aspects of the design have been included in recognition of belonging being fluid and changing (Carruthers Thomas, 2018; Austen et al., 2021; Allen et al., 2024), as well as to address the gaps in current longitudinal research on student belonging identified within the [literature review chapter](#). Whilst the quantitative aspects of the project measure students' sense of belonging before and at multiple points after the intervention, as well as connections to retention data, this is not enough on its own to fully capture how the intervention affects the ways students construct their own journey of belonging (Cupchik, 2001). To address this, the study utilises a mixed-method design, including the use of qualitative methods to investigate what actions students have taken to develop their sense of belonging and their reflections on this complex and dynamic process (Gravett and Ajjawi, 2021).

Moving away from a randomised control trial approach

The original design of this study involved a randomised control trial (RCT) approach, which would involve randomly assigning participants to either the agentic belonging intervention or the study skills control workshop, rather than allowing participants themselves to choose which workshop they wanted to attend. One motivation for this was that RCTs had been referenced within guidance issued by the Office for Students (OfS), discussing how distinct levels of evidence should be sought for access and participation evaluation, with causality being seen as the 'highest' of three levels (Office for Students, 2021). Experimental methods, at least in theory, are better able to establish causal links through their ability to control extraneous variables (Spiegelhalter, 2019). Furthermore, as already noted within the [literature review chapter](#), most action research evaluating belonging interventions have not used methods that allow any investigation of causal links between the intervention and changes in belonging or subsequent changes in student outcomes.

Through an exploration of the literature on RCTs, a few aspects of good practice and challenges were discovered about utilising this method within educational research. This included the principles for ensuring a fair test (Spiegelhalter, 2019), arguments for the importance of utilising a mixed-methods approach to help counteract the limitations of RCTs (Styles and Torgerson, 2018; Norwich and Koutsouris, 2020), use of the CONSORT principles designed for RCTs (Torgerson, 2009) and emphasis on close working and access to participants (See et al., 2015).

However, two challenges remained that mitigations were not able to address. Firstly, guidance around RCTs stresses the importance of initial pilot studies before the full-scale RCT is implemented. Given the lag in being able to collect continuation data – see the section later in this chapter about project timeframes – it was not seen as feasible to run a pilot study and a subsequent RCT within the timeframes for this PhD. Secondly, as the agentic belonging intervention was newly developed, there were concerns around the ethics of randomly allocating students to this as yet untested intervention. This is often why RCTs require pilot studies, as a route to showing promise for the intervention under consideration. Running an RCT without any prior pilot study would have involved extensive expenditure of time and resources, with risk of little gain (TASO, 2020). Furthermore, by not running an RCT, more time and investment was able to be invested into other aspects of this study, such as the longitudinal online diaries of actions that students take to build belonging.

Upon closer examination of the guidance from the Office for Students (2018, 2021) and other Government sources at that time (Gold, 2018), an alternative approach was discovered. Whilst these resources talked about the benefits of RCTs in educational research, they also emphasised that quasi-experimental approaches using “appropriate control or comparison groups who did not take part in the intervention” can also be utilised to show causality (Office for Students, 2021). Utilising guidance from TASO, an organisation set up to support UK universities in their evaluation methods, the project was re-designed with a quasi-experimental approach (TASO, 2023). Elements of a difference-in-difference quasi experimental approach were utilised, through comparing changes in student belonging across those involved in the agentic belonging intervention and those in the comparable non-participating groups. In this case, there are two comparable non-participating groups; those who attended the study skills workshop and those who signed up to either workshop but did not attend.

Theory of Change

Theories of Change (ToC) are increasingly used within evaluation in both the charity and education sector. The approach has been encouraged for higher education institutions within the UK context by the Office for Students, recognising the benefits of having “a clear rationale for how short-term activities are connected to longer term improvements in access and participation” (Office for Students, 2022a, p.2). A ToC can be helpful in identifying the “missing middle” between one’s interventions and desired outcomes (Centre for Theories of Change, 2022). As there are often many distinct stages and steps between activities in universities and eventual desired outcomes, ToC can be useful in providing a place to acknowledge the different assumptions that we must make at each stage along the way (TASO, 2022). This approach seems especially relevant for studying students’

sense of belonging, as between students receiving a supportive intervention and then deciding to stay at university, there is a 'missing middle' where they are taking actions to belong and processing these belonging experiences.

Figure 3.2 shows the full ToC, which lays out the methodological approach for this study. All connections within the ToC are either well-established through existing research and models on university students' sense of belonging or were tested as part of this research project. For example, much research has already investigated the factors that influence belonging which are often outside of student's control. These are therefore included in the model but are labelled pink to show that they are not re-tested explicitly through this study. However, as there is an absence of research exploring whether interventions can affect students' understanding of their belonging needs and how this may influence subsequent behaviours, this is tested within the study (and coloured dark blue). Aspects of the research tested within the study are described as core parts of the ToC. Whilst the study skills workshop has been introduced as an appropriate control activity (Murphy et al., 2020), there is a risk that this workshop could influence students' self-efficacy, which inadvertently increases their likelihood of successful retention. The inclusion of a non-attending control group is utilised to explore the extent to which study skills cannot be fully considered a 'control' group when studying student belonging and retention outcomes.

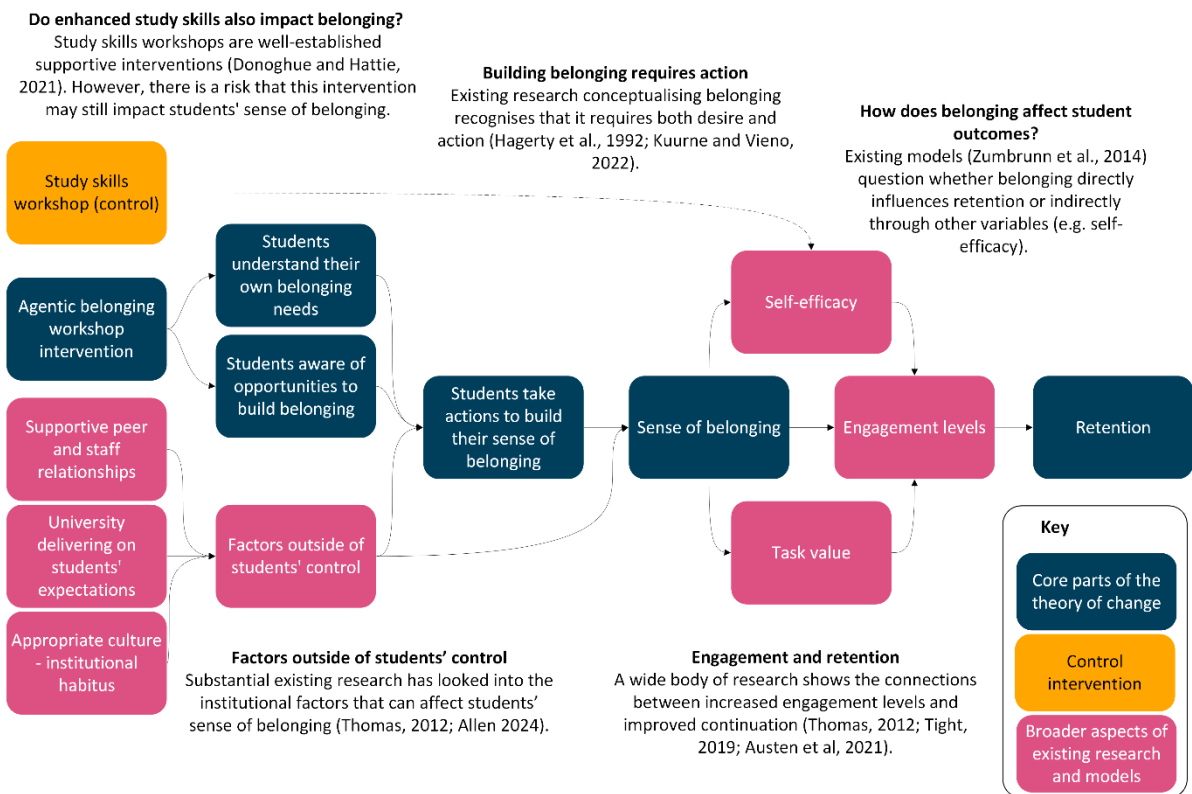


Figure 3.2 – Full Theory of Change diagram for this study – suggesting how the agentic belonging workshop intervention may connect to improved retention outcomes through ‘missing middle’ steps (Centre of Theories of Change, 2022)

Through utilising a ToC approach, other causal factors and influences on students’ sense of belonging and retention can be acknowledged, without needing to be re-tested within the design of this study. Figure 3.3 maps an abridged ToC design, showing the aspects that are evaluated within this study and how each of the connection points reflects one of the different research questions. Within each of the results chapters of this thesis (Chapters 4 – 7), a set of analyses explore one of these connecting parts of the ToC and its associated research question. For instance, within [Chapter 6 – Changes in Belonging](#), the analyses focus on answering research question 3: what effect does attendance of the agentic belonging workshop have on subsequent changes in levels of belonging?

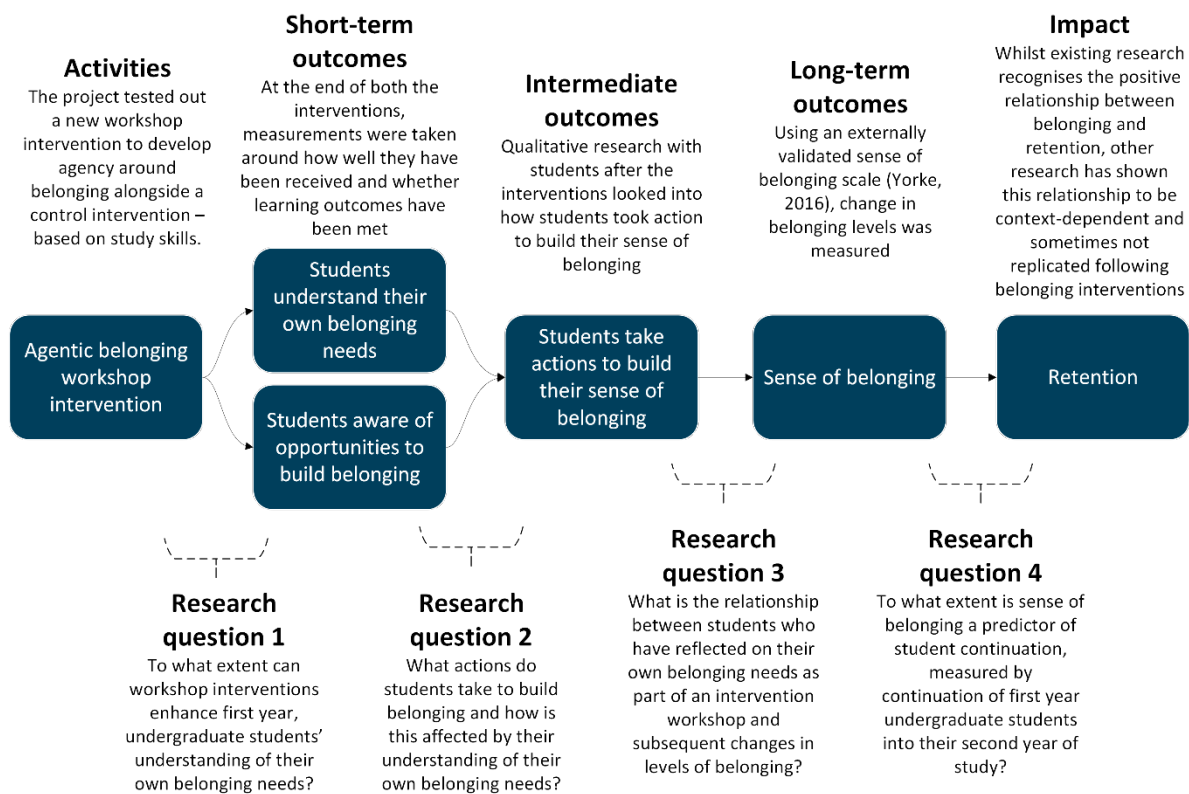


Figure 3.3 – Abridged Theory of Change diagram – showing just the core components that are tested within this study, including how each stage of the ToC relates to the project’s research questions

Timeframes and phases of interventions and data collection

This section outlines the various stages of this research project. The combined length of all data collection phases was 15 months – starting with the recruitment and delivery of workshops and ending with the collection of continuation data from participating institutions. These timeframes have been discussed below and summarised in Figure 3.4.

- **Phase 0 – preparation – Mar to Sep 2022** – This preparatory phase involved building relationships with collaborator universities and agreeing their involvement, planning and constructing all the workshops, piloting these workshops with students, and preparing communications to recruit and maintain engagement with participants throughout the project. Also, during this period, ethical approval for the project was submitted and approved – more details of this are included at the end of this chapter.

- Phase 1 – participant recruitment and workshop delivery – Sep to Nov 2022** – Student Communications teams at each of the two institutions promoted the overarching study and attendance at the initial workshops to all their new undergraduate students. Students were invited to register for the study online through a Qualtrics form, which involved them providing demographic data and signing up for one of the two workshops (belonging or study skills). At the beginning of each workshop, participants were asked to complete a short questionnaire to assess their levels of belonging (see phase 2). At the end of each workshop, all participants were asked to complete a short questionnaire to self-assess how well the workshop’s learning outcomes had been met. Students who registered but did not attend their workshop were still invited to complete a questionnaire to gather a baseline belonging reading in case they wanted to continue in the research project. These participants were also asked for some details about why they did not attend, which has been used as part of the process evaluation within [Chapter 4](#).
- Phase 2 – Primary research (qual and quant) – Nov 2022 to May 2023** – Across the rest of the academic year, all participants were invited to complete three follow-up questionnaires, which included a sense of belonging scale. This is the same belonging scale that participants were asked to complete at the start of their workshops, which allowed evaluation of changes over time – including pre- and post-intervention. This data is primarily analysed through [Chapter 6](#) – focusing on changes in belonging. Beyond these quantitative research aspects, participants were invited to take part in longitudinal qualitative research in the form of online diaries. The focus of this qualitative research was around what actions students have taken to build belonging at university and how taking such actions have made them feel. Two additional open text questions that were included in each of the follow-up questionnaires were also utilised as part of this qualitative analysis. At each data collection point – either a follow-up questionnaire or online diaries request – participants were emailed two to three times to encourage maximum response rates. An additional set of self-reflective questions were also included within the last online diaries request, asking students about their involvement in that part of the research study. An analysis of this data is included within a process evaluation section of [Chapter 5](#).
- Phase 3 – Impact evaluation (continuation data analysis) – Dec 2023 to Jan 2024** – The final phase of this project was the collection and analysis of continuation data from each collaborator institution. Data sharing agreements were established between the University of

York and both participating universities, which confirmed the process for collecting and utilising this continuation data. This data is analysed within [Chapter 7](#) – Belonging and Retention.

When initially planning the project, risks around timescales were assessed to create contingency plans and proactive mitigations (discussed later in this chapter within the expected challenges section). For example, a risk was identified around successfully recruiting sufficient numbers of students for interventions in October and November 2022. These challenges did emerge in both participating institutions, however having contingencies in place allowed the project to continue on schedule. At Middlesex University, this involved running an additional set of workshops, which gave more opportunities for students to take part. At the University of Southampton, when recruitment numbers were low, the original date for the workshops was postponed, allowing more time for recruitment. Had neither of these back-up plans been sufficient, a further possibility was to wait for January 2023, as both participating institutions had a new cohort of students starting at this point. This would have provided another opportunity to recruit new UG students to take part in the workshops and research project. The final back-up option was to run a further set of interventions at the start of the 2023/24 academic year (October 2023).

As risks to the project timescales were able to be addressed in real time, the project timescales in Figure 3.4 refer to both what was initially planned for the research project and what was actually carried out.

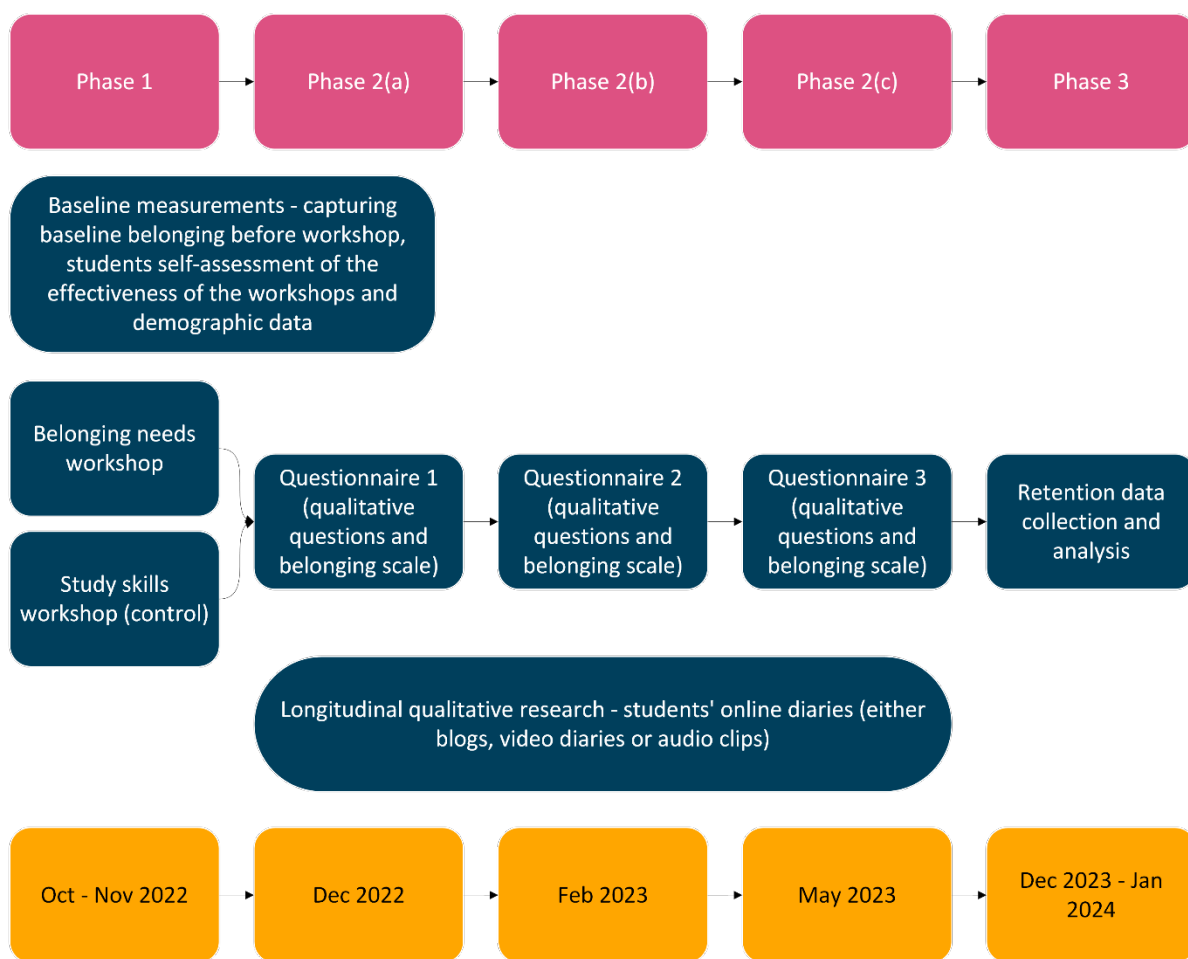


Figure 3.4 – Project timescales for data collection stages

Research contexts

Universities which took part in the research

The research for this project was conducted at two different English Higher Education Institutions – one that is a widening participation university and another that is a more selective-recruiting institution. The two institutions were intentionally selected for their differences, so that the impact of the agentic belonging intervention could be studied in two different higher education contexts, thus hopefully increasing the external validity of the findings.

The widening participation institution was Middlesex University, where the author works as Head of Student Engagement and Advocacy. Middlesex is a medium-sized, campus-based, widening participation institution in London, England. For the selective-recruiting institution, the University of Southampton was approached, due to the author already having some existing relationships with staff

who worked there. These two institutions were selected as they represent universities with quite different student demographics and challenges (Table 3.1). Middlesex students are much more likely to come from deprived backgrounds, come from ethnic minority communities and start university at a later stage in life. Middlesex students are also much more likely to withdraw from their studies within the first year, compared to students from the University of Southampton (Office for Students, 2024; Table 3.1).

Demographic or outcome indicator	Middlesex University	University of Southampton
Mature	39.3%	7.4%
Black	25.4%	6.0%
Prior eligibility for free school meals	41.2%	9.0%
Students from the most deprived quintile of the Index of Multiple Deprivation	24.3%	7.0%
Non-continuation rate for full-time, first degree students	17.9%	4.1%

Table 3.1 – Demographic and continuation rate details for the two participating institutions (Office for Students, 2024)

Beyond these student demographic and outcomes differences between Middlesex and Southampton, these institutions have also been selected with practicalities in mind: relationships with institutional gatekeepers and access to participants. The author’s position as Head of Student Engagement and Advocacy at Middlesex University includes responsibility for student communications and coordination of some activities over the welcome period. This means that existing relationships can be utilised to arrange workshops and promote them to students. To ensure a similar fit at the University of Southampton, the author developed relationships with multiple members of staff within their Student Engagement and Student Communications teams. Perhaps most importantly of all, through conversations with staff members at Southampton and at Middlesex, it was clear that both institutions had a strategic interest in the topic of student belonging and therefore would be committed to the research project.

Funding and incentives

The main cost for the running of this research project was around the incentives for the participants. Costs for the running of the initial workshops were minimal – as each institution supported the printing

of workshop materials and did not charge for booking rooms for the workshops. Similarly, participant recruitment did not incur any costs, as internal university communications channels at each of the two participating institutions were utilised.

Incentives for research participants formed an important part of the ethics and participant engagement approaches for this study. The approach taken was to provide students with a £5 Amazon voucher for each activity that they took part in throughout the research project. As noted within subsequent sections of this methodology section, there were three online questionnaires and seven online diary collection points. This meant that participants could earn up to £50 across the entire project.

Each participating institution was given a budget document, which outlined the costs per participant and overall projected costs based on estimates of participation rates. Institutions were asked to fund the costs of these incentives, recognising that the running of the workshops, carrying out of the research project, and subsequent presentation of data back to the institution would be carried out for free. As institutions would have access to the results of the research and have their students hopefully benefit from these workshops, they were asked to fund the incentives. When discussing these costs, it was emphasised how such work could be allocated to their Access and Participation Plan evaluations. All English universities need to agree an Access and Participation Plan with the Office for Students, the Higher Education Regulator in England. As part of this, institutions need to spend a certain amount of money on evaluating their work on access and participation. In addition, recent communications from OfS prioritises independent and external evaluation (Office for Students, 2022b). Each institutional contact signed off these budgets and provided the costs towards these incentives for students, meaning that no additional or external funding was required for the project.

Developing the interventions

As recognised through the ToC, the intention was to develop a workshop intervention that could develop students' agency in how they built belonging at university – agentic belonging. This centred on helping students to better understand their own belonging needs – their preferences, and how these would be different for each student – and awareness of opportunities to build belonging within the university context.

At the point of developing the workshops, interventions specifically designed to address aspects of student belonging were still in their infancy, with few published studies adopting this approach. One such study was a randomised-control trial approach by Murphy et al. (2020) which introduced a social-

belonging intervention that led to participants reporting higher levels of belonging and continuation rates. Over recent years, numerous other experimental studies have reaffirmed the positive impact that these social-belonging interventions can have on increasing students' sense of belonging and academic outcomes (Chrobak, 2024). The notion that underlies these interventions is that by addressing how belonging changes over time, and normalising the idea that students may face challenges and barriers to their belonging, participants will then be better prepared to face those challenges (Marksteiner et al., 2019; Murphy et al., 2020; Strayhorn, 2021; Chadha et al., 2024; Chrobak, 2024). Practically, these interventions often achieve this by using stories from students in subsequent years of study, discussing barriers that they faced and how they overcame them (Tontodonato and Pringle, 2024). This aspect of these social-belonging interventions was utilised within the workshop for this study.

This study also emulates previous studies that have utilised a study skills intervention to act as a 'control' workshop (Murphy et al., 2020). However, as noted already, this study takes a quasi-experimental approach, rather than running an RCT. The content for the study skills workshop was taken from existing study skills support interventions, which are well-established within higher education (Murphy et al., 2020; Donoghue and Hattie, 2021). In addition to building on the designs of workshops utilised in the studies above, the author worked with staff within the Middlesex University Learning Enhancement Team to understand topics that they covered within study skills development programmes.

Given that belonging workshop interventions were still in their infancy at this point in the study, the belonging workshop was designed anew utilising the theoretical framework of ecological systems discussed in the previous [literature review chapter](#). The Bronfenbrenner model of human ecological development (Figure 3.5) was cited by multiple different authors to understand numerous aspects of how students would – or would not – be able to build belonging at university (Hamwey et al., 2019; Mulisa, 2019). Firstly, the model recognises the different spaces, relationships and identities that exist outside of university where students may already have built a sense of community before starting their studies. Secondly, the model recognises the broader systems that affect everyone in diverse ways, again affecting one's needs and experiences. Finally, the model emphasises how we must consider how development – more broadly and of our sense of belonging – takes place over time. All these aspects of the model were brought into how the belonging workshop was designed; emphasising how students need to consider their existing domains of belonging before starting as a student, how each student's belonging needs are individual to them, and how belonging changes over time.

The workshops were built up of a series of activities. This was crucial for students to find the sessions interactive, engaging, and fun to ensure that they had a lasting impact and chance to affect the subsequent actions that students took. Given the experimental nature of the newly developed belonging workshop, this was piloted with a group of paid student ambassadors, prior to its usage in this research project, and changes were made based on students' feedback of their experience of the workshop. Within each workshop, content was segmented based on the institution that students were studying at. For example, there was an activity in the study skills workshop around spaces that are conducive to good studying practices, which swapped in images of popular study spaces from each university's campus. More details about how the running of the pilot led to enhancements is included within the results of [Chapter 4](#). A practitioner toolkit has also been developed to enable replication of the workshops in other contexts ([Appendix 3.1](#)). This has been modelled on the structure of intervention toolkits created as part of the multi-institution #IBelong project (Thomas, 2022).

Bronfenbrenner Model of Human Bioecological Development

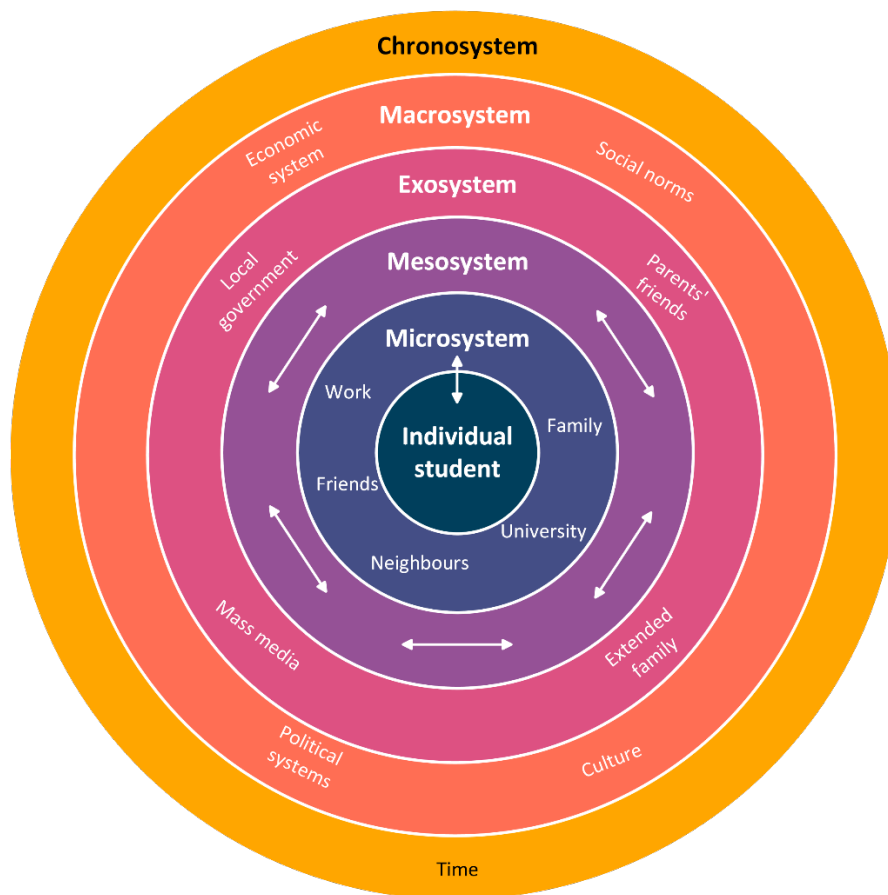


Figure 3.5 - Adaptation of Bronfenbrenner's ecological model of human development for the university context

Participant recruitment and selection

Close collaboration with each institution's student engagement teams ensured that the timing and promotion of the workshops was appropriate for the respective contexts, so that numbers of participants could be maximised. Workshops were positioned to students as post-arrival welcome events, advertised to all new, undergraduate students. A variety of methods were used to promote the workshops to students, which included messages featured within e-newsletters, promotions through student mobile applications, post on social media and in-person promotion through student Welcome ambassadors. More reflection on the promotion of workshops is discussed within the process evaluation section of [Chapter 4](#). Based on the author's own experience of running student events within the Higher Education sector, it was expected that roughly 40% of those who signed up for the workshops would not attend; a 40% attrition rate. Full details of numbers of participants can be found in Table 3.1. A full flow-diagram of numbers of participants and responses throughout the research project can be found in *Figure 3.6*.

Institution type	Widening participation institution	Selective-recruiting institution	Total
Total registrations	224	66	290
Belonging workshop registrations	103	13	116
Study skills workshop registrations	121	34	155
Total attendances	51	12	63
Belonging workshop attendances	33	3	36
Study skills workshop attendances	18	9	27
Total attrition rate (% non-attend)	77%	74%	78%
Belonging workshop attrition	68%	77%	69%
Study skills workshop attrition	85%	74%	83%
Non-attenders continuing in study	27	11	38
Total students remaining in study	78	23	101

Table 3.2 – Participant registration, attendance, and attrition numbers

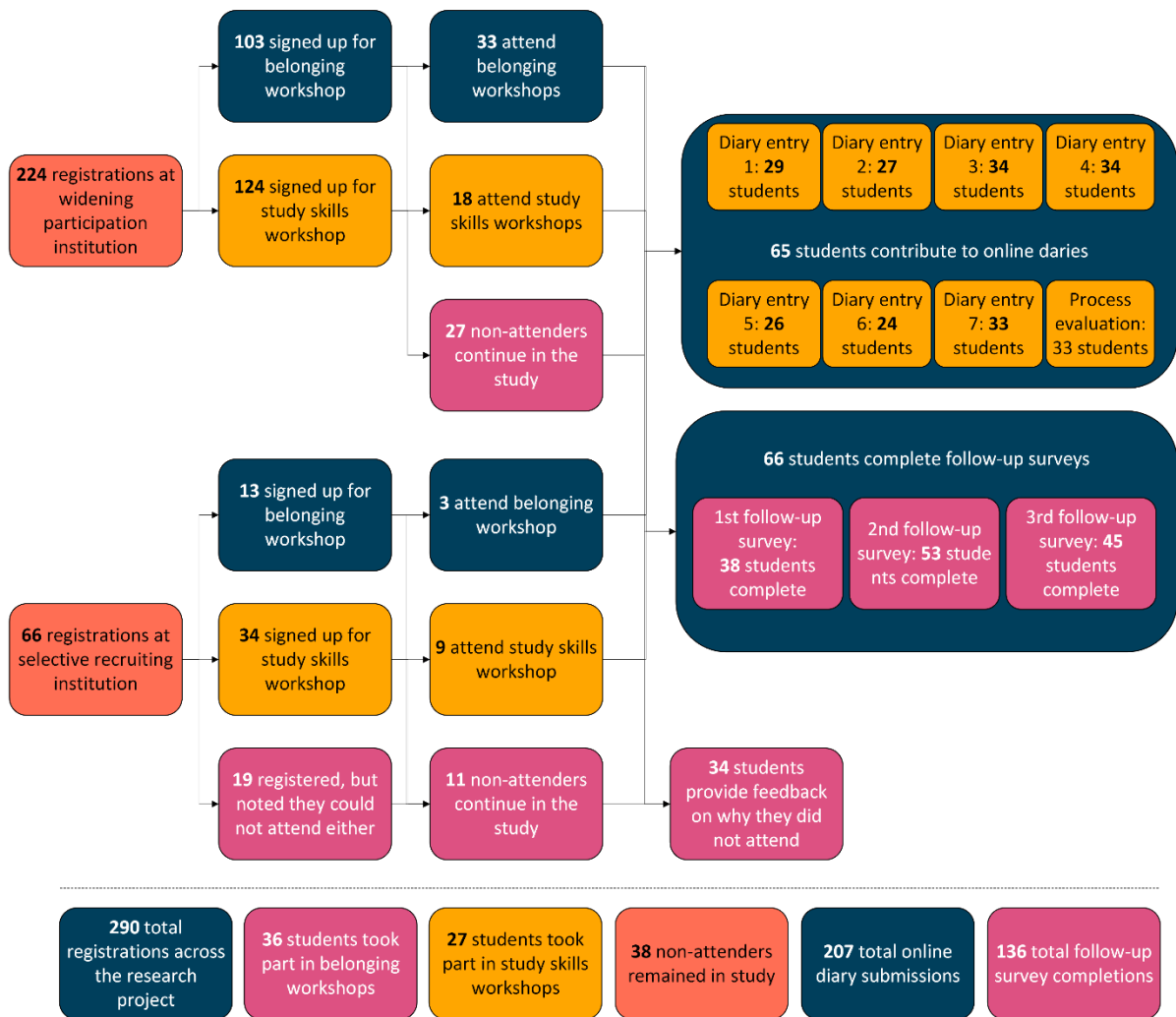


Figure 3.6 – Summary of participant numbers at each part of the overarching study

Students signed up to be part of the research project through an online Qualtrics form. This Qualtrics form was structured into three sections. Firstly, participants could read more information about the overarching research project and consent to take part as a participant. Secondly, participants were told about the workshops available for them to attend. Through careful setting up of this booking system, it was possible to ensure that students were not able to book on to more than one of the workshops. Close collaboration with staff at each of the institutions also ensured that the workshops did not clash with any other important welcome activities, as this could have affected students' ability to take part. Finally, participants were asked to complete a set of questions to gather demographic details. Further details about the demographic questions can be found in the subsequent section. The decision was made to not ask students about their baseline levels of belonging at this point. The rationale behind this decision was to separate out the process of asking students about their sense of

belonging from asking for demographic variables to reduce the likelihood of priming biases in their responses (Spiegelhalter, 2019).

Once students had signed up to their respective workshop via the Qualtrics form, they were sent an automated confirmation message confirming details of their workshop. A further email reminder was sent to all participants the day before their workshop was due to take place. As discussed within [Chapter 4: Intervention Effectiveness](#), attrition rates for the workshop were higher than expected, so a revised approach was utilised to increase the numbers of students who remained in the study. All students who had signed up to be part of the study, but not attended their registered workshop, were sent a subsequent email asking if they still wanted to take part in the research project. Students who wished to remain in the study were asked to complete a follow-up Qualtrics form, which captured baseline readings of belonging and asked comparable questions that were posed to participants at the end of each of the workshops. These baseline readings from non-attending students are used for analysis in [Chapter 4](#). Within [Chapter 4](#), regression analysis is carried out to assess whether students' likelihood to attend workshops varies by demographic characteristics and baseline levels of belonging. Some feedback from non-attenders as to why they did not attend the initial workshops were also captured at the point that participants agreed to continue with the study, which is discussed within the process evaluation section of [Chapter 4](#).

Demographic data collection

The demographic data that was collected from participants at the point of registration is as follows:

- first-generation status (how many parents or caregivers attended university)
- age (whether they are a mature student or not)
- gender
- length of commute (in time)
- fee status (whether they are international or UK students)
- and prior schooling (whether they attended private or state school)

These demographic details were included within analyses in subsequent chapters as a route to establish whether differences between the intervention groups may be explained by demographic variables. This helps to mitigate the risk selection bias within the quasi-experimental nature of the study. The demographic categories above were selected due to their prominence in the literature as potential factors that affect students' ability to build belonging. Due to ensuring that ethical approval

could be agreed for the study, no special category data (e.g. sexual orientation or ethnicity) was collected within this research project.

The demographic variable of whether students are first in their family to go to university is not entirely unproblematic, due to the varying definitions of what it means to be a 'first-generation' student (O'Shea, 2016). An analysis by Toutkoushian et al. (2021) in the US context found that whilst across all definitions of first-generation students they were less likely to graduate than non-first-generation counterparts, it did matter whether parents just enrolled in a higher education course or completed their degrees and whether it was one or both parents who did so. For the purposes of this study, participants were asked how many parents or caregivers attended university. This allowed testing across some of these previous distinctions in how first-generation status is defined.

Methods – Introduction

As discussed within the introduction for this methodology chapter, there are methodology sections within each of the four results chapters of this thesis. This decision was made to ensure that full details of the methodological approach could be expanded on before highlighting the results from the analyses carried out. Within this overarching methodology chapter, some details of the methods used in each of the four results chapters are discussed, but not in the same level of detail as is found within those chapters themselves. The discussion within this chapter centres around how methods were utilised to fit within the overarching study design. Whilst risks and limitations of these methodological approaches are discussed throughout this chapter, [Appendix 3.2](#) provides a more thorough consideration of challenges that were identified in the initial stages of study design and how they were mitigated. This included possible threats to validity brought about through students' self-selection bias, bias from the researcher delivering the interventions, and whether the timeframes of the research limit external validity. A further discussion of threats to validity across the whole research project takes place in [Chapter 8 - Discussions and conclusions](#).

Methods utilised in [Chapter 4](#): Intervention effectiveness

Process evaluation

The first half of [Chapter 4](#) utilises a self-reflective process evaluation approach to document the journey of developing the interventions, recruiting participants, and running the workshops. Whilst impact evaluation deals with the assessing the effectiveness of interventions, implementation and

process evaluation helps to assess whether interventions are being implemented as intended and provides useful learnings to revise and improve activities in the future (TASO, 2023). This process evaluation was designed in a way that minimised requests on participants for additional time and effort. The process evaluation primarily consists of reflective diaries created by the researcher during the period of designing and implementing the workshop interventions. This provides a symmetry between the experiences of the researcher and participants, who were also invited to complete online diaries. In addition to this, two sources of feedback from students were included within the process evaluation. Firstly, how feedback provided from student ambassadors following the piloting of the belonging workshop led to design enhancements. Secondly, through discussion of the reasons provided by participants who did not attend either of the initial workshops.

Evaluating intervention effectiveness

At the end of each workshop, all participants were asked to complete a short questionnaire to see how well they received the workshops and whether the learning objectives of the sessions were met (Table 3.3).

Questions for treatment workshop participants (student belonging)	Questions for control workshop participants (study skills)
All questions were asked as statements on a five-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree (as this mirrors the same structure in Yorke’s sense of belonging scale, discussed later in this chapter).	
1. I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university)	1. I am able to describe a variety of approaches to improving studying at university
2. Every student has a different path to belonging at university	2. It is worth investing time and energy in finding the right study habits for me
3. I have a clear idea of what my own belonging needs may look like	3. I understand strategies for developing a positive approach to studying
4. I understand some of the potential opportunities and barriers to my own belonging needs being met at university	4. I have an idea of study approaches that I would like to apply to my own learning
5. I found the workshop fun and engaging	5. I found the workshop fun and engaging
6. I know a lot more about being a successful student than I did before this session	6. I know a lot more about being a successful student than I did before this session

Table 3.3 – Questions asked to participants at the end of each workshop to assess whether learning outcomes had been met

As these post-workshop questionnaires have been created specifically for this study, they have not been externally validated. This poses a risk, as there is an unproven assumption that they do actually measure successful completion of the learning outcomes. Whilst some research suggests that students' self-assessment of their learning in workshops can be reliable (D'Eon et al., 2008), this is often context dependent (Lam, 2009). Despite this, self-assessment may be the "only feasible method" for evaluating the success of short workshops (Lam, 2009, p. 103). Given the scope of this research project, even though such scales have not been validated, the ability to check whether the agentic belonging intervention changed how students understand the concept of belonging is an important part of the study's ToC. Furthermore, given the positioning of belonging as individual and subjective within the [literature review chapter](#), it is hard to foresee how any other method of measuring understanding around belonging, beyond self-assessment, would be appropriate.

Within [Chapter 4](#), regression analyses are carried out to assess any connections between demographic variables and learning outcomes being met, as well as connections between initial baseline levels of belonging and learning outcomes being met. Furthermore, learning outcome scores between attendees and non-attendees are also analysed. Finally, Cronbach's alpha scores for the learning outcome scales are calculated to assess internal reliability.

Methods utilised within [Chapter 5](#): Actions students take to belong

[Chapter 5](#) addresses how students take actions to belong at university and whether prior attendance of the agentic belonging intervention affected their agency around building belonging. A qualitative approach was taken to answer this research question, which involved reflexive thematic analysis (RTA) of two sources of data: 1) longitudinal online diaries and 2) open text responses within online questionnaires. RTA was selected given its fit with the individual and constructivist nature of belonging, as well as its flexibility (Braun and Clarke, 2006 and 2019; Byrne, 2022). Within the last online diary request to participants, an additional set of questions were added asking students to reflect on their experience of participating in the online diaries, which could contribute to a process evaluation.

When originally designing this aspect of the research project, a risk was conjectured around whether participants would not contribute enough to the online diaries. To remedy this potential risk, a back-up plan was created utilising semi-structured interviews to explore any contributions from the online diaries that was unclear or could benefit from more detailed reflections from participants. However,

these interviews were not required due to the better-than-expected participation within the online diaries and depth of detail provided by participants. Sixty-five students contributed towards the qualitative aspect of the study, which was analysed in [Chapter 5](#). A top-level summary of numbers who contributed to the online diaries and open text questions within surveys can be found in Table 3.3, with more detail available within [Chapter 5](#).

Institution type	Widening participation institution	Selective-recruiting institution	Total
Total participating students	45	20	65
Total number of diaries completed	121	86	207
Average number of diaries completed per student	2.69	4.30	3.18
Total number of open text questionnaire responses	62	34	96
Average number of open text questionnaire responses per student	1.38	1.7	1.48
Total number of responses	183	120	303
Average responses per student	4.07	6	4.66

Table 3.4 – Participant numbers within online diaries and open text responses within questionnaires

Longitudinal online diaries

An online diaries method was selected as the preferred approach for gathering rich, qualitative data from participants due to its flexibility for participants and ability to address the gap in longitudinal research around student belonging. More of the benefits and rationale behind this approach are discussed within [Chapter 5](#).

All research participants were invited to take part in the longitudinal online diaries, which involved seven separate invitations for them to contribute their reflections throughout their first academic year – with invitations being spread three weeks apart. Participants were given the choice of how they wish to provide their reflections – which could take the form of either blogs, video diaries or audio recordings; one of the flexible benefits of using the online diaries approach. Participants were given the option of which medium they wanted to use for their reflections, as it was theorised that this would help encourage more regular participation, with students being able to play to their strengths and preferences. Participants were invited to complete the online diaries by email and were reminded each time about the £5 Amazon voucher incentive, which they received after each completed diary

entry. All diary entries contained a set of constant prompts around student belonging, as well as one unique prompt for each different diary entry. [Chapter 5](#) provides more detail on the prompts used.

Open text questions within surveys

In addition to the online diaries, qualitative data was gathered through the inclusion of two open text questions within online questionnaires that were sent to all research participants. These questionnaires were developed primarily for gathering quantitative data for analyses within [Chapter 6](#), however two open text questions were added, which were analysed as part of the RTA in [Chapter 5](#). These two questions were:

1. Briefly describe some of the steps that you have taken since [month of last questionnaire] to build relationships at university and find spaces (either physical or online) where you feel that you belong?
2. Is there anything more that you want to do next to develop your sense of belonging at university? If so, briefly describe what.

Whilst the longitudinal online diaries aspect of the study was designed with the expectation that it would gather incredibly rich data from participants, these additional open text questions were added to increase the total number of potential data-points that could be analysed and also to allow all students to reflect on their own actions to build belonging separate to the more in-depth online diaries.

Process evaluation of online diaries

Within the last online diary collection point, participants were asked to complete a brief set of additional questions reflecting on their experience of taking part in this aspect of the study. This was built into the study design to address the conjecture that reflecting on one's own belonging may influence sense of belonging. More details about the questions asked within this process evaluation and the results themselves are presented within [Chapter 5](#).

Methods utilised within [Chapter 6](#): Changes in belonging

The third results chapter of this thesis aims to explore what effect attendance of the agentic belonging workshop has on subsequent changes in levels of belonging. This is achieved through quantitative

analysis that utilises regression models to evaluate the connections between students changing belonging, as measured through four questionnaires across their first year of undergraduate study, against whether or not they attended the agentic belonging intervention, the extent to which they felt learning outcomes of these workshops were met, and demographic variables (as already discussed in the sections within this methodology chapter around [Chapter 4](#)).

Quantitative analysis of Yorke belonging scales

For the online questionnaires within this study, a validated belonging scale developed by Yorke (2016) was utilised. The full scale developed by Yorke has eighteen questions, split evenly between the topics of belonging, engagement, and self-confidence. Within this study, the six belonging questions were asked to participants:

1. I feel at home in this university
2. Being at this university is an enriching experience
3. I wish I'd gone to a different university (reversed scale)
4. I have found this department to be welcoming
5. I am shown respect by members of staff in this department
6. Sometimes I feel I don't belong in this university (reversed scale)

Scale responses: strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree

This scale was selected for several reasons. Firstly, unlike other belonging scales such as Goodenow (1993), it has been created specifically for and tested within the context of UK higher education. Secondly, the questions recognise the multi-dimensional nature of belonging, which was identified within the [literature review chapter](#) as an important part of how this concept should be defined. Towards this point, questions cover topics of both relationships with others and spatial belonging. Finally, recognising the conceptualisations of belonging as dynamic, it was important to be able to run this survey with participants multiple times. Towards this end, the scale needed to not be burdensome or lengthy, as this would have increased the attrition of participants. The Yorke scale, at only six questions long, is the shortest of recognised scales around belonging within an educational context.

Finally, an existing, validated scale was chosen, as it was believed to be infeasible on top of the scope of the rest of the study to create a new scale and undergo similar levels of rigorous validation. Even if this were feasible, it would not be desirable, given the concerns discussed in the [literature review chapter](#) about the already proliferating number of different scales used to measure students' sense of belonging. The Yorke scale has been piloted to remove unnecessary questions, undergone test-retest

reliability evaluation and produced several expected outcomes when split by demographic groups, such as higher confidence levels for non-first-generation students (Yorke, 2016).

Whilst it is common for subsets of scales to be used in academic research, especially in the context of student belonging research, as noted through the literature review, the Yorke scale has only been validated as one whole scale (including the self-confidence and expectations question sets). This has the potential to alter the results that students would provide, due to the item bias effect – where the order of questions in a survey may affect how people respond due to context or priming information in recently asked questions (Spiegelhalter, 2019). To address this, Cronbach's alpha scores are calculated in results chapters to assess the internal reliability of this subset of the Yorke scale in the context of this study.

Participants who attended either the belonging or study skills workshop were asked to complete this scale at the beginning of their session to provide a baseline recording of their sense of belonging. Students who did not attend their registered workshop, but wished to remain within the research study, completed the Yorke scale as part of an online Qualtrics form that was sent to them when they confirmed their desire to continue within the project. Participants were then invited to take part in the follow-up questionnaires by email, which included the same Yorke belonging scale questions. Each participant who did not initially complete the follow-up questionnaire was sent a reminder email to improve participation levels.

Inclusion of sentiment analysis from online diaries

As part of the analyses of qualitative data from online diaries within [Chapter 5](#), sentiment analysis was carried out on all contributions from students. Within the quantitative analyses of [Chapter 6](#), the data of this sentiment analysis is analysed alongside data from the online questionnaires to increase the number of belonging data points. This not only adds to the analyses of [Chapter 6](#) by providing a more in-depth picture of how students' sense of belonging changes over the first year of study, but it also allows a novel investigation of the comparability of these two very different methods of eliciting reflections on sense of belonging from students. More detail about this analysis is captured within [Chapter 6](#).

Methods utilised within [Chapter 7](#): How belonging links to retention

The final results chapter of this thesis is also quantitative in nature and utilises regression analysis to examine the connections between students' sense of belonging and their continuation or non-continuation into their second year of undergraduate studies. Through working with the two partnering institutions, continuation data was collected for all students who took part in the project. This was achieved through the development of data sharing agreements between the University of York and the two participating institutions. More information about exactly how retention was defined and how this data was collected is included within the methodology section of [Chapter 7](#).

Students' changing levels of belonging, their intervention status – in essence, which workshop they attended, or whether they were part of the non-attending group – demographic variables, the extent to which learning outcomes from workshops were met, intentions to persist and eventual continuation status are brought together within this chapter using data visualisation and regression models.

Quantitative analysis of a bespoke intention to persist scale

For the follow-up questionnaires within this research study, in addition to the Yorke belonging scale, a series of questions were posed to students about their intention to persist at university. Intention to persist, and its relationship with student belonging, has been explored in a variety of existing research studies (Hausmann et al., 2007; Booker, 2016; Russell and Jarvis, 2019; Boyd et al., 2022; Kahu et al., 2022; Pedler et al., 2022). However, there is no consistent approach used across these studies to measure intention to persist. Many studies use single-item measures, which are often criticised as being less reliable than multiple-item scales (Lingat et al., 2022).

To build an intention to persist scale, questions were taken from existing studies around this topic:

- I intend to complete my course at university – taken from Hausmann et al. (2007)
- I sometimes consider withdrawing from university (reversed) – adapted from Nemtcan et al. (2020), changing 'drop out' to 'withdrawing', as this is more neutral language, and removing the term 'before graduation', as this felt out of place in a question set only being issued to first-year undergraduate students who may not yet be thinking much about graduation
- I sometimes consider changing my university (reversed) – adapted as above
- I have doubted whether I should stay at university (reversed) – adapted from Foster et al. (2012)

Within [Chapter 7](#), Cronbach's alpha coefficients are calculated for the intention to persist scale to assess its internal validity.

In most studies, such as those referenced above, intention to persist is measured as a proxy for eventual student retention. This suggests that intention to persist is utilised when study design may preclude the use of actual retention data. Given that this thesis has been designed to include retention data, it could be argued that intention to persist data is redundant. However, as is discussed more within the [literature review chapter](#) of this thesis, there are aspects of the connections between belonging and intention to persist which are unexplored.

There is also a benefit of the inclusion of intention to persist data, above retention data, which is especially relevant for practitioners. Whilst there is a strong predictive relationship between students' intention to persist and eventual retention, data around whether students have doubted staying at university can be accessed much sooner and therefore potentially addressed before it becomes too late (Foster et al., 2012). Intention to persist can be considered a lead indicator, whilst retention is a lag indicator. Given the focus of this overarching thesis to provide recommendations for practitioners, there is a potential benefit of being able to assess how belonging and intention to persist interact and how this association varies based on students' workshop status. It was therefore decided that intention to persist would be also included within the data collection and analysis for [Chapter 7](#).

Ethical considerations

Ethical approval for this project was sought from and approved by the University of York Education Ethics Committee. Whilst ethical considerations have been discussed throughout this methodology chapter, a few additional points are added here around how ethics were intentionally designed into this project.

Participant autonomy

Participant autonomy was encouraged throughout this research to ensure that any time commitments are reasonable to the individual participant. Participants were given the ability to choose which parts of the research they took part in by having them independently incentivised. For example, with the three follow-up questionnaires, a participant could choose to not fill out the second questionnaire if they are too busy at that point in their studies, but still fill out the third questionnaire and be incentivised for it. Autonomy was also engendered through the qualitative aspects of the study, which

allowed participants to choose the medium of their online diaries that works best for them. By allowing participants to choose between blogging, video, or audio recordings, they were able to retain autonomy in how they share their story and pick the medium that they felt most comfortable with.

In addition to the above, dates for the longitudinal online diary prompts and follow-up belonging questionnaires were based around the student academic calendar, avoiding times when students were likely to be most busy, such as assessment periods). The scheduling of the workshops at the beginning of the project was also agreed with the partnering universities to ensure that they did not clash with any other important welcome activities. The nature of data collection methods – online surveys and online longitudinal diaries – also meant that participants could choose when they completed them (within a given window). This further helped to ensure that participants could manage their participation within the study alongside all their other commitments.

Participant beneficence

The principle of integrity was utilised to maximise participant beneficence in this study. Participants were told about the full research project when signing up – not just the workshops aspect. Learning objectives for each workshop were made clear at the beginning of the sessions and participants were told both about their ability to withdraw from the research at any time, as well as how they could maximise its flexibility so that it could fit around their own lives. This continued openness ensured that participants were able to trust in the research project. Within workshops, participants were introduced to the idea of higher education research, recognising that for many students this may be the first time they had acted as research participants. This both ensured that there was no risk of deception within the study and hopefully increased participation, as students saw this as an opportunity to learn more about how research works within a higher education context.

In addition to the incentives that are documented earlier within this methodology chapter, participant beneficence was also ensured the design of the workshop interventions. The study skills workshop was chosen as it is a topic that is known to be beneficial for students in higher education. There is significant academic research that shows the benefits of additional study skills courses for student success (Gettinger and Seibert, 2002; O’Gara et al., 2009). To ensure that the more experimental belonging workshop was also likely to provide benefit for students, it was developed based on the results of the extensive literature review of how to build belonging amongst students in higher education. Furthermore, this workshop was piloted with a group of student ambassadors who provided positive feedback, about how useful it was, as well as constructive feedback for

improvements, which were utilised to further develop the intervention before running it as part of this research project. Despite the belief that both workshops would be beneficial to participants, to ensure proper ethical delivery of the project, the workshops were still presented to participants in a neutral way.

The design of the study also considered how to avoid any risks of harm to participants. Whilst participants either within the workshops or follow-up activities were not probed specifically on topics that were likely to cause distress, supporting signposting was still included. For each participating institution, a set of messages were agreed that were then included in all participant communication, signposting students to appropriate support services at their own university if they experienced any distress throughout the research project.

Data management approach

Once data collection was completed, all personal data, such as names and contact details, that had been provided by participants was deleted to ensure that data was anonymised. Participants who wished to withdraw from the project or have their personal data deleted were told that they could request this at any point before this point at which personal data was deleted; however, no participants requested this. The timeframes for this were specified to participants within the information sheets provided to them at the beginning of the project. Participant ID numbers were assigned to participants at the beginning of the project so that all contact and demographic data about the participants could be stored in separate documents.

In addition to anonymising the source of the data by deleting personal data and providing ID numbers for each participant, a process was also undertaken to anonymise all qualitative data. Firstly, audio recordings and vlogs from the participants were transcribed and saved in text documents. Following this, any identifying information was redacted from the data, following best practice (Elliot et al., 2016).

All participant data files were saved within secure folders on institutional Google Drive accounts. All participant data was submitted through online Qualtrics forms, which only the researcher had access to. Whenever documents were worked on as part of data analysis, these were saved as password protected files on a secure personal laptop and backed up regularly onto the Google Drive folders on a regular (weekly) basis.

A separate data sharing agreement was created by the University of York to allow secure transfer of continuation data from each of the two participating institutions. For long-term data storage, all files will be maintained within the University's Research Data York service.

Conclusion

This chapter has laid out the philosophical foundations that have grounded the methodological approach to this study. A constructivist realist paradigm has been utilised to balance the needs of this study to capture how participants construct their own journeys to and understandings of belonging, whilst recognising the need to evaluate the extent to which the agentic belonging intervention leads to measurable changes in student outcomes. These philosophical positionings led to the study being designed as a mixed-methods, longitudinal and quasi-experimental piece of action research. A theory of change approach has been adopted to allow evaluation of the agentic belonging workshop activity to be connected to short-term understanding of learning outcomes, medium-term changes in student behaviours, long-term changes in students' levels of belonging, and eventual impact through improved student continuation.

This chapter has laid out how practical details for the project, such as timeframes, participating institutions, participant recruitment and incentivisation were selected. Descriptive data around numbers of participants and visualisations of the various aspects of the research that they participated within have also been provided. The latter half of the chapter introduced the reader to the different methods that are utilised in subsequent chapters. The chapter then ended with a reflection on identified methodological risks and ethical considerations.

The next four chapters address each of the four research questions of the thesis in turn. The following chapter begins this by utilising a process evaluation and quantitative analyses to explore the extent to which the agentic belonging workshop intervention had an impact on students' understanding of belonging in the short term.

Appendices for Chapter 3

[Appendix 3.1](#) – Implementing the agentic belonging workshop - Toolkit for practitioners

[Appendix 3.2](#) – Expected challenges and limitations of the research design, with planned mitigations

Chapter 4 – Intervention effectiveness

Introduction

The overall research question answered through this chapter is: to what extent can workshop interventions enhance first-year, undergraduate students' understanding of agentic belonging? For each results chapter within this thesis, a number of sub-research questions have been developed to focus the specific analyses being conducted. For this chapter, the sub-research questions are:

- RQ1.1: What practical insights can be derived from a process evaluation of the belonging workshop intervention?
- RQ1.2: What influences new undergraduate students' motivation to register for and attend workshop interventions?
- RQ1.3: To what extent can workshop interventions influence students' understanding of belonging?
- RQ1.4: To what extent are the belonging workshop learning outcome scores explained by students' demographic variables and baseline levels of belonging?

After a top-level methodological section, the chapter is split into two halves. Firstly, the methods and results of the process evaluation, followed by the quantitative analyses that comprise the impact evaluation. Figure 4.1 demonstrates how these two parts of this chapter address the research questions.

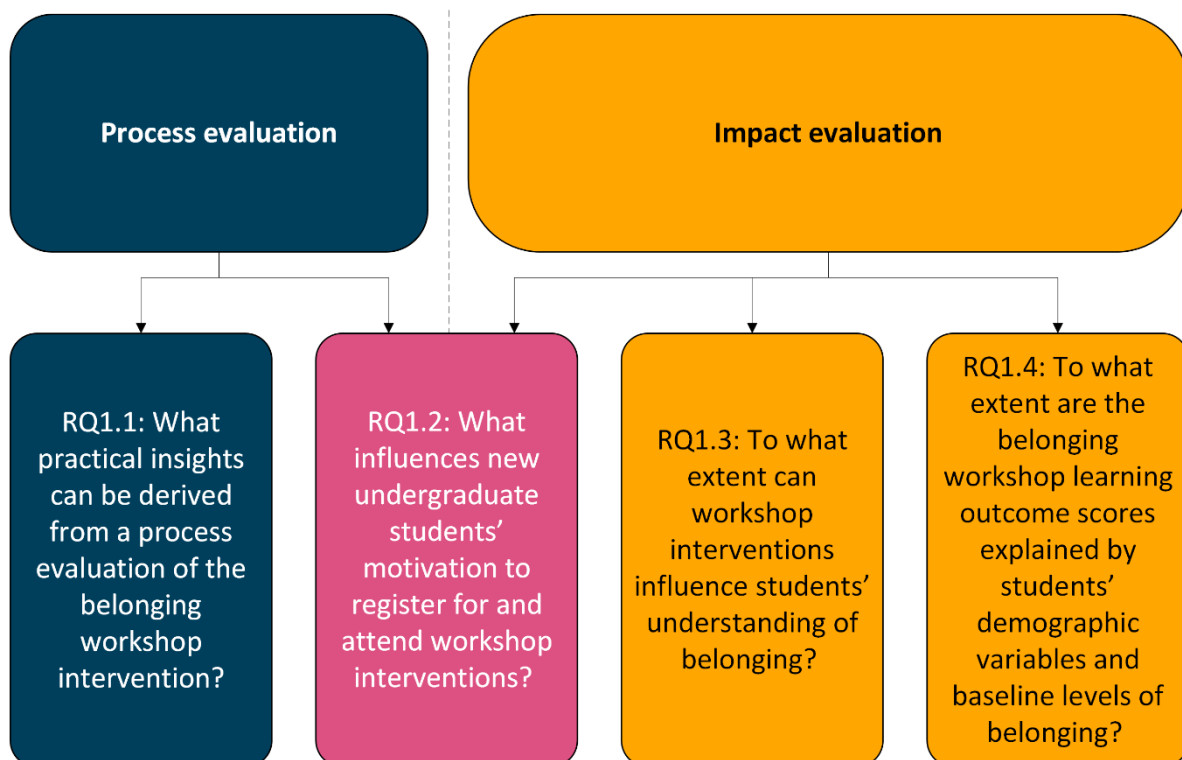


Figure 4.1 – How the four sub-research questions are addressed by the process and impact evaluation aspects of this chapter

Times of transition are well recognised as being challenging for students' sense of belonging (Russell and Jarvis, 2019; Tang et al., 2022). To address this challenge, universities invest heavily in effective delivery of supportive orientation and induction activities to support positive development of students' sense of belonging (Johnson et al., 2007; Slaten et al., 2016; Cruz and Grodziak, 2021). Despite the good intentions behind delivery of such activities early on in the student journey, there is often so much offered to students during this period that navigating the vast array of opportunities and messages can be challenging (Read et al., 2003; Graham, 2022; Zhang et al., 2022). Universities therefore have a role in helping students to reflect on their own needs and prioritise accordingly. There is a risk during this liminal stage that if students don't understand, and have confidence in pursuing their own path to building belonging, then they will focus on 'fitting in' to pre-defined institutional cultures. Furthermore, developing a sense of belonging at university takes time and students often face many barriers to this (Tao et al., 2008; Carales and Nora, 2020; Mulrooney and Kelly, 2020; Taylor et al., 2022). If students do not start university with realistic expectations of when they will begin to develop their sense of belonging or when they may face challenges, this could lead students to assume that feelings of loneliness are their own fault (Marksteiner et al., 2019; Murphy et al., 2020; Strayhorn, 2021).

This chapter provides a case study of designing, delivering and evaluating an experimental belonging intervention designed to address the above problems. As has been articulated within the prior [methodology chapter](#), new undergraduate students at two English universities were invited to register for either a newly developed student agentic belonging workshop or a control workshop on study skills. The purpose of the belonging workshop was to help students better understand their own belonging needs and to begin to prioritise how to fulfil these through opportunities provided to them at university. The intervention also addressed the dynamic nature of belonging and challenges that students may face to their sense of belonging at university. The approach draws on critical self-reflection theory in the context of student transitions (Cheng et al., 2023). This chapter utilises a mixed-methods approach to provide a self-reflective process evaluation on the development and delivery of the belonging workshop, as well as impact evaluation through linear regression models on initial effectiveness (TASO, 2023).

Process evaluation aspects of this chapter document how feedback was gathered from students to enhance the delivery of the agentic belonging intervention – including a practical toolkit for practitioners. Student feedback emphasised the importance of student voices within the content of the workshop and encouraged even more use of interactive activities to help maintain engagement. The researcher also reflects on the recruitment of participants and the higher than expected attrition rate. A brief summary is included on reasons that students were not able to attend, as well as deliberations on the challenge of recruiting participants in a multi-institution research project. The discussion also contributes to student communications theory by exploring how the marketing funnel (Strong, 1925) applies to the context of extra-curricular university activities.

Visualisations across each demographic characteristic and by institution were provided to show the differences from overall population demographics to those who registered and finally to those who attended. Linear regression models were also developed to investigate the factors that predicted workshop registration and attendance. Attrition – the percentage of sign-ups who did not attend – was high for both workshops, although it was significantly lower for privately educated students and students over the age of 40. This suggests that age and prior education background may influence the value students place on such extra-curricular activities and/or barriers that these students face to engaging, such as needing to work or perform caring responsibilities alongside their studies. Whilst students' baseline belonging levels did not predict attendance, they did predict learning outcome scores for both workshops. This problematises whether such supportive interventions increase inequality amongst new student populations; with those who already belong the most also getting the most out of such workshops.

A promising indicator for the effectiveness of the 'experimental' agentic belonging intervention is that learning outcome scores from this workshop were similarly high compared to those from the study skills workshop – a workshop format that is more established within higher education. Furthermore, linear regression analysis found that three out of four of the belonging workshop's learning outcomes were significantly higher amongst attendees than a control group of non-attendees, even when demographic factors were accounted for. However, Cronbach's alpha analysis of the scale used to measure belonging workshop learning outcomes showed that the scale has questionable internal consistency, emphasising the complexity in understanding the individual and dynamic nature of belonging, as well as the potential need for further work to develop output measures in this area. In summary, this chapter contributes to knowledge, theory and practice by providing a reflective examination of the process of designing, delivering and evaluating a new belonging intervention.

Methodology

Models to guide the structuring of this chapter

Given that this chapter includes a mixture of quantitative data analyses and process evaluation, two models have been utilised to provide a sense of structure. Process evaluations are incredibly flexible in their application (Grant et al., 2020), which means the approach can be used in a wide variety of contexts, but also poses a risk that it is used in an unstructured way. The use of these two models sit underneath the methodological approach of this chapter and have guided how the data analyses and process evaluation approaches combine to address the chapter's research questions.

Firstly, the marketing funnel (Figure 4.2) provides a framework to combine aspects of the process evaluation with data analysis of registration and attendance data. Secondly, the action research cycle model (Figure 4.3) has informed the ways in which the process evaluation aspects of the results, as well as key findings from the quantitative analyses, lead towards the creation of practical lessons for future practitioners, including recommendations for practice within the overall discussion chapter of this thesis. Both of these models are explored further in the rest of this section.

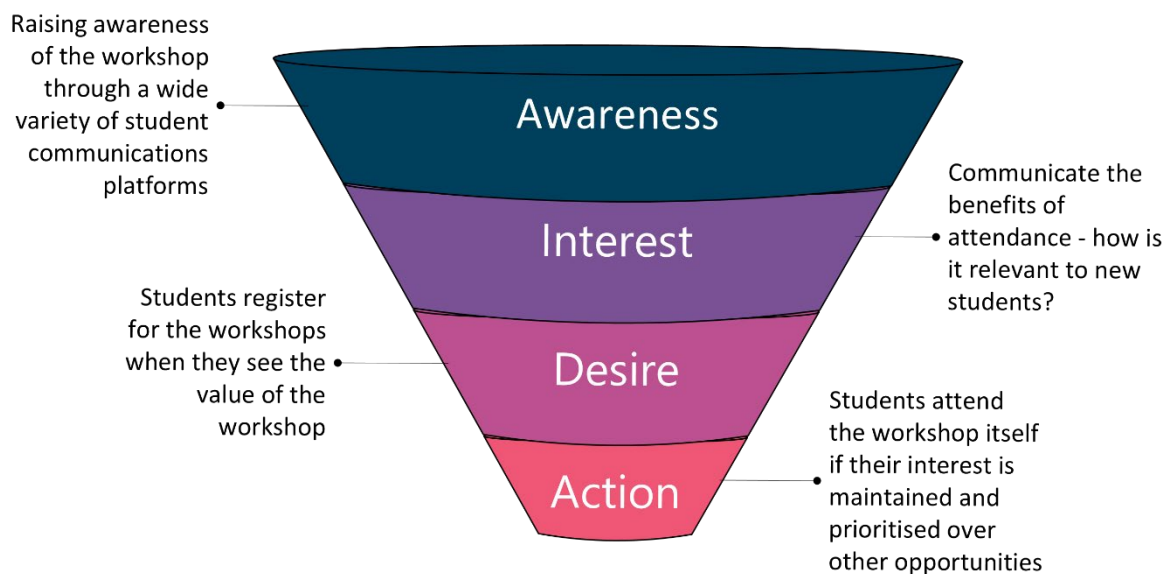


Figure 4.2 – The marketing funnel, developed by Elias St. Elmo Lewis in 1898 and adapted to the context of workshop attendance for university students

The marketing funnel, also known as the Awareness-Interest-Desire-Action (AIDA) model, is a well-used model that has long underpinned approaches to sales and advertising (Strong, 1925). The model is used to plan and critique marketing approaches across a wide variety of sectors, including higher education through use of the funnel to assess approaches to university recruitment activities (Clow, 2013; Al-Thagafi et al., 2020). The AIDA model has even been used as a lens to promote changes in teaching and learning approaches that utilise marketing best practice and gamification to increase students' engagement with studies (Polk, 2018; Piernas et al., 2024). However, in published literature to date there does not seem to be any use of the marketing funnel to help assess promotion of extra-curricular activities for students. Given the increasing number of extra-curricular activities available and recognition of increasing pressures on students' time (Neves and Stephenson, 2023), assessing the effectiveness of our promotional efforts through the theoretical lens of the marketing funnel may help practitioners to better understand the steps that lead to students engaging – or not – with our activities. The model also recognises a balance of responsibilities between different actors; with the first two stages of the funnel requiring action from the marketer and the second two stages requiring action from the student. This mirrors the discussion on belonging and agency within the [literature review chapter](#), recognising aspects that are within students' control and aspects that require appropriate conditions from the university.

Action research is often described as cyclical in nature (Ip, 2017; Levitt, 2019). Starting from early conceptual models around action research, the main steps identified in the process are to plan, act, observe and reflect (Lewin, 1946). From its appearance, the overarching theory of change (ToC) for this thesis suggests a neat sense of linear progression from each stage of the process to the next, however this is an oversimplification. This perception of linearity “does not fully reflect the reality of the on-the-ground, messy and emergent process of implementation” (Ghate, 2018). Instead, this chapter draws on the cyclical model of action research (Figure 4.3) as an underpinning framework to introduce a sense of reflexivity and learning that can aid practitioners. Through the lens of the action research cycle, this chapter can produce a more nuanced appreciation for all aspects of the workshop – its design, delivery and evaluation – and how learnings can aid future implementation (Dickens and Watkins, 1999) of either this or other optional workshops for university students. This model guides all aspects of exploration in this chapter, but especially the process evaluation. Ultimately, the purpose of process evaluation is to encourage future enhancement and refinement (TASO, 2023), which aligns neatly with the concept of the action research cycle that values reflection, planning, and follow-up action.

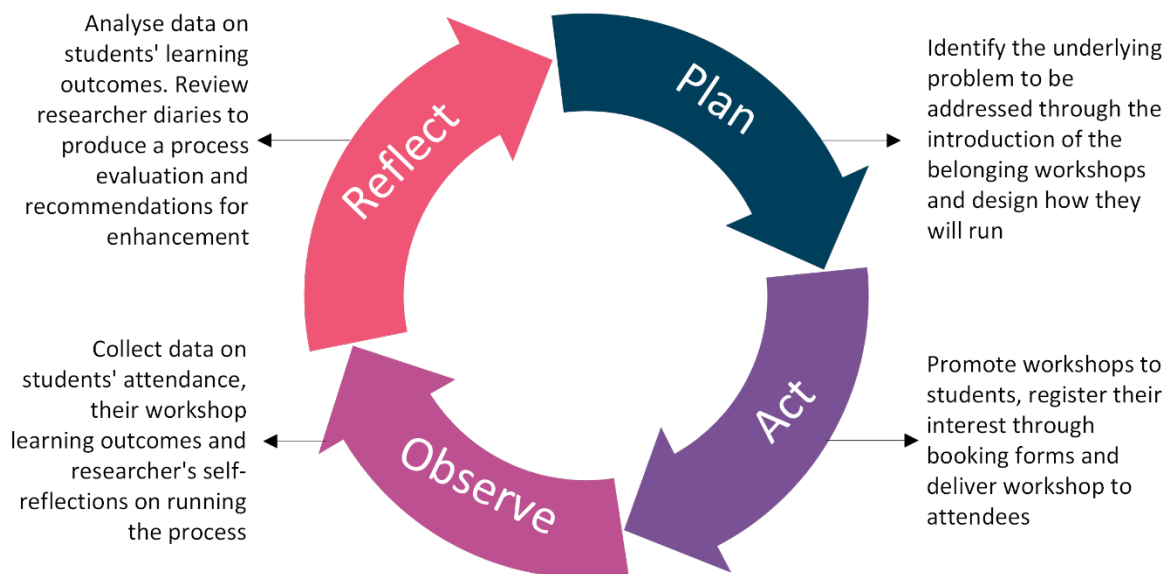


Figure 4.3 – The action research cycle, adapted from Lewin (1946) for the context of extra-curricular workshops for university students

Overview of patterns of participation

All new undergraduate students at two English universities were invited to be part of this overarching research study (n = 5609). In total, 290 students registered to be part of the study (Table 4.1), which involved participants choosing which of the two workshop interventions they wished to attend. Sixty-three participants attended their respective workshop, representing a total attrition rate of 78%. Thirty-eight participants who registered for the overarching study, but did not attend their workshop, still agreed to continue in the study.

Institution type	Middlesex University	University of Southampton	Total
Total registrations	224	66	290
Belonging workshop registrations	103	13	116
Study skills workshop registrations	121	34	155
Total attendances	51	12	63
Belonging workshop attendances	33	3	36
Study skills workshop attendances	18	9	27
Total attrition rate (% non-attend)	77%	82%	78%
Belonging workshop attrition	68%	77%	69%
Study skills workshop attrition	85%	74%	83%
Non-attenders continuing in study	27	11	38
Total students remaining in study	78	23	101

Table 4.1 – Participant registration, attendance and attrition figures

At the point of registering for the study, participants provided basic contact information, ethical approval and demographic details across age, gender, fee-status, commute length, whether they had been privately educated and parents' education status. More detail about why these demographic variables were collected is discussed within the [methodology chapter](#) of this thesis. Table 4.2 shows the demographic breakdown of participants across both institutions. Unfortunately, data on students' age were collected in brackets that do not align with the formal definition of a mature student. According to the Higher Education Statistics Agency, undergraduate students are considered mature if they are 21 or over at the start of their course (HESA, 2022). This limits the ability of the analyses within this chapter around age to be compared with other studies that are using the formal definition of mature students.

Demographic variable		Middlesex		Southampton		Total	
		Sign-ups	Attend	Sign-ups	Attend	Sign-ups	Attend
Gender	Female	146	30	43	9	189	39
	Male	76	21	29	3	105	24
	Other / Prefer not to say	3	0	5	0	8	0
Number of parents or caregivers to attend university	0	124	27	27	2	151	29
	1	43	10	23	4	66	14
	2 or more	46	14	25	4	71	18
	Prefer not to say	12	0	2	2	14	2
Age	18 – 24	166	39	69	10	235	49
	25 – 29	16	3	3	0	19	3
	30 – 39	18	2	2	1	20	3
	40 - 65	18	7	0	0	18	7
	Prefer not to say	7	0	3	1	10	1
Fee status	International student	77	21	24	4	101	25
	UK student	138	29	52	7	190	36
	Prefer not to say	10	1	1	1	11	2
Commute length	< 30 minutes	73	23	68	10	141	33
	30 minutes +	131	26	8	2	139	28
	Prefer not to say	21	2	1	0	22	2
Prior private education	Yes	50	16	25	5	75	21
	No	147	32	52	7	199	39
	Prefer not to say	28	3	0	0	28	3

Table 4.2 – Participant demographic details, split by institution. Data provided at stage of sign-up for the research project and for those who attended either of the two workshop interventions

Whilst the exact details of participants are considered within the quantitative analysis part of this chapter, the figures may provide helpful context about the number of participants ahead of the process evaluation section; hence their inclusion in this part of the chapter. Methods and results for the process evaluation aspects of this chapter are discussed in the next section. This is then followed by a section dedicated to exploring the methods and results of quantitative analyses related to workshop attendance and learning outcomes. A unified discussion section then links findings across these two methods to existing research and practice.

Process evaluation of workshop design and delivery

Methods

To address the first two research questions, this chapter utilises a process and implementation evaluation on the stages of designing and promoting the workshop interventions. Given the cyclical nature of producing action research discussed above within this methodology section (Ip, 2017; Levitt, 2019), process evaluation can help to provide context that can be utilised for future enhancement and refinement (TASO, 2023). In particular, this chapter utilises a process evaluation by case study approach, as a way to reflect on the design, promotion, implementation and evaluation of the belonging workshop in a way that “capture[s] the dynamic and complex relationship between intervention and context” (Grant et al., 2020). In particular, process evaluations are most useful in the context of randomised control trials or other quasi-experimental approaches – such as is the case within this thesis design – to provide context in a way that can help to better assess external validity (Rothwell, 2006). In essence, process evaluations help to understand the many contextual variables not captured within quantitative data analysis that influence the delivery of the intervention (Grant et al., 2020).

The primary source of data utilised for the process evaluation within this chapter was reflective diaries created by the researcher during the period of implementing the workshop interventions. This method was selected primarily because student online diaries were part of the wider study, creating a symmetry between participant and research experience. However, reflective diaries are also recognised as being underutilised within process evaluation, so its usage as a method provides a case study that may be helpful in addressing this gap (Griffin-James, 2023). This approach was also selected because it minimised additional requests on participants to provide data. Given the longitudinal nature of this overarching study, participants were already being invited to contribute in many ways. The only additional data requested was from those that did not attend the workshop interventions, where it was asked if they would be willing to provide any reasons for why they were not able to attend the workshops. This process evaluation aims to provide a more reflective journey that can help practitioners understand key considerations for future intervention design and delivery.

As this process evaluation primarily focuses on the researcher’s self-reflections, this methodological approach shares characteristics with autoethnographic research. Within Butz and Besio’s (2009) exploration of different categories of autoethnography, they depict insider research as when researchers “study a group or social circumstance they are part of, and use their insiderness as a methodological and interpretive tool”. This role of the insider seems inherent to higher education practitioners who also undertake scholarly evaluation of their practice – that is those working in Third

Space Professionalism (McIntosh and Nutt, 2022). Whilst elements of this process evaluation share similarities with autoethnographic research, there are many principles and conditions that sit behind autoethnographic research (Poerwandari, 2021) which go beyond case study approaches to process evaluation and therefore are not included within the self-reflective aspects of this chapter.

The process evaluation aspects of this chapter have been written in the first-person to recognise the dual-role of author and practitioner, as well as to acknowledge the self-reflection involved.

Student and researcher reflections on preparing the workshop interventions

As discussed in the [methodology chapter](#) of this thesis, the agentic belonging intervention was primarily developed in response to recognised gaps in existing social-belonging interventions (Murphy et al., 2020; Chrobak, 2024). The learning outcomes and focus of the workshop were developed based on the theoretical underpinning of the Bronfenbrenner model of human ecological development (Hamwey et al., 2019), as a way to encourage students to understand both the fluid and subjective nature of belonging. However, to increase the likelihood that participants would be engaged and maintain focus during the workshops, I knew that it was important to consider not just the subject matter, but also how it would be delivered. To achieve this, the workshop was designed as much as possible to be based around participant activities. Learning outcomes reflected these priorities by asking students not just about their understanding of the subjective and personal nature of belonging (Cheng et al., 2023), but also the extent to which they found the workshop fun, engaging, and relevant to their overarching success as a student. More information about the substantive content of the workshops is included in the overarching [methodology chapter](#) and [Appendix 3.1](#) – which provides a full toolkit for replication of both workshops.

As interventions in this area are relatively new and untested, this belonging workshop was piloted with a group of paid student ambassadors. Feedback was sought from these students at the end of the pilot workshop and changes made accordingly prior to the running of the workshops in this study. Students who attended the pilot workshop have contributed greatly to enhancements to improve the workshop, which were then implemented as part of this study. Recommendations from the students include providing more information within the session about opportunities available that may help students to belong, reducing the time within the workshop spent on solo activities – such as reading and writing – and having more time for group activities, and including video content from previous students telling their stories of belonging journeys.

I also completed my own reflective diary after delivering the pilot workshop, where I recognised some enhancements that I could introduce when running the workshops in the future. Through piloting the workshop, I was able to get a better sense for the overall flow between activities and energy levels amongst students. These aspects of a workshop are very hard to foresee when creating a plan from a theoretical perspective, so need testing with students to explore. For instance, at the very beginning of the pilot, I noticed that some students attended up to 10 minutes early, whereas others were a few minutes late. Knowing that this could also again happen in the subsequent delivery of the workshops for this study, I made some adjustments accordingly. This included preparing some music that could play whilst students were arriving, providing some 'introduce yourself' prompts for students, and moving details about how to fill in the pre-workshop questionnaire to the first slide in the PowerPoint – that was playing as students entered. Some of these reflections, like the above, are examples of good practice that could be expanded across workshops of any subject matter. Other reflections from the pilot were more specific to the belonging workshop, such as adjusting the time spent on activities to better explain areas that felt more difficult for students to understand. Overall, the process of running a pilot was useful beyond gathering ideas for enhancements, as it also improved my confidence as a facilitator of the workshops. Full details of enhancements made from both student feedback and research reflections are listed within [Appendix 4.1](#).

Reflections on promotion and participant recruitment

Effective participant recruitment was crucial for the workshops, as they were being run as optional activities, rather than being positioned as mandatory workshops, for instance as part of a programme-level induction plan. This was done to maximise ecological validity of the research design; ensuring that the process of promoting and delivering the workshops was comparable to how extra-curricular activities are normally delivered. Whilst this introduces the potential for self-selection or sampling bias, this is true for all extra-curricular or optional activities within universities. Many practitioners will hopefully appreciate the challenge in promoting optional workshops for students and concerns around whether those who eventually attend include the students who 'need it most'. Furthermore, when constructing the research design, I perceived an ethical risk if the workshops had been run as part of mandatory programme-level activities, as students would then not have had a choice of which workshop to attend.

To provide the best chance of recruiting sufficient participants for the workshops and wider research project, an integrated marketing theory approach was utilised (Gilani, 2024); meaning that a variety of different communications channels were used at similar times with similar messaging to increase

the opportunity to reach different types of students. This included physical promotion on campus through the use of traditional posters, as well as digital promotion through inclusion in email newsletters, university mobile apps and social media groups. Student ambassadors were also employed to encourage registration with the project as a route to reach students who may not yet be as actively using university communications channels near the start of their journey.

These promotional methods were utilised to increase general awareness of the workshops, in line with the first stage of the marketing funnel (Figure 4.2). However, each of the communications methods also included details about the workshop and research project to maximise the potential of students taking interest in signing up. This included information about the financial incentives that students could receive by taking part in the broader research project, as well as messaging around the benefits of learning about research in universities at such an early point in the student journey. For ethical reasons, the potential benefits of the workshops themselves was not made a focus of the initial communication, due to the nature of them existing as part of a research project and thus being somewhat untested.

The marketing funnel is further illustrated through the steps that students went through before they actually attended the workshop interventions. Once students were aware of the workshops and had enough interest in them due to the promotional messages utilised – stages one and two of the marketing funnel – they then expressed their desire – stage three - to be part of the research project by registering through the online sign-up form. However, it was not until students actually took the action to attend the workshops that they reached – or passed through – the final stage of the marketing funnel. Reflections on why students may have not attended are explored within the next section of the results.

Student and researcher reflections on attendance and attrition

As already discussed, for both workshops there was a high attrition rate of 78%. From my own professional experience of running extra-curricular activities for university students, this was higher than expected for workshop non-attendance. Email reminders were sent to all students who had registered for the workshops to increase the likelihood of attendance and some students responded to these emails to let me know that they would not be able to attend. Given the high attrition rate, students who did not attend the initial workshops were invited to continue within the overarching study and provide details around why they did not attend their workshop. Within these responses from non-attendees, the most common response was around the workshop conflicting with a class,

another university commitment or some responsibility outside of their studies, such as caring for a family member. Some students noted that they were unwell. These workshops were organised quite near to the start of term, which is a time where students are invited to sign-up for many different events, workshops and activities. It is also possible that some students may have signed up before they received their finalised teaching schedule, which is why they did not choose a workshop that matched their eventual availability. Some international students requested whether the workshop could be run online, as they had yet to arrive in the country.

For higher education practitioners running supportive activities for students, seeing such promising sign-up numbers which then do not result in eventual attendance can be incredibly disheartening. In my own reflective diaries after the workshops, I wrote about my disappointment in not seeing as many students attend as I had expected. As I worked at one of the institutions participating in the research project – Middlesex University – I was able to easily book additional rooms to run additional sets of both workshops for students to increase the number of students involved in the wider research project. However, this required changing plans at short notice. Given my geographical distance from the second institution – University of Southampton – this was not something that I was able to replicate there. This has meant that there is an imbalance in numbers of participants across the two institutions, which limits the viability of quantitative analyses split by institution.

My final reflection on the attendance, having been able to review the feedback from students on why they could not attend, was, frustratingly, that there was not an obvious solution. As noted within the [literature review chapter](#), substantial evidence highlights the importance of belonging interventions for students near the start of their university journey – however, there are so many things that students are already required or invited to engage with during this period. Whilst, one potential solution could be to try and include such belonging interventions within already scheduled induction or teaching activities, this was not appropriate in this case given the quasi-experimental design of the research study. As already discussed, from an ethical perspective, it was important that students be able to choose which workshop that they would attend. In my self-reflective diaries, I noted a potential irony that this belonging intervention was designed to help students better navigate the overwhelming number of opportunities presented to them at university; yet it itself became another such opportunity to add to students' list of options.

Process evaluation summary

This concludes the process evaluation aspects of this chapter, which has focused on design, promotion, and recruitment of participants to the agentic belonging workshop intervention. Design of the intervention was greatly enhanced through the piloting of the workshop with student ambassadors and my reflections on the delivery of that pilot. Prior piloting of the workshop allowed me to introduce a wide variety of enhancements ([Appendix 4.1](#)); including substantial changes to workshop structure as well as small, nuanced changes to interactions with participants. My reflections on workshop promotion synthesise the ways in which selection of communications channels and choice of promotional messages formed an important part of ensuring students registered for the workshops. The process evaluation then ends with reflections from participants and myself on attendance and attrition. According to students' reflections, high attrition was mainly attributed to the workshops conflicting with other activities. This challenge was mitigated at my own institution, as I was able to organise additional dates and times for workshops, but not at the second institution.

Quantitative evaluation of intervention effectiveness

Data collection for quantitative evaluation

Students who attended one of the workshops provided a baseline reading of their sense of belonging by completing the Yorke belonging scale (2016). At the end of each workshop, participants also completed a brief questionnaire to self-report whether the workshop learning outcomes had been met (Table 4.3). Students who had signed up for a workshop, but not attended, were contacted to ask if they would like to remain within the remaining aspects of the wider study. These students were asked to complete the Yorke belonging scale and answer all learning outcomes questions from both workshops; excluding questions 5 and 6 (see below), which related directly to students' experiences of the workshops. Non-attendees were also asked to provide feedback on why they were not able to attend. All questions included within these measures are discussed within the prior [methodology chapter](#). Participants in the study have since taken part in longitudinal online diaries and regular surveys around their sense of belonging, which are explored in subsequent results chapters.

Questions for treatment workshop participants (student belonging)	Questions for control workshop participants (study skills)
All questions were asked as statements on a five-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree (as this mirrors the same structure in Yorke's sense of belonging scale)	
1. I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university)	1. I am able to describe a variety of approaches to improving studying at university
2. Every student has a different path to belonging at University	2. It is worth investing time and energy in finding the right study habits for me
3. I have a clear idea of what my own belonging needs at university may look like	3. I understand strategies for developing a positive approach to studying
4. I understand some of the potential opportunities and barriers to my own belonging needs being met at university	4. I have an idea of study approaches that I would like to apply to my own learning
5. I found the workshop fun and engaging	5. I found the workshop fun and engaging
6. I know a lot more about being a successful student than I did before this session	6. I know a lot more about being a successful student than I did before this session

Table 4.3 – Questions asked to participants at the end of each workshop to assess whether learning outcomes had been met

Methods used within quantitative analyses

In addition to the findings from the process evaluation, the second research question on students' motivations for registering and attending the workshops was investigated through comparing students' demographic variables at each stage in the sign-up process. Visualisations across each demographic characteristic and by institution were provided to show the differences from overall population demographics to those who registered and finally to those who attended. Binomial confidence intervals were calculated within these visualisations to show where significant differences existed between demographics at each stage. The second research question was addressed using binary logistic regression models to investigate connections between students' demographic details, baseline levels of belonging and attendance rates.

The third research question – investigating the extent to which workshop interventions influence students' understanding of belonging – was addressed through data visualisations depicting how learning outcomes scores of those who attended the belonging workshop compared to those who

attended the study skills workshop. Given that study skills workshops are so well-established in existing literature as being both understandable and beneficial for students, comparing learning outcomes scores between the two workshops was seen as a good way to look at whether the content within the belonging workshop was seen as being similarly beneficial for participants. Furthermore, belonging workshop learning outcome scores were compared to the results of similar questions asked to the non-attending students through linear regression models. Given that the learning outcomes scale for both workshops were newly developed, Cronbach's alpha was also calculated to assess the internal reliability of these scales.

Finally, regression models were also used to explore the extent to which the belonging workshop learning outcome scores were explained by students' demographic variables and baseline levels of belonging. Linear regression models were used in models where learning outcome scores were the outcome variable, whilst binary logistic regression models were used when exploring attendance as the binary outcome variable. This analysis addresses the fourth research question of this chapter by investigating how learning outcomes of the workshop may be related to students' prior characteristics – and thus not benefitting all students equally. This is especially important to understand within the context of the broader thesis, given the importance of student belonging to help address inequalities in student outcomes.

Demographic variables and belonging as predictors of workshop attendance

Whilst the above process evaluation has partially addressed research question two around the factors that explain student attendance at the workshop, quantitative analyses were also employed to explore whether demographic variables and students' baseline levels of belonging had a relationship with attendance.

Logistic regression analyses were conducted against both students' baseline levels of belonging and demographic variables. Table 4.4 shows the result of this regression analysis, where baseline levels of belonging had no significant relationship with workshop attendance. To help interpret estimated coefficient values in logistic regression models, average marginal effects were calculated for the baseline belonging variable to more clearly show the effect size of the relationship. In this case, a percentage increase in students' baseline levels of belonging was associated with a 0.2% increase in the likelihood of students attending their registered workshop. As the p-value is greater than 0.05, this represents a non-statistically significant result. Average marginal effects have been added to the

predictor variable of focus in logistic regression models where there is a binary outcome variable – for instance, whether or not students had a positive continuation status – for the rest of this thesis.

term	Estimate	Std error	p-value
(Intercept)	-0.284	1.177	0.809
Baseline belonging	0.010	0.015	0.497
Average marginal effects	0.002	0.004	0.493

Table 4.4 – Binary logistic regression: baseline belonging as a predictor of workshop attendance rate. Average marginal effects calculated to show the percentage increase in likelihood of attending for each percentage increase in baseline belonging. Only non-attendees who still chose to remain in the study after missing their workshop and completed a baseline belonging survey are included within this analysis (N = 101)

Analysis to explore the relationship between students’ demographic variables and attendance was split into two parts. Firstly, data visualisations were created showing the variation across each demographic variable at the three stages, mirroring different levels of the marketing funnel: 1) overall new undergraduate student population 2) those who registered for the workshops and 3) those who actually attended. Given that demographic variables differ across the two institutions, this data was split out and shown at an institutional level. For clarity of visualisation, demographic variables were grouped together into simpler binaries – for example, students who had a commute length of below 30 minutes and those with a commute length of 30 minutes and above. Data was also not included in these visualisations for students who selected ‘Not sure’ or ‘Prefer not to say’ options for any of their demographic variables. This decision was made due to the percentages of students in these groups being very low and for clarity of presentation.

Figures 4.4 – 4.7 show the population proportions at each of these stages for gender, age, fee status and parents’ educational status respectively. The binomial confidence intervals are larger for each subsequent stage in the process – from overall population to registration to attendance – as the number of students is smaller. Whilst confidence intervals are often used to judge statistical significance, this is a conservative method for examining differences in proportions (Schenker and Gentleman, 2001), so two-sample z-tests were also carried out to judge whether demographic proportions changed significantly at any stage. These z-tests showed that there were no significant changes in proportions across gender or age at any stage. However, there was a significant change in the fee status proportions at Middlesex, with international students being significantly more likely to

sign-up ($\chi^2 = 6.4971$, $p = 0.011$). Whilst there was not a significant change in proportions between sign-up and attendance based on fee status ($\chi^2 = 0.570$, $p = 0.450$), international students at Middlesex were overall more likely to attend one of the workshops ($\chi^2 = 5.267$, $p = 0.021$). There were no significant changes in proportions based on fee status at Southampton.

Finally, the engagement journey for students split by parents' educational status is shown within Figure 4.7. Data for Southampton's overall new undergraduate students is missing within this plot as they did not have this data available. At Middlesex, there is a visible change in proportions between overall population numbers and students who registered for the research. As with other demographic variables, two-sample z-tests were carried out to assess the statistical significance of changes in proportions across these stages of sign-up and attendance. First-generation students were significantly more likely than their counterparts to register for the research at Middlesex, as confirmed by these z-tests ($\chi^2 = 36.8$, $p < 0.001$). Similar to fee status, whilst there was then no significant change in proportions between registration and attendance by parents' educational status ($\chi^2 = 0.382$, $p = 0.536$), overall first-generation students at Middlesex were still significantly more likely to attend ($\chi^2 = 4.569$, $p = 0.033$). There were no significant changes in proportions based on parents' educational status at Southampton.

Gender demographic details by overall student populations, students registering and attendance

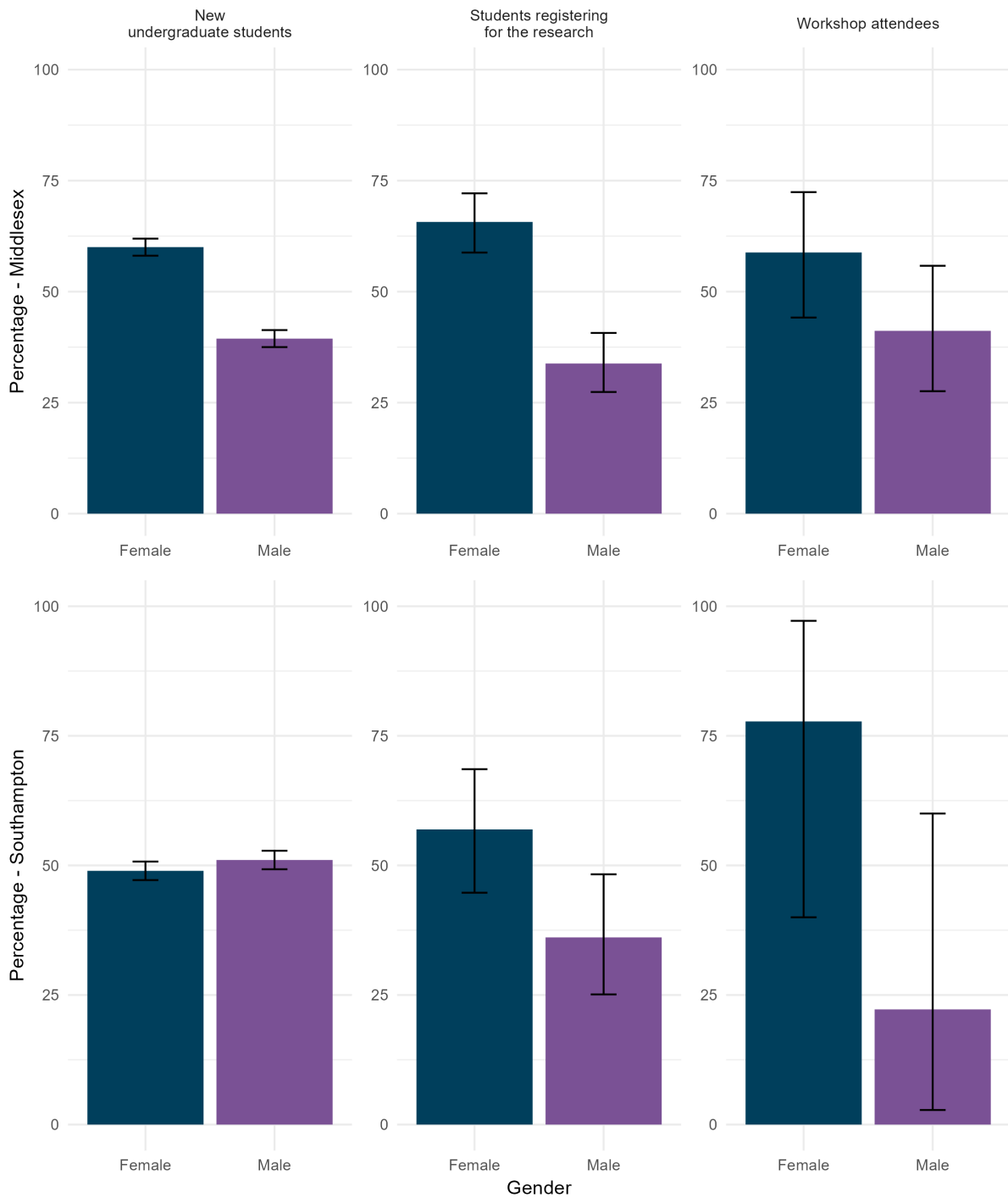


Figure 4.4 – Gender split at each institution across overall new undergraduate students, those who registered for the workshops and eventual attendees. Binomial confidence intervals are set at 0.95 (for all graphics)

Age demographic details by overall student populations, students registering and attendance

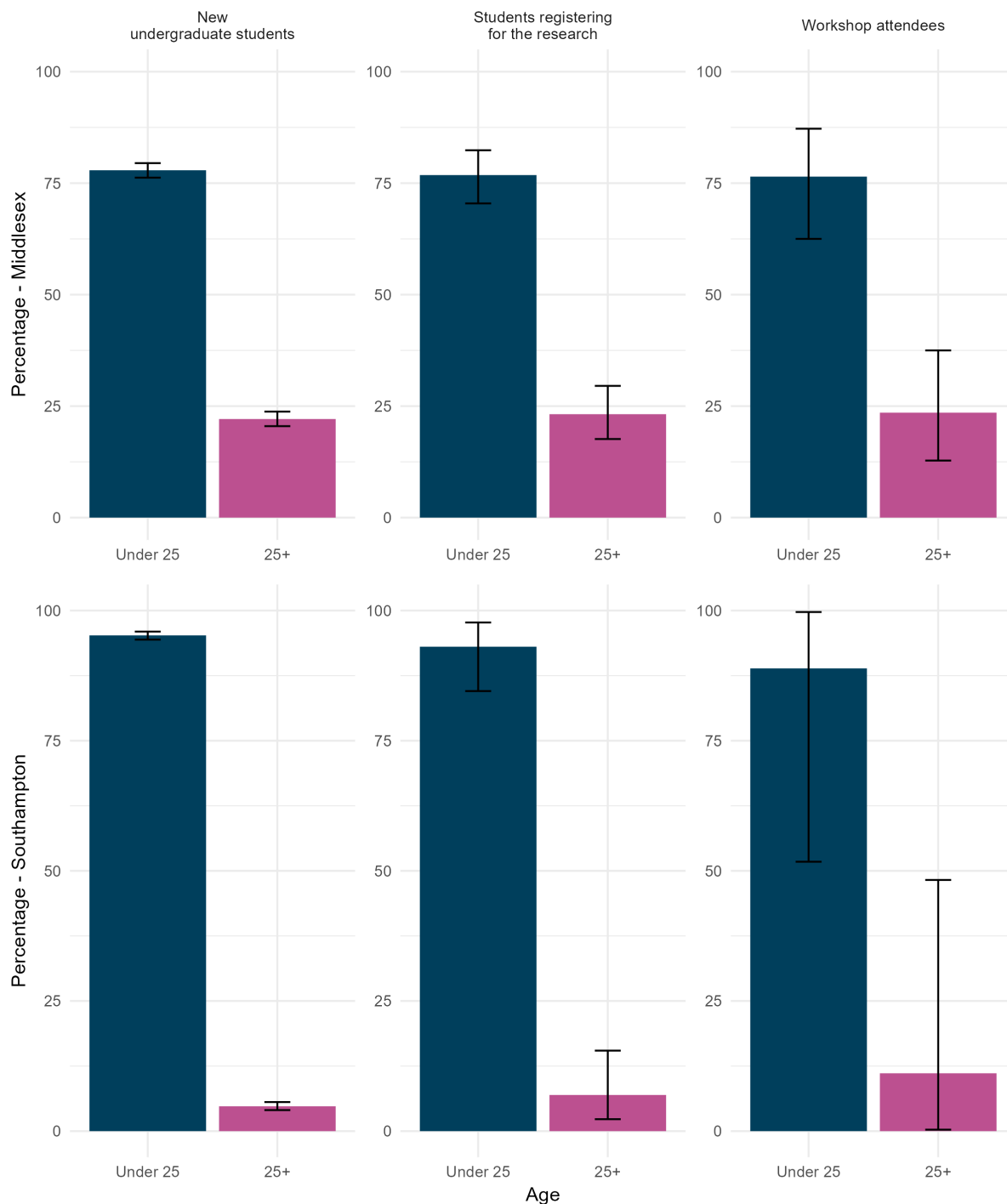


Figure 4.5 - Age split at each institution across overall new undergraduate students, those who registered for the workshops and eventual attendees. Age brackets have been grouped together for clarity of presentation.

Fee status / Residence demographic details by overall student populations, students registering and attendance

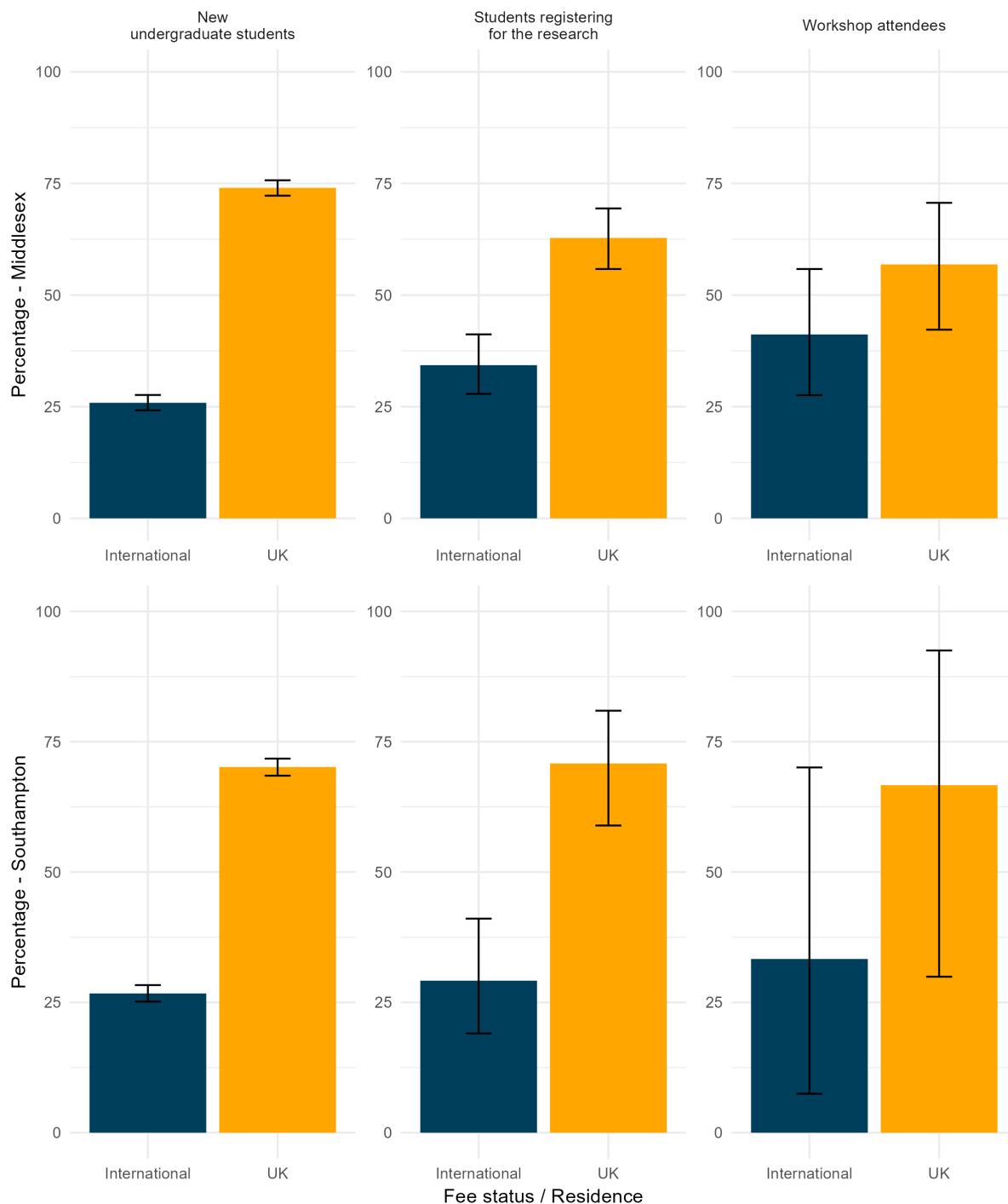


Figure 4.6 – Fee status split at each institution across overall new undergraduate students, those who registered for the workshops and eventual attendees. ‘Not sure’ responses were removed for clarity.

Parents' or caregivers' educational status by overall student populations, students registering and attendance

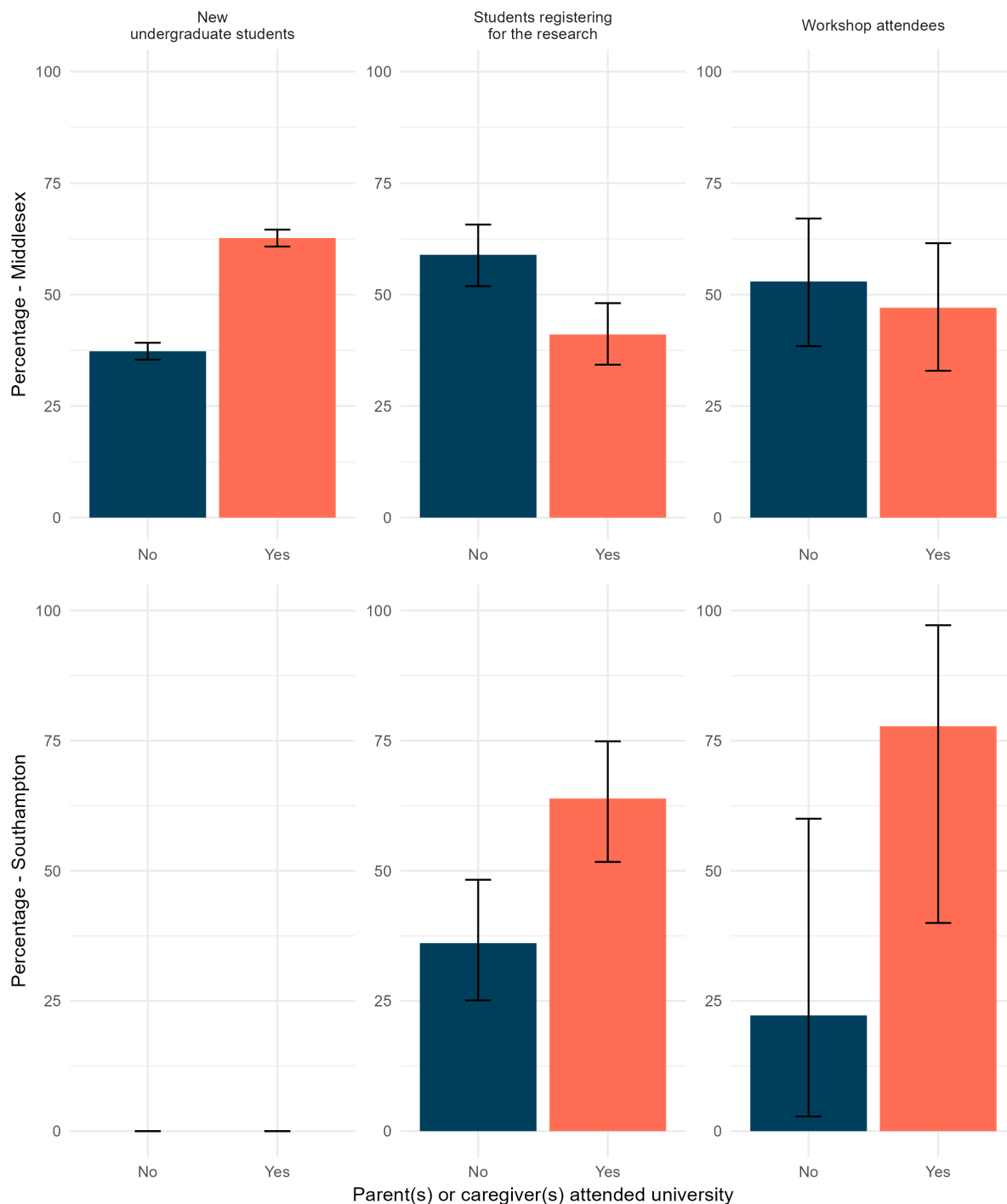


Figure 4.7 – Parents' educational status split at each institution across overall new undergraduate students (for Middlesex only), those who registered for the workshops and eventual attendees.

However, in recognition that the above analyses were utilising simplified demographic binaries, a further stage of analyses were carried out to explore how demographic variables may predict

attendance rates amongst those who signed up to the study. Importantly, this means any explorations of attendance are conditional on having already signed up to the research project. Multiple logistic regression exploring average marginal effects found that age was the only variable with a significant relationship to attendance, with those aged over 40 much more likely to attend, once they had signed up, than all other age groups (Table 4.5, Figure 4.8). Whilst this result is statistically significant, there are two immediate caveats to consider. Firstly, the age groupings that students were asked to report within are somewhat arbitrary and there was not a progressively increasing attendance rate through the rest of the age groups. Furthermore, whilst this analysis shows a significantly higher attendance rate, this does not mean that students in this older age group were more likely to register for the workshops than younger students (Figure 4.5).

Large, statistically insignificant, variation in workshop attendance rates were also found for some of the other demographic variables (Table 4.5, Figure 4.9); such as higher attendance for privately educated students, those with quantified commute lengths, international students and non-first-generation students. None of these differences were statistically significant within the logistic regression analysis within Table 4.5. One final interpretation of these visualisations is that in all demographic instances, students who selected ‘prefer not to say’ for their demographic variables had the higher attrition rate. This may suggest that students who did not wish to disclose their demographic variables when registering had less commitment to the workshops and thus lower attendance rates. This may reflect these students having less trust in either the research project or their university as a whole. Alternatively, this could reflect that students who had more uncertainty in their own demographic details, possibly due to finding the language unclear or inaccessible, were also less likely to understand the value of the workshops and thus less likely to attend.

term	Estimate	Std error	p-value
Gender - Male	0.017	0.051	0.744
Age - 25 - 29	-0.068	0.079	0.388
Age - 30 - 39	-0.031	0.095	0.742
Age - 40 - 65	0.248	0.125	0.047
Age - Prefer not to say	-0.117	0.091	0.197
Commute length - 30 minutes +	-0.030	0.052	0.561
Commute length - Prefer not to say	-0.130	0.078	0.096
Privately educated - Prefer not to say	-0.093	0.076	0.219

Privately educated - Yes	0.023	0.067	0.732
Fee status - Prefer not to say	0.027	0.175	0.878
Fee status - UK student	-0.089	0.067	0.186
Parents attended university - 1	0.021	0.061	0.732
Parents attended university - 2 or more	0.026	0.061	0.665
Parents attended university – prefer not to say	-0.064	0.100	0.522

Table 4.5 – Multiple logistic regression of averaging marginal effects for demographic variables as predictors of attendance rate. Reference categories are Female, Age – 18 – 24, Commute length – less than 30 minutes, Not privately educated, and No parents or caregivers attended university (N = 302)

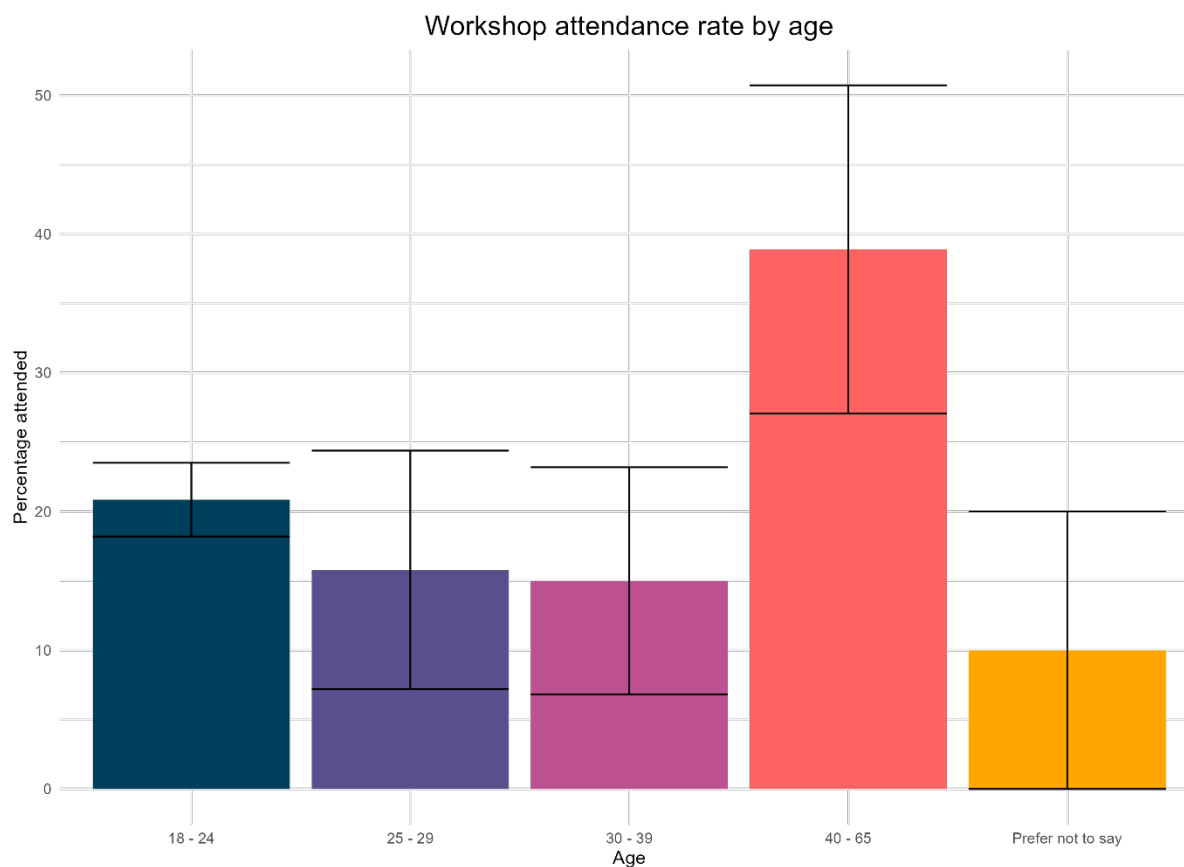


Figure 4.8 - Workshop attendance rate (the proportion of students who attended the workshop after having initially signed up) by age. Including data from both institutions

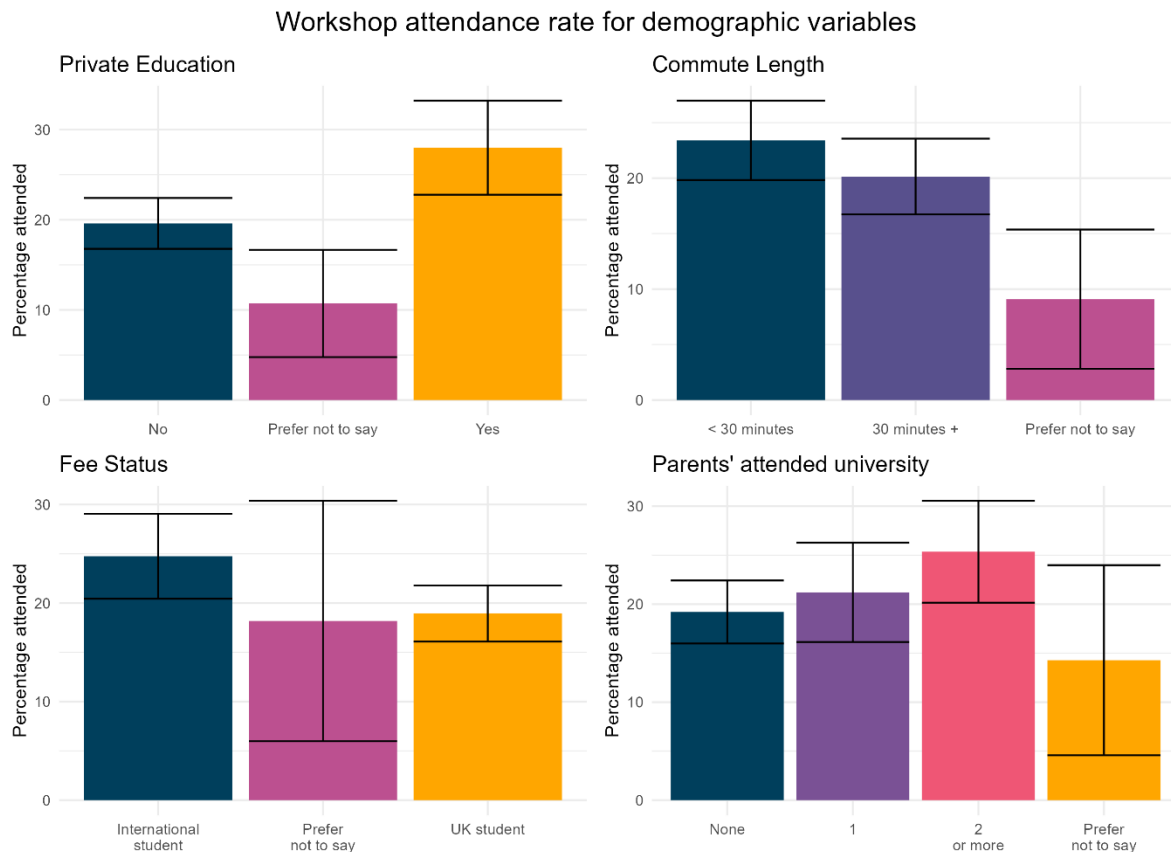


Figure 4.9 - Workshop attendance rates for other demographic variables with variances

Similar to analyses within the previous process evaluation section, these analyses have followed the stages of the marketing funnel to look at influences on students' likelihood of originally registering for and then attending the workshops. Compared to the overall student population at Middlesex University, international students and non-first-generation students were significantly more likely to register and attend the workshops, however similar differences were not found for Southampton students. When looking at attrition rates, the only demographic group to have significant differences were students aged over 40, who were more likely to attend once having signed up, than any other age group.

Evaluating the interventions – assessing workshop learning outcome scales

As discussed within the main [methodology chapter](#), a bespoke scale was created to measure the extent to which the workshops' learning outcomes were met for each participant. Given that the scale for each workshop was unvalidated, Cronbach's alpha was calculated for each scale to investigate their internal consistency. This analysis does not directly answer any of the research questions for this

chapter, but is a preliminary analysis that helps to address underlying assumptions in the theory of change and methodological design of this thesis. In this case, use of Cronbach’s alpha analysis is important to establish the internal consistency of the two workshop learning outcome scales, which are then used in subsequent analyses to address research questions three and four. Preliminary analyses like these are also used in subsequent results chapters within this thesis.

Cronbach’s alpha scores were 0.761 for the Yorke belonging scale, 0.510 for the belonging workshop learning outcomes and 0.884 for the study workshop scale. Whilst levels of internal consistency as measured through Cronbach’s alpha are somewhat arbitrary (Taber, 2018), scores below 0.6 are often considered poor, so a correlation matrix was created (Table 4.6) to investigate the low Cronbach’s alpha score for the belonging workshop learning outcomes scale. This showed that question two of six – “Every student has a different path to belonging at university” – had least relatedness to all other items in the scale. This could be because whilst all the other questions were asking participants to reflect on their own abilities, understanding and experiences, this question is about beliefs relating to others. Cronbach’s alpha for the belonging workshop scale was calculated again with question two removed and received a higher, but still questionable score of 0.607. Overall, this suggests that further investigation is needed into how or even whether we can measure students’ understanding of concepts related to belonging. This is addressed further within the discussion section of this chapter.

Learning outcomes correlation matrix	L01	L02	L03	L04	L05	L06
I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university) [L01]	1.000					
Every student has a different path to belonging at University [L02]	0.027	1.000				
I have a clear idea of what my own belonging needs may look like [L03]	0.331	-0.057	1.000			
I understand some of the potential opportunities and barriers to my own belonging needs being met at university [L04]	0.142	-0.020	0.222	1.000		
I found the workshop fun and engaging [L05]	0.519	0.029	0.113	-0.044	1.000	
I know a lot more about being a successful student than I did before this session [L06]	0.310	-0.095	0.216	0.197	0.330	1.000

Table 4.6 - Correlation matrix for belonging workshop self-reported learning outcomes

Evaluating the interventions – learning outcomes by workshop type

To assess the third research question of this chapter – workshop interventions' ability to influence students' understanding of belonging – data visualisations were used to compare the workshop learning outcomes between belonging workshop and study skills workshop attendees. As noted within the methodology section of this chapter, given the existing acceptance of the benefits of study skills workshops for students, the hope was to see whether workshop outcomes for the belonging workshop would be comparable. Subsequent linear regression analyses and data visualisation was then also utilised to explore whether the workshop learning outcomes were higher for those who attended the belonging workshop than non-attenders who answered the same questions when they missed their registered workshop.

Average learning outcome scores for each workshop were very similar and high (Figure 4.10), which suggests that participants felt the content of the workshops was addressed equally as well in both cases. This assumes that both sets of questions have equivalent difficulty. Whilst the two question sets cannot be perfectly compared, the questions have been designed to be very similar to allow this comparison. Scores in the belonging workshop were more variable than for those in the study skills workshop, which is to be expected given the lower Cronbach's alpha scores for the belonging questions. Similar scores were seen for the questions around workshop experience 'I found the workshop fun and engaging' and utility 'I know a lot more about being a successful student than I did before this session'.

Overall, this suggests that the principles and aims underlying the experimental belonging workshop were understood to a similar degree as those underlying the more established study skills topic. Given the already prevalent use of study skills workshops within universities to support students, this is a promising result to suggest that within self-reported post-workshop surveys, students can find belonging interventions similarly understandable, enjoyable and relevant to their success as students.

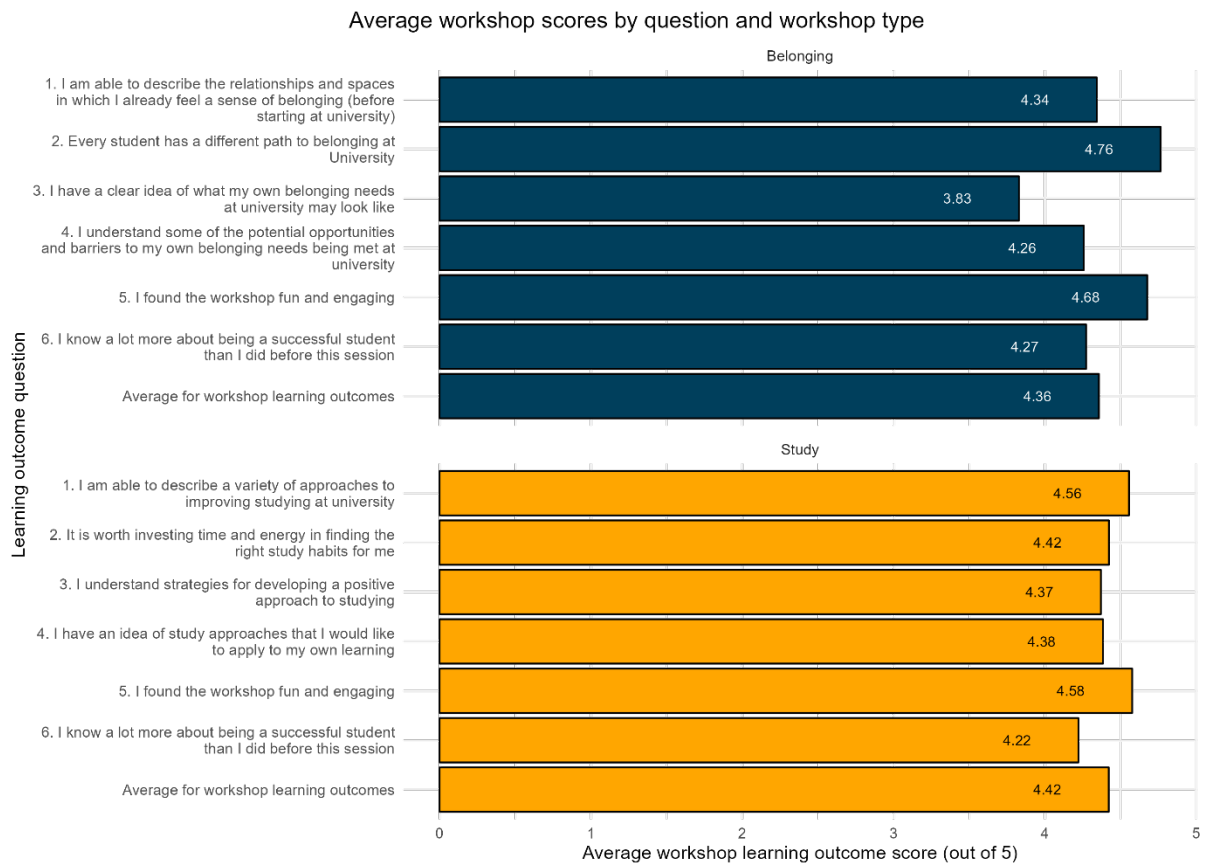


Figure 4.10 - Average workshop learning outcome scores by question from both the belonging and study skills workshops

Students who did not attend either workshop also completed questions that mirrored those asked at the end of the workshops to evaluate whether learning outcomes had been met. The results from non-attendees were compared to those who attended the belonging workshop (Figure 4.11). Linear regression analysis (Table 4.7) showed that learning outcomes 1, 2 and 4 were all significantly lower for non-attendees with large effect sizes. Non-attendees had between 0.42 and 0.6 lower average scores against these learning outcome questions compared to belonging workshop attendees. However, learning outcome 3 - “I have a clear idea of what my own belonging needs may look like” - was not found to be significantly different between these two groups.

An obvious caveat to this analysis is that those who registered, but did not attend the workshops may have inherent differences that explain the variance in the learning outcome results. To try and account for some of these differences, the regression models within Table 4.7 also include all students’ demographic details, meaning that the variance in estimates between belonging workshop attendees and non-attendees account for any differences in learning outcome scores by demographic differences. Whilst this partially addresses differences between these two groups, which challenge

the comparison between them within the quasi-experimental design of this chapter, it cannot fully account for all differences between the groups. This challenge is discussed further within the limitations section of this chapter.

Learning outcomes	term	Estimate	Std error	p-value
1 - I am able to describe the relationships and spaces in which I already feel a sense of belonging (N = 73)	(Intercept)	4.276	0.283	0.000
	Non-attend	-0.421	0.176	0.020
2 - Every student has a different path to belonging at university (N = 72)	(Intercept)	4.749	0.245	0.000
	Non-attend	-0.608	0.152	0.000
3 - I have a clear idea of what my own belonging needs at university may look like (N = 73)	(Intercept)	3.201	0.355	0.000
	Non-attend	0.010	0.221	0.966
4 - I understand some of the potential opportunities and barriers to my own belonging needs being met at university (N = 73)	(Intercept)	3.621	0.377	0.000
	Non-attend	-0.545	0.235	0.024

Table 4.7 - Multiple linear regression models exploring belonging workshop attendance as a predictor of learning outcomes. In these models, non-attend represents the learning outcome scores of non-attendees compared to those who attended the belonging workshop as the reference group. Demographic variables were included within the regression models to account for differences that may exist across these groups, but were not presented in these results for clarity of presentation. Full regression results with demographic details are presented within [Appendix 4.2](#) (Number of observations provided alongside each model)



Figure 4.11 - Average workshop learning outcome scores for belonging workshop attendees and non-attendees

Evaluating the interventions – learning outcomes by demographics and baseline belonging

The previous section of the results has shown some promising similarities between the learning outcomes scores of the belonging and study skills workshops, as well as significant variance between the learning outcomes of those who attended the belonging workshop compared to non-attendees. These two analyses together support a promising conclusion that the content of the belonging workshop was understood by attendees and perceived as enjoyable and relevant. In addition to that, the significant differences between belonging workshop attendees and non-attendees suggests that these high learning outcome scores could be at least partially attributed to attendance at the belonging workshops, rather than just being concepts that all students already understand when starting university.

This section of the results addresses the final research question of this chapter by exploring whether the workshop learning outcomes vary based on either students' baseline levels of belonging or students' demographic variables. These analyses are important to be able to assess whether the benefits of the workshops – as measured through learning outcome scores – were equitably distributed or not.

Firstly, linear regression analysis was utilised to assess the relationship between students' baseline levels of belonging and learning outcomes for both workshops (Table 4.8). These results show that in the cases of both workshops, baseline belonging was a significant predictor of learning outcomes scores. For the belonging workshop, each percentage increase in students' baseline sense of belonging was associated with a 0.239 increase in their workshop learning outcome scores. The association was even more pronounced for the study skills workshop with attendees having a 0.342 higher learning outcome score for each percentage increase in sense of belonging.

Learning outcomes	term	Estimate	Std error	p-value
Belonging workshop (N = 35)	(Intercept)	65.409	9.087	0.000
	Baseline belonging	0.239	0.115	0.045
Study skills workshop (N = 27)	(Intercept)	59.660	11.486	0.000
	Baseline belonging	0.342	0.149	0.031

Table 4.8 - Multiple linear regressions - baseline belonging as a predictor of workshop learning outcomes. Full regression results with demographic details are presented within [Appendix 4.2](#) (Number of observations provided alongside each model)

This suggests that the benefit that students took from either workshop was higher when students already felt a greater sense of belonging. This is a somewhat problematic finding, as it could mean that students who have a lower sense of belonging at this crucial point in their student journey are also those who benefit the least from workshop interventions. The implications of this are explored further within the discussion section of this chapter.

Finally, multiple linear regression analysis was utilised to examine whether students' demographic details were predictors of their workshop learning outcomes (Table 4.9 and 10). For the belonging workshop model, there were no demographic categories that were significantly related to workshop learning outcomes. This suggests that any variance in the benefits from the workshop – as measured through learning outcome scores – were not associated or explained by students' demographic variables. However, for the study skills workshop, the multiple linear regression analysis suggested that male students were statistically likely to report lower overall learning outcomes scores, when other demographic characteristics were accounted for. Contrastingly, male students had higher average scores for the belonging workshop, although this variance was just outside the level of

statistical significance. Further exploration into study skills workshops may discover similar gender learning outcomes variances, however as the focus of this chapter was primarily focused on the experimental belonging workshop, further discussion of this study skills demographic variance has not been included.

term	Estimate	Std error	p-value
(Intercept)	71.226	10.939	0.000
Baseline belonging	0.168	0.117	0.164
Gender - Male	5.993	3.214	0.074
Parents attended university - Yes	-1.935	3.340	0.568
Age – Under 25	-5.838	4.017	0.159
Fee status - UK student	3.453	4.029	0.400
Commute length - 30 minutes +	2.955	3.164	0.360
Privately educated - Yes	-2.794	4.258	0.518

Table 4.9 - Multiple linear regression analysis exploring the extent to which belonging workshop learning outcomes are predicted by students' demographic variables and baseline measurements of belonging. Reference categories are Female, Age – 18 – 24, Commute length – less than 30 minutes, Not privately educated, and No parents or caregivers attended university (N = 32)

term	Estimate	Std error	p-value
(Intercept)	61.764	14.491	0.001
Baseline belonging	0.115	0.170	0.511
Gender - Male	-18.870	5.352	0.003
Parents attended university - Yes	3.287	4.984	0.520
Age – Under 25	12.104	6.105	0.066
Fee status - UK student	7.699	4.977	0.143
Commute length - 30 minutes +	10.917	5.624	0.071
Privately educated - Yes	3.923	5.397	0.479

Table 4.10 - Multiple linear regression analysis exploring the extent to which study skills workshop learning outcomes are predicted by students' demographic variables and baseline measurements of belonging. Reference categories are Female, Age – 18 – 24, Commute length – less than 30 minutes, Not privately educated, and No parents or caregivers attended university (N = 23)

Discussion

The results of this chapter provide a case study of designing, delivering and evaluating a belonging intervention for new, undergraduate students. The results explore an adaptation of the marketing funnel that can be followed by practitioners when running optional supportive interventions for students, providing a case study that can be followed as a guide for future work. Quantitative analyses sit alongside this process evaluation to explore underlying factors that may explain students' attendance within workshop interventions, as well as to evaluate learning outcomes from those workshops. This discussion summarises and reflects on these results, including the extent to which findings were expected based on existing practice and literature, and then hypothesises how they may be applicable in broader contexts.

Student feedback and buy-in from institutional gatekeepers are crucial for designing workshops and recruiting participants

The results began with researcher self-reflections on the process of designing the workshop intervention, highlighting the benefits of including students in the design process. Running the pilot workshop with a group of student ambassadors and incorporating their feedback led to an enhanced intervention design. This is to be expected given the positive links between partnership strategies and building students' sense of belonging (Cook-Sather and Seay, 2021). The process of running a pilot belonging workshop also allowed the researcher to reflect on positive aspects, as well as areas that could be improved within the intervention. This practically builds on past theorising of action research as a cyclical process of implementation, evaluation and enhancement (Ip, 2017; Levitt, 2019). In hindsight, more could have been done to involve students as partners in the original design of the workshop, beyond gathering their feedback as part of the pilot. [Chapter 8](#) discusses how the belonging workshop has been taken forward at Middlesex University being redesigned by graduates and delivered by current students.

Employing an integrated marketing theory approach (Gilani, 2024), a variety of channels were employed to recruit students to sign-up for the overarching research project. However, the high attrition rates reflect a challenge in engaging students in any one particular extra-curricular activity at the start of the academic year. Previous literature comments on the challenges to belonging that new students have whilst settling into university (Russell and Jarvis, 2019; Tang et al., 2022). Whilst, the workshop interventions within this study were being promoted to support students with these transition challenges, it remains the case that barriers exist for students at this time. There is perhaps

an interesting irony that this belonging intervention, designed to help students better navigate the overwhelming number of options open to them at university, itself added to that feeling of being overwhelmed. This suggests that practitioners running activities in this early part of the academic year may need to 'over-recruit' to proactively mitigate for subsequent higher rates of attrition. Targeting the promotion of the workshops to specific cohorts, rather than to all new undergraduate students may also result in higher attendance rates. Additional promotional activities to recruit more students were able to be utilised at the institution where the researcher was based, but not as effectively at the secondary institution, emphasising the importance of buy-in from all participating institutions in cross-university research projects. Whilst the workshops were deliberately promoted to students as optional, extra-curricular activities in the context of this study to ensure that students maintained their choice of what workshop to attend, the high attrition rates faced in this case study provide more evidence for the potential benefit of including belonging interventions within early compulsory teaching or induction activities.

Linear regression analysis found that mature students – aged over 40 – had a higher attendance rate than other students, which is surprising given previous literature which discusses barriers faced by these students (Thomas, 2013; Erb and Drysdale, 2017). However, this result does not suggest that overall engagement from mature students was higher, as it focuses on the specific stage in the engagement funnel where students go from registering for an activity to then actually turning up. This could say more about the differences between some students committing to something once signing-up.

Baseline levels of belonging did not predict attendance, but did predict learning outcomes

Surprisingly, linear regression analysis suggests that baseline belonging was not a predictor of students' attendance rate for the workshops. This was counter-intuitive given the previous research linking belonging and attendance within welcome events and wider university activities (Cruz and Grodziak, 2021). However, this is only utilising baseline belonging scores of those who attended the workshops and those who did not attend, but crucially still chose to stay within the overarching research study. Baseline belonging scores were not captured for all new students at the respective institutions, nor even for those who registered for the research project initially. It is not possible to say whether baseline levels of belonging were a predictor of signing up for the overall study, as that would require measurements of student belonging for the whole cohort. Institutions may be able to at least partially overcome this challenge by including student belonging scale questions within institutional pre-arrival or welcome surveys, as long as these have a high response rate. However,

even in these circumstances, there is likely to be a bias towards students who are more engaged, and therefore possibly have higher rates of belonging, filling in these surveys (Wilson et al., 2015; Gillen-O’Neel, 2021; Luo et al., 2022). [Chapter 8](#) discusses further how insight from the belonging intervention, including self-reported learning outcomes, could be utilised in the context of wider institutional support mechanisms, such as through academic advising systems.

Whilst baseline levels of belonging did not predict attendance, it did predict workshop learning outcomes. This suggests that how much students get out of workshop interventions is affected by prior belonging levels. There was a significant, positive relationship between baseline belonging and learning outcomes for both the belonging and study skills workshops, which suggests that this connection cannot just be explained by the learning outcome questions for the belonging workshop overlapping in subject matter with the Yorke belonging scale questions. There are therefore two likely explanations for this relationship: firstly, that there is a confounding variable which causes both greater sense of belonging and higher workshop learning outcomes – which could include a general sense of positivity and optimism from participants in responding to survey questions; secondly, that there is a direct link between baseline student belonging and workshop learning outcomes. The latter of these options is intuitive, as feeling a greater sense of belonging at the start of a workshop – no matter the workshop’s content – is likely to result in you being more motivated to engage in it and seeing the value in its subject matter for your own journey (Freeman et al., 2007; Zumbrunn et al., 2014; Mulrooney and Kelly, 2020). Either way, this finding presents a challenge for practitioners running belonging interventions, as it suggests that those with lower baseline belonging may not get as much out of the workshop. Given that belonging interventions are often introduced to help address existing inequalities in student outcomes, such a finding problematises this goal by questioning whether belonging interventions may increase inequalities in students’ sense of belonging.

Whilst it is hard to measure students’ understanding of their belonging needs, the learning outcome scores of the belonging workshop are promising when compared against control groups

Low to moderate Cronbach’s alpha scores for the belonging workshop learning outcomes scale reflects that additional work is needed to develop an effective way to measure the efficacy of this newly developed workshop. Whilst using unvalidated scales to measure students’ self-reflections on workshop learning outcomes can be problematic (D’Eon et al., 2008), it is often the only feasible way for practitioners to measure the effectiveness of their work (Lam, 2009). These results suggest that more work is needed to look into the development of scales to measure these specific aspects of understanding one’s own belonging needs.

Despite these challenges and qualifications, the workshop learning outcome scores were similarly high for the belonging workshop compared with the study skills workshop. As discussed within the methodology section of this chapter and the wider [methodology chapter](#), study skills workshops are prevalent and well evidenced for their effectiveness in higher education (Murphy et al., 2020; Donoghue and Hattie, 2021). For the workshop learning outcomes of this experimental belonging workshop to be as high as the learning outcome scores for the study skills intervention suggests that the content matter of the agentic belonging intervention was successfully understood by most students. Whilst there is an inherent assumption in these analyses that the two scales are comparable, the questions were intentionally designed to be similar. The linear regression analysis showing significantly higher scores by belonging workshop attendees compared to non-attendees for three out of four learning outcomes, is also promising in evidencing the effectiveness of this workshop.

The only belonging workshop learning outcome which was not significantly higher for attendees compared to non-attendees was: “I have a clear idea of what my own belonging needs may look like.” Within the workshop, activities to address this learning outcome focused around participants prioritising from a longer list of opportunities to develop belonging at university. Upon reflection, this activity seems slightly misaligned from the learning outcome question. This could be reframed in the future as: “I have a clear idea of what opportunities at university may satisfy my own belonging needs”. Alternatively, the activities of the workshop could change to better address the original learning outcome question. How students talk about their efforts to satisfy their belonging needs is addressed further in the next chapter through analysis of students’ longitudinal online diaries.

However, as this was not a randomised control trial, comparisons between the attendees and non-attendees must be made cautiously. Non-attendees are likely to have faced barriers, which also may have influenced their learning outcome scores when surveyed. This methodological challenge is discussed more in the following limitations section, but it has also been partially mitigated in this analysis through the inclusion of demographic variables within the above regression analysis. Furthermore, when modelled alone, demographic variables were not significant predictors of workshop learning outcome scores. This suggests that differences between the belonging workshop and non-attendee scores cannot be explained by demographic differences between the two groups. Whether students were able to understand and agree with the learning outcomes of the belonging workshop was the first step in evaluating its efficacy, however this is explored in the subsequent research chapters; especially chapters [6](#) and [7](#) which evaluate whether students’ workshop attendance was a predictor of changes in their sense of belonging and eventual continuation.

Limitations and recommendations for future research

Given the self-reflective nature of the chapter, many limitations and lessons learned have been identified within the results sections that present the process evaluation. Instead, this section focuses on the limitations of the methodological approaches used for this aspect of the overarching research project.

As recognised within the process evaluation section of the results on recruitment, it was more challenging to recruit sufficient numbers of participants from the institution where the researcher was not based. Whilst overall, an adequate sample of students have been included in the overarching research study, the numbers across institutions are imbalanced, limiting the viability of analyses by institution type. This is a concern for any cross-university project, but in particular in this case where the researcher was based at one of the two. Whilst it was decided that students should have a choice in which intervention to attend, based on the experimental nature of the agentic belonging intervention, future research could adopt a random allocation approach. This would mean that the workshop could be delivered as part of scheduled teaching or induction activity, reducing the challenges of needing to proactively recruit participants.

As has already been addressed, the low internal consistency of the belonging workshop learning outcomes scale could have been addressed through some form of testing of this scale prior to use in the research study. This was decided as being out of scope for this particular research study, however, given the low scores found in this analysis, it is recommended as being more important for prioritisation in future research studies.

Assessing the effectiveness of this experimental belonging workshop could have been enhanced with qualitative reflections from those who attended the workshop. Whilst this was partially addressed through including feedback from students who attended the pilot workshop, gathering additional feedback within the study itself could have added more understanding to what aspects of the workshop were most effective and what could benefit from future improvements. However, adding in additional questions for participants around their experiences of the workshop would need to be balanced against the design of the wider research study. In this case, the decision was made that asking for additional qualitative feedback from participants on the workshop design itself would have been too much ahead of their involvement in the online diaries aspect of the study (explored in [Chapter 5](#)). Whilst this is a balance, the decision to not gather additional qualitative feedback from participants meant that the process evaluation aspects of this chapter relied heavily on the self-reflective notes from the researcher, which, by itself, limits the depth of the process evaluation (Griffin-James, 2023; TASO, 2023).

Finally, efforts to assess the effectiveness of the agentic belonging workshop are limited by the lack of pre-and-post-test measurement of the learning outcome scores. Whilst linear regression analysis was utilised to explore demographic differences across the intervention groups, measuring changes in learning outcome scores would have aligned more successfully with best practice in running quasi-experimental research (Spiegelhalter, 2019; TASO, 2023). This was an oversight in the design of this aspect of the research study, given that the overarching study was already using pre-and-post-test changes in belonging (see [Chapter 6](#)) as a methodological approach.

Conclusion

This chapter provides a detailed examination of the design, implementation, and evaluation of an experimental belonging intervention for new, undergraduate students. Contributions to both knowledge and practice are made through the chapter's combination of qualitative research reflections to inform a process review of designing and promoting the workshops, along with quantitative linear regression analysis of attendance and learning outcomes scores. In its whole, the chapter provides a case study for practitioners for implementing action research within the field of student belonging interventions.

Process evaluation into workshop design and promotion explore the benefits of involving students in workshop testing and refinement, as well as the importance of close working with student communications professionals to achieve effective workshop registrations. Evaluation into the high attrition rate, a common challenge in extra-curricular activities, was able to add to an understanding of the factors influencing non-attendance, such as conflicting schedules, responsibilities outside of studies, and health issues.

Noteworthy findings, such as the unexpected higher attendance rates among mature students, prompt further investigation into the nuances of early student engagement. The counterintuitive result that baseline belonging did not predict workshop attendance but significantly influenced learning outcomes introduces a problematic challenge for those delivering belonging interventions: are our activities inadvertently exacerbating inequalities amongst our students? Whilst the scale developed for this chapter to measure the learning outcomes of the belonging workshop held low-to-medium internal consistency, the high scores from students were comparable to those of a well-established study skills workshop, suggesting a successful understanding of the workshop content by most students. The belonging workshop learning outcomes were also significantly higher than those

of non-attending students, however given the lack of pre-and-post-test measures, this requires cautious interpretation.

Given the aim of providing useful resources for practitioners, the discussion includes lessons learned with the intention about being honest about what did not work well and therefore what could be improved in the future. A list of recommendations for practice has been included within the discussion chapter of this thesis ([Chapter 8](#)), including the importance of piloting interventions, employing diverse communication channels for recruitment, and ultimately recognising the cyclical nature of action research. The limitations emphasise the need for future research to address imbalances in participant numbers, incorporate qualitative reflections from participants, and employ pre-and-post-test measurements for enhanced methodological rigour.

In conclusion, this chapter provides a vulnerable account of the journey to develop and evaluate the implementation of a new belonging intervention. It serves as a guide for practitioners navigating the complexities of supporting students in their transition to university life and the first step in being able to evaluate whether such an intervention can ultimately change the way students behave and how they belong. The subsequent chapter addresses the next stage of the theory of change, by utilising longitudinal online diaries as a method to analyse students' reflections of their actions to build belonging.

Appendices for Chapter 4

[Appendix 3.1](#) – Implementing the agentic belonging workshop – a toolkit for practitioners

[Appendix 4.1](#) – Feedback from belonging workshop pilot

[Appendix 4.2](#) – Chapter 4 full regression model results

Chapter 5 – Taking action to belong

Introduction

The purpose of this content chapter is to be able to address the second overarching research question of this thesis: *What actions do students take to build belonging during the first year of study?*

To explore this topic in more detail, a set of sub-research questions were developed for this chapter:

- RQ2.1: What barriers need to be addressed before students can take action to belong?
- RQ2.2: How do students take action to belong during their first year at university?
- RQ2.3: To what extent do students' belonging reflections vary based on experience of prior belonging interventions?
- RQ2.4: To what extent do students perceive benefits in reflecting on their sense of belonging?

Answering these research questions is achieved through analysis of qualitative data provided by students through the online diaries aspects of the overall research project. This chapter begins by exploring the exact methodology that was utilised to collect and analyse this data, followed by presentation of the results and subsequent discussion. A combination of online diaries and open questions within surveys was utilised to gather qualitative data from 65 first-year undergraduate students at two English universities across the 2022/23 academic year. Students were asked to reflect on their sense of belonging at their university and the actions that they had taken or were planning to take to develop their sense of belonging. Reflexive thematic analysis was utilised through NVivo to analyse the data, focusing on when students were or were not able to take action to build their own sense of belonging. The longitudinal nature of the data allows for analysis to look at each participant's change in belonging over time. Sentiment analysis was used to evaluate changing student sentiment and matrix coding was used to evaluate variances between students who had received different belonging interventions prior to the online diaries and surveys data collection.

Results show that students build belonging in three core domains: socially with peers, academically through mattering to staff, and physically through belonging to university spaces. In each of these thematic areas, students require supportive conditions to be provided before they can feel a sense of agency in building their own sense of belonging. Results also shine a light on *how* students build belonging; with students recognising the reciprocal relationship between belonging and engagement and highlighting the importance of authenticity, whilst also pushing the boundaries of one's comfort zone. In all five themes found through reflexive thematic analysis, there was some variance in results

between students based on their prior exposure to belonging interventions, suggesting that early belonging interventions do affect how students take subsequent actions to build belonging. Feedback from students on their experience of participating in this study also suggests that the process of reflecting on one's sense of belonging itself was beneficial for many students.

The findings from this chapter highlight potential and limits of students' agency to build belonging by addressing what students require within different domains before they feel able to build their own belonging. The discussion focuses on connecting these results to existing literature, as well as acknowledging the limitations of the current study.

Methodology

Context and sample

As part of the larger study, 101 first-year undergraduate students at two English universities were invited to contribute to a series of online diaries and surveys around their experiences of belonging. Sixty-five students took part in the longitudinal online diaries aspect of the project (full demographic details of the participants can be found in [Appendix 5.1](#)). More information about the recruitment of participants can be found within [Chapter 3 - Methodology](#).

Data collection and measures

Participants were given the choice of how they wish to provide their reflections for each of the online diary entries – which could take the form of either blogs, video diaries or audio recordings. Participants were then prompted to share their thoughts on belonging roughly every three weeks throughout their first year of study, with a small incentive – £5 Amazon voucher – for each time they took part.

Online diaries were chosen as the method of data collection for three reasons. Firstly, online diaries present a way for the experiences of participants to be captured on a longitudinal basis without the need for further in-person interaction between the researcher and the participants. This was important to minimise the risk that each data collection point would also establish a further bond between the researcher and the participant, which may influence their sense of belonging. Furthermore, this distance may allow participants to disclose information that they perceive as too personal to share in interviews (Day and Thatcher, 2009). That said, the process of reflection itself is likely to have had an influence on sense of belonging and this is explored further in the process evaluation section of the results. Secondly, from a practical standpoint, online diaries collect

experiences from participants at a distance and collectively – i.e. not from one participant at a time. Given practical time constraints on the research due to the numbers of participants, this was necessary to consider. Finally, in addition to the benefit of addressing the gap in longitudinal research on the subject of student belonging, utilising online diaries throughout the academic year captures data from participants near to when events happen, thus reducing the potential for errors in recall (Cucu-Oancea, 2013).

As noted above, a choice of medium for submitting to the online diaries was provided with the hope that it would increase regularity of participation from students and also improve the depth of insight within each submission. By allowing students to choose the diary entry medium, it increased the chances that participants would be able to use a medium that they already had experience using, thus removing potential barriers to continued participation (Day and Thatcher, 2009).

Within each online diary call-out participants were asked to reflect on a different aspect of belonging, as well as some secondary prompts which stayed constant throughout all diary entries. Participants were able to choose how much time or how many words to write on each of the various prompts. This additional layer of self-direction is more likely to allow participants to share information about what was most important to them (Baker, 2021). In addition to the online diaries, participants were also sent online questionnaires to measure their perceptions around sense of belonging. The quantitative data from these surveys is analysed within the two subsequent chapters, however the questionnaires also contained two open text questions to gather more thoughts from students around belonging. A full schedule of prompts from the online diaries and online questionnaires is presented in Table 5.1.

Overarching prompt questions (present in all diary entry requests)			
What are some of the areas where you have felt a sense of belonging at university over the last few weeks?	Are there any areas where you have felt more isolated, excluded or alienated?	Have you taken any steps to build your sense of belonging?	What barriers have you faced in your attempts to build your sense of belonging?
Additional, timely prompts			
Oct / Nov	Nov / Dec	Dec / Jan	Jan / Feb
What spaces at university (both online and in person) do you feel a positive sense of belonging? Are there any spaces where you don't feel welcome?	To what extent do you feel like you belong in your classes (lectures and seminars)? What are the positives and negatives?	Have you been able to find groups of students to make friends where you feel like you belong?	What are your relationships like with academic staff on your course? Do you feel respected and a sense of belonging with your lecturers?
Feb / Mar	Mar / Apr	Apr / May	
How has your belonging changed at university since you started back in September? What feels different now compared to six months ago? Have your priorities changed in terms of areas where you wanted to belong?	What challenges are you still facing in terms of feeling a sense of belonging? Is there anything that you've tried to do to overcome barriers that still hasn't worked?	As we're now coming towards the end of the academic year, what lessons have you learned about building belonging? What do you wish you could have known when you started?	
Open text questions within surveys			
Briefly describe some of the steps that you have taken recently to build relationships at university and find spaces (either physical or online) where you feel that you belong?		Is there anything more that you want to do next to develop your sense of belonging at university? If so, briefly describe what.	

Table 5.1 - Prompts used within online diaries and open text questions within surveys

The study was designed so that students did not have to complete all diary entries or surveys to be able to participate. Given the different time commitments that students may face during an academic year, this was primarily chosen to ensure that the study did not impact negatively on students' wellbeing. The incentive structure for the study was designed with this in mind, so that students would receive incentives for each contribution they made. Full details on the number of contributions from each participant are also included in [appendix 5.1](#). 207 online diary entries and 97 survey responses were submitted in total, meaning that on average each student submitted 4.7 submissions towards this research.

Approach to data analysis

Reflexive thematic analysis (Reflexive TA) was selected for data analysis, due to its close fitting with the constructivist nature of belonging. Reflexive TA is ultimately about foregrounding the subjectivity of the researcher and identifying themes from the data after coding the data in a systematic way (Braun and Clarke, 2006). The flexibility of Reflexive TA provides its main strengths and weaknesses. The flexibility provides an accessible method of analysis, which therefore makes it ideal for a broader array of applications than stricter or more narrow methods. However, this flexibility can also lead to inconsistent applications of the method, especially with regards to the parameters through which themes are identified (Braun and Clarke, 2019).

Given the vast qualitative research that has already explored students' sense of belonging at university, this study utilises a primarily deductive approach in theme identification. This approach allows identified gaps in the literature to be explored in greater depth, distinctly separating it from grounded theory, which sees prior conducting of a literature review as constraining (Glaser and Strauss, 1967, p. 45). The research questions for this study focus on the connections between student belonging and agency – taking actions to belong; thus, data were coded and themes conceptualised with the purpose of exploring these questions. Whilst this means that this study does not present a rich description of the overall data, such descriptions of students' experiences of belonging has already been explored in a wide variety of studies (see [Chapter 2](#)). Instead, this chapter provides a much more in-depth analysis of an aspect of belonging that is currently less-well explored: student agency and its connections to belonging. Furthermore, given that questions of agency were often implicit in the prompts utilised in the online diaries, the analysis develops latent themes, “where broader assumptions, structures and/or meanings are theorised as underpinning what is actually articulated in the data” (Braun and Clarke, 2006).

Protocol for analysis

NVivo software was utilised for the coding and identification of themes. Aspects of narrative inquiry methodologies were utilised to ensure the stories of participants as a whole, captured through the longitudinal aspect of the project, were not missed. Each student's contributions across the online diaries and surveys were grouped, so that analysis focused initially on each participant's journey of belonging. This approach was chosen, given the gaps in longitudinal studies on belonging and thus absence of studies that have been able to explore changes in student belonging (see [Chapter 2](#)). A balance was sought between holistic and categorical analysis (Elliott, 2005), so that the overarching

story of each participant could be coded, as well as each individual diary entry. This helped ensure that changes, or constancy, in perspectives from students could be captured as part of the analysis (Connelly and Clandinin, 1990). This approach also allowed gaps in data, where students had missed individual entries, to be more readily apparent. All video and audio submissions from students were transcribed so that data could be coded in a consistent manner. This meant that no analysis was carried out around tone of delivery or body language for the audio and video media.

In the initial coding stage (full coding list available in [Appendix 5.2](#)), participants were not classified based on their demographic data, institution of study or prior exposure to belonging interventions. This partially 'blinded' the data, so that no assumptions about the students' experiences could be made throughout the coding process (Spiegelhalter, 2019). This approach was especially important given that students' exposure to previous belonging interventions was explored as part of the analysis. Once initial coding and theme generation was conducted, demographic data was imported into NVivo, so matrix coding query analysis could be used to explore differences in data based on students' prior intervention experience. As suggested by Braun and Clarke (2006), several phases of theme iterations took place ([Appendix 5.3](#)) before final themes were agreed upon. Coding comparison queries were used to ensure that each theme was sufficiently distinct from each other, as well as sufficiently internally consistent. Sentiment coding analysis was also used throughout, which supported the development of theme generation. Theme ideas in earlier stages of iteration could be explored further in future research, but were not represented sufficiently in the data, or were not distinct enough from other themes, to be included in this study's results.

Results – introduction

Five themes were developed to answer the research questions of this study. Whilst Reflexive TA only recognises codes and themes, these themes have been grouped together under category headings for ease of presentation (Figure 5.1). These results explore each of the themes, utilising quotes from students and the development of models. Each student has been given a unique reference based on their prior intervention status ([Appendix 5.1](#)) – 'B' for students who attended the belonging workshop, 'S' for study skills or 'N' for no workshop attended – which is presented whenever a direct quotation is used. Within each theme, analysis has also been conducted to explore differences in results based on prior intervention status. Whilst each theme has been developed to be distinct, there are occasionally links between them, which are presented in the results.

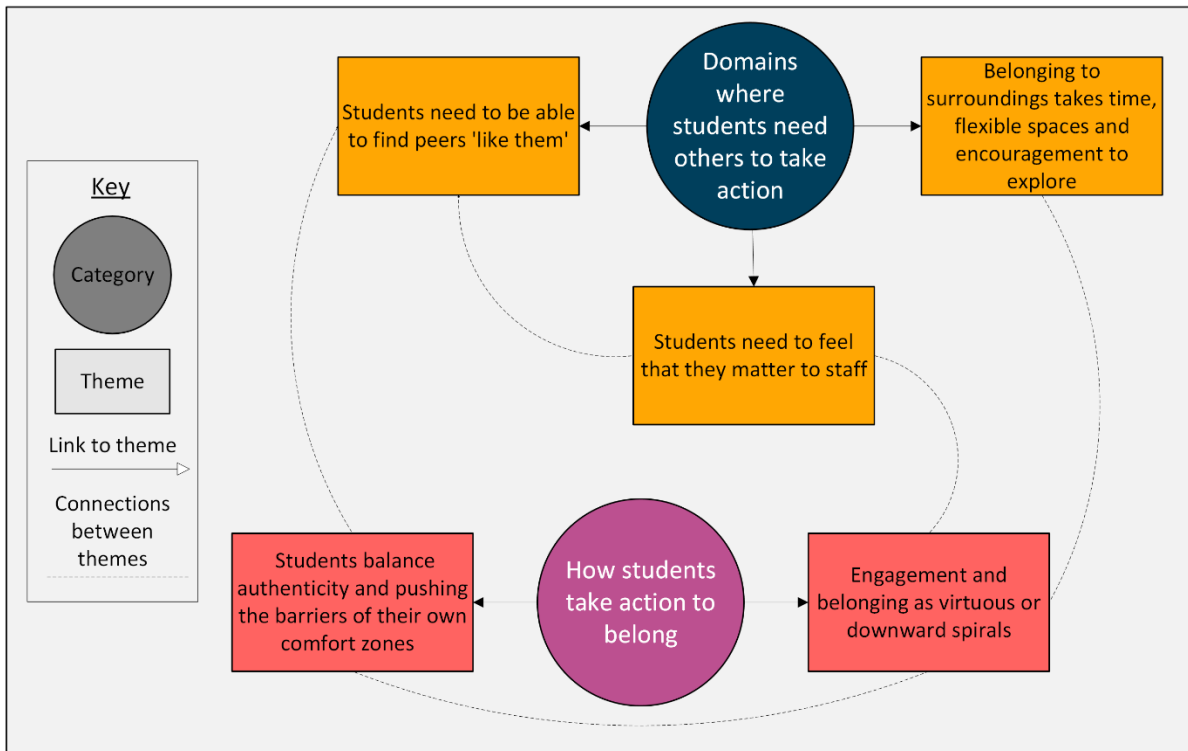


Figure 5.1 - Map of categories and themes from Reflexive Thematic Analysis of student belonging online diaries data

Theme 1 – Students need to be able to find and connect with peers ‘like them’

Students describe social connection as both a prerequisite for engaging in future opportunities and as preventative to feelings of isolation. In most cases, students are looking for opportunities to connect with peers ‘like themselves’. This does not necessarily mean students who share their demographic identity, although this certainly features in students’ contributions, but also peers who share their goals and priorities. Students talked more positively about modules where other students connected meaningfully with them, as opposed to modules where “people come in, get on with it and then leave” (N22). Participants also articulated the barriers that they face in being able to find and connect with peers ‘like them’.

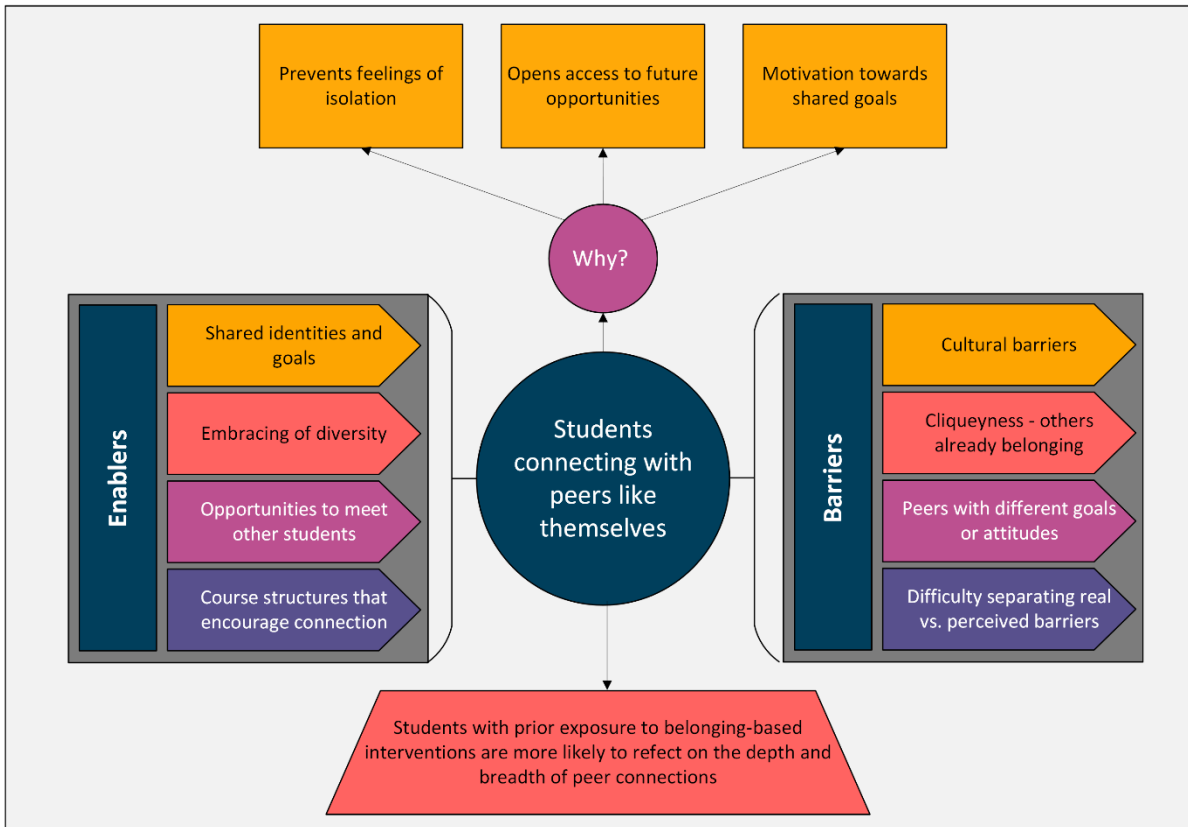


Figure 5.2 - Summary of the theme: students need to be able to find and connect with peers 'like them'

Most students want to find similar peers, but some embrace diversity

Many students articulated the benefits of being able to find students who shared their own identity, whether in their course or wider opportunities to connect with students, such as societies.

“In my faculty, there is a society made only for international students, and we often meet to discuss school life, academic aspects and life as an international student in the UK.” (N9)

Students appreciated societies that were tailored towards their specific identities – often based on nationality or ethnicity. More generally societies were seen as a place to meet “like-minded people” (B6). Students also talked positively about their relationships with flatmates when they shared “similar lifestyles” (S10).

However, other students also explicitly referenced the value of diversity when connecting with peers. One student noted the benefit of having students from different year groups within her society, which meant that she could ask them about accommodation options. Diverse make-up of class demographics, in terms of “appearance and interests” was also talked about positively (B18). One

student briefly discussed how diversity at university was a welcome thing because people respected these differences:

“People were surprisingly very friendly and all of the stuff that you face in high school with some people who think too much of themselves or think they're better than everyone, that kind of goes away once you actually get to university.” (N3)

This student went on to say that connecting with a diverse set of peers helps you to “grow as a person”, seeing it as a “core part of life” (N3).

Students who are not able to find peers like themselves face challenges

Whilst diversity was recognised as a positive by some students, others articulated the challenges that it presented for them. Many international students talked about the barrier of not understanding cultural references, which slowed their ability to connect with peers. Even though they often reported other students as being friendly and welcoming, not being able to instantly “click” (B3) with others hindered their development of social belonging. Other students felt less welcomed in spaces where students took part in other cultural practices – e.g. social events that involved drinking. One student who identified themselves as “Black” (B9) said that they never felt that they belonged in this country and so found it difficult to answer the question in a positive way.

Like international students who described the additional time investment it took to overcome cultural barriers; one mature student articulated a similar barrier:

“The age difference has made a difference with the use of social media; everyone else seems to have seven different accounts whereas I don't have all the Instagram, Snapchat, TikTok etc. ... it feels like I haven't got the time to develop the new 'hobby' of social media in order to connect and belong to the groups of other students.” (B4)

Overall, there is a sense that students who do not find peers like themselves easily within their course resent having to exert extra effort and energy to find this connection elsewhere, wishing that “more that could be done to create a more diverse and inclusive environment within [their] course”. (N14)

Whilst this was not true for the majority, a few students reported trying to make friends in societies, but being unsuccessful, and so now feeling like they should give up and only stick with friends that they already know outside of university. Students' particularly struggled when they felt that other students around them did not prioritise social belonging in the same way that they had. Sometimes this was due to not having access to the right opportunities to meet like minded students – e.g. for

students not living in Halls of residence – other times it was just a general sense that other students did not share their priorities:

“I have tried making friends but everyone seems to be in their own box, people are either antisocial or rude, so it’s best I stay in my box too.” (B22)

Whilst these barriers are certainly real for many students, upon reflection, one student recognised that some of these initial challenges to overcoming cultural barriers may have been more about their own levels of confidence:

“Initially, I was concerned about making friends abroad, and since I do not speak English as my first language, I was not confident enough to approach people. However, I realised that what limits my socialising and building a sense of belonging is my introverted attitude towards making friends rather than the language barrier... If I could go back to my freshers, I would be more confident and active in exploring new people.” (N9)

The perception of cliques is a barrier to connection

Many students noted the challenge of other students already seeming to have made friends and therefore feeling less welcomed within group settings. Students talked about this within classroom settings, canteen spaces and in halls of residence. One student felt that this was their own fault because they prioritised making friends within their accommodation and then regretted not having invested as much time in developing friendships with coursemates:

“Perhaps one of the greatest challenges still faced in terms of a sense of belonging is how hard it is to get to know other students in your class or to keep building new groups of friends with fellow classmates, as most seem to want to have just an initial group of friends and are less keen further on into the year to talk to other students.” (B6)

However, for the majority of students, this perceived “cliqueyness” (S8) was due to no fault of their own. Some students noted that they were unwell near the start of term and so missed opportunities to connect with peers. Some participants mentioned that other students connected quickly due to similarities – e.g. cultural connections – which they did not possess.

Course structures and delivery sometimes acted as a way to break up existing cliques:

“In seminars it is easier to interact with others as many people are split up from their ‘normal click’ of friends. I try to help other people talk and interact with each other when in seminars so that everyone feels welcome to join the conversation.” (B4)

However, other students noted the exact opposite – i.e. that changing modules separated them from their friends and they then found themselves with other students who somehow already knew each other. This was a particular challenge for joint-honours students who found it difficult to connect with peers in either of their subject areas, as other students had already made closer connections.

Belonging intervention group students discussed depth vs. breadth of peer connections

Students from the belonging intervention group were those most likely to reflect on the nature of their connection with peers; questioning the idea of depth vs. breadth of connections. Whilst this topic was not addressed by many students, they emphasised how finding peers like themselves was important to go from making acquaintances to strong friendships. One student when taking part in society activities reflected on whether the other students who were part of the society were that much like himself and talked about the “stress” of not being sure if they would see him as a friend (B16).

Another student reflected on their time during their first year and questioned whether their initial approach of trying to make lots of friends had resulted in an authentic sense of belonging:

“During my time at university this year I have grown to understand how many different ways there are to belong here and various levels of belonging too. Initially I believed it was vital to develop strong friendships and belong with my immediate cohort, but quickly realised for business school students this was more complicated. Five hundred students are in my year cohort, with 90 in my direct course... My approach of trying to touch base with a lot of students meant I ended up with no close belonging, but has allowed me to feel a wider belonging on the course.” (B4)

Theme 2 – Belonging to surroundings takes time, flexible spaces and encouragement to explore

Responses from participants invariably showed that students did feel a sense of belonging to physical spaces, but that certain conditions had been met to allow this to happen. They require enough choice of spaces to feel a sense of autonomy in choosing which spaces work for them. This is often based on students’ personal preferences and personality choices, but it is clear that these personal elements are what allow students to feel belonging to their surroundings. Some students felt confident enough to explore spaces, which greatly aided the building of a sense of belonging, whereas other students felt that it was the responsibility of their institution to show them relevant spaces. Students recognised

that this process takes time, which was a barrier for some participants. Spaces that provided less flexibility and variety – especially digital spaces – were linked to more negative responses from participants.

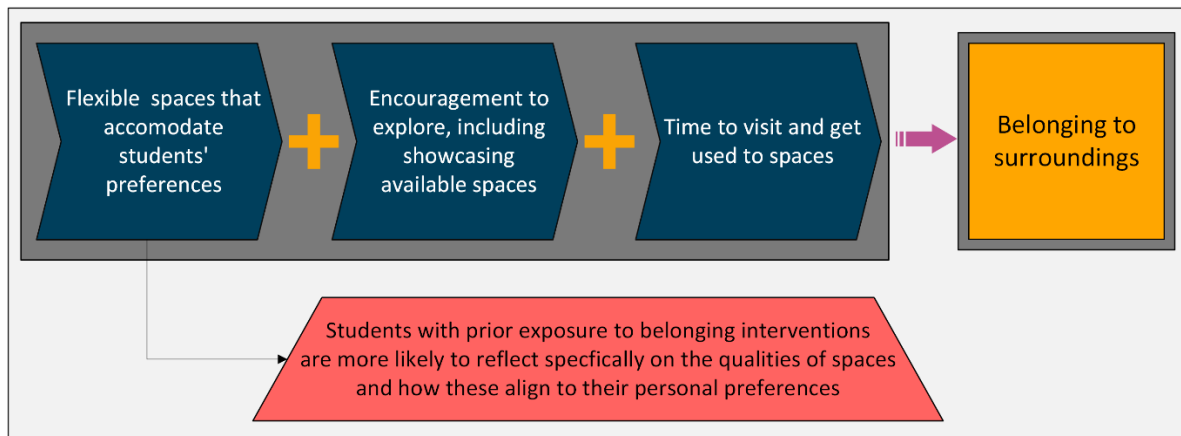


Figure 5.3 - Summary of the theme: belonging to surroundings takes time, flexible spaces and encouragement to explore

Students like choosing from a variety of spaces based on their personal preferences

Students liked it when they found spaces on campus that catered to their own personal preferences. Some students sought out “quieter areas” (S11), whilst others appreciated the spaces that allowed them “to connect with other students and to build relationships” (S6). Whilst some students particularly appreciated “green spaces” (B6) for their beauty and access to “outdoorsy” locations (B18), most students focused on how spaces either allowed them to feel a sense of “comfort” (S12) or because they allowed them to practically have somewhere to study. Students with prior exposure to belonging interventions were more likely to reflect specifically on the qualities of spaces and how these align to their personal preferences.

The flexibility of spaces was seen a real asset by multiple students, especially if this meant that they felt welcome beyond just time dedicated to independent learning:

“In the library I also feel quite comfortable because I tend to get in my own space, especially in quieter areas... However, when I want to take a break I'll usually go down to level 1 in the library where it's a little louder and there will usually be someone I know there who I can just have a chat with.” (S11)

Indeed, multiple students commented on how they felt belonging in certain spaces because they allowed them “to meet new people and feel like [they are] part of the larger university community”

(B11). This emphasises the importance of not separating social from spatial belonging. And whilst most students talked positively about flexible access and long opening hours, one student appreciated that one of their preferred study spaces closed at a certain time, as it encouraged them “to go home and stop studying” (N14).

Some students perceived certain spaces as large and daunting and thus did not feel comfortable spending time there. This was also true for digital spaces:

“In my Music course, we have a group chat for all the students. As this chat is so large, it always feels daunting to send a message or reply on it, and I feel self-conscious about sending a message on it due to my anxiety. Sometimes this means I don’t ask my peers for help when I need it” (N21)

Digital spaces may be a barrier in building belonging when they lack the flexibility for personal preferences that students are able to find with physical spaces.

Some students explored spaces on their own, whilst others needed encouragement

Multiple students talked about how they had made a purposeful effort to go “exploring on campus to see which areas [they] feel comfortable in” (S11). For most students they made this exploration at the start of the year, as this was when they felt less busy with course commitments. One apprentice student noted that they felt pressure to fit in this exploration at the start of the year before their working days commenced. Overall, students talked clearly and explicitly of the connection between knowing their university facilities and their sense of belonging and this is why they invested effort in exploring:

“Finally, exploring the university’s campus has also been a really great way to build belonging, as getting to know all the many locations can really help you to feel like you know your way around campus, which can have a really positive impact upon your sense of belonging.” (B6)

Students benefited from their course structure exposing them to spaces on a regular basis; either through discovering different parts of the library to access resources required for the course or through having regular access to subject specific facilities. These activities were described as helping to break down what could have been perceived as a difficult to navigate space. This recognises that not all students explored university facilities and campus spaces on their own and thus the benefits of tours from staff:

“We eventually had a full tour of the library, particularly in the basement, which appears to have a wide variety of resources for my fellow illustration students and I to look through.”
(B18)

Having sufficient time is the main barrier to building belonging with surroundings

The development of belonging to these spaces over time was evident through the way in which students talked about spending time in these various spaces in later diary entries. Implicit in the positive remarks about being in these spaces is that students belong there and so are now able to utilise those spaces for things like socialising, relaxing, group studying, etc. Whilst for most students this was described as a positive journey with few barriers – “once you step in, it’s fine” (N4) – this was not the case for everyone.

The most common barrier for building belonging to surroundings was having enough time. This was noted by international students who felt that they needed more time than home students to travel around and “enjoy the new environment” (B2). One commuter student also articulated their barrier to spending time on campus:

“As someone that commuted, I felt isolated from the students who would hang around the campus, spending their days committed to their education whilst I had multiple commitments.” (N22)

Theme 3 – Mattering to staff as a pre-condition to belonging

For students to feel a sense of belonging, especially within their course, there was a clear need to feel respected by and mattering to their academic staff: “When I feel respected and valued, I tend to have more positive relationships with my academic staff and I am more motivated in my studies” (B22). Whilst this theme was discussed frequently by many participants, students who had previously taken part in the belonging intervention talked more about this topic than students from the other two groups.

This included students feeling that their staff members were approachable and accessible enough to seek help – and then receiving prompt responses to such communication. Students also emphasised the importance of support and staff showing a caring approach. Students needed to know that their identities and experiences were valued by staff and especially appreciated when they could see how

their feedback was being taken seriously. Students also recognised that there were limits to how much support staff could provide and that these were sometimes based on systemic or institutional issues.

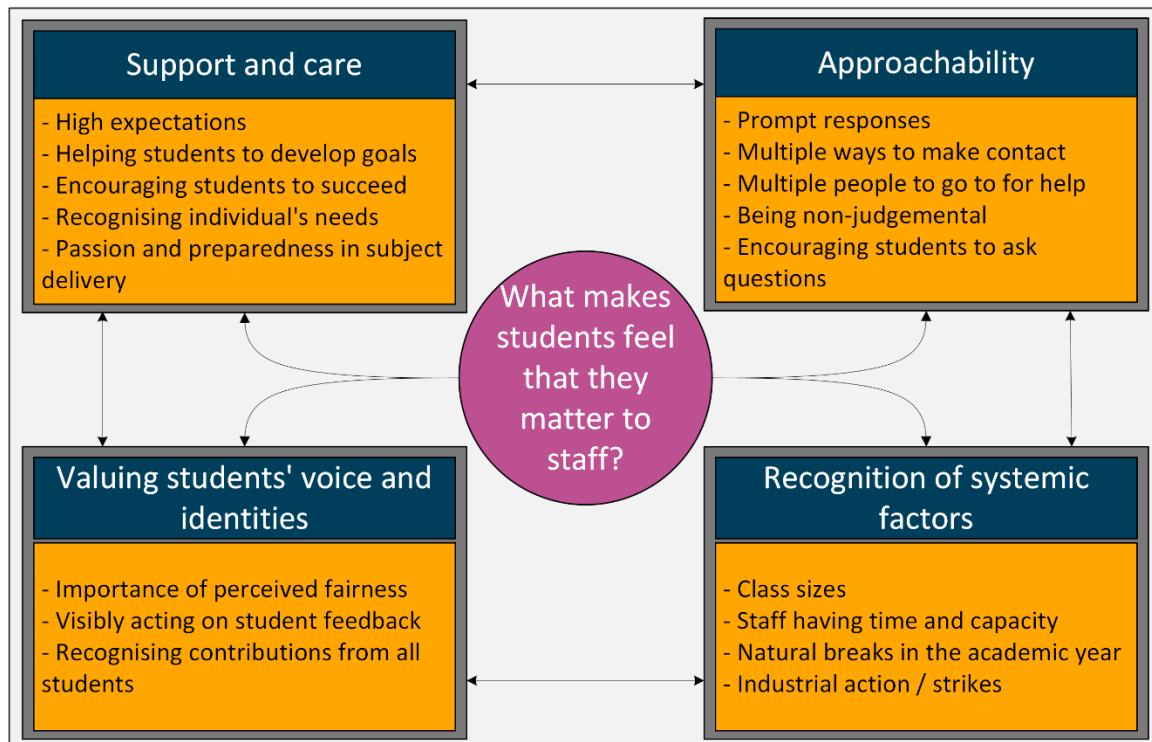


Figure 5.4 - Summary of the theme: mattering to staff as a pre-condition to belonging. Arrows connecting the different boxes are used to indicate how each of these terms were often used in overlapping and interchangeable ways by participants - e.g. activities that showed staff cared were often the same as those that showed value for students' voices and identities

Between all these sub-themes, there was a significant amount of overlap, where students would cover multiple different aspects within their same diary entries. This suggests that these sub-themes – e.g. approachability and caring approaches – may be closely interrelated:

“I have been conducting a laboratory project as part of my dissertation and have found my lab supervisor to be absolutely amazing. He is very attentive, explains the task clearly and is very friendly and approachable and makes the lab an amazing place to work and spend time. This really is a positive experience and makes me feel respected and like I matter as he is also very reachable and can be contacted about other things like interview help and other general questions.” (N25)

The importance of approachability and responsiveness

“The staff in my course are approachable and responsive, facilitating my ability to seek support and advice whenever needed.” (S6)

Feeling that their staff members are approachable was a crucial aspect in students then being able to take action to belong. This approachability meant that students did not “hesitate as much” to ask staff for advice and guidance (S9). Common ways that staff were able to emphasise this approachability to students was through taking a non-judgemental stance when questions are asked, proactively checking in with students when in class, and providing different communications routes for students to ask questions. When the reverse is displayed, this negatively influences students’ confidence in taking actions to belong:

“There are one or two who I feel are not respectful and make students feel uncomfortable when they ask questions. This negative experience kind of discourages me from seeking help in the future, which can ultimately harm my academic progress. It is important for all lecturers to create a safe and respectful learning environment where students feel comfortable asking questions without fear of judgement or embarrassment.” (S11)

Multiple routes of communication – inside and outside of the classroom – seemed to allow students to choose whichever medium they felt most comfortable with, which further emphasised the approachability of staff. Examples given by students included interactive ways to ask questions within the classroom, email communications, instant messaging platforms, and drop-in sessions in person or online: “Their modes of communication on our learning site and via email is a credit to the effort they put in for the students.” (N22)

These modes of communication and access to support from staff were appreciated by students even when they weren’t actively using them: “Everyone also had an academic adviser, which I personally never had to use. But I know that it gave me a sense of belonging at the university because I knew that if I ever needed anything, I would be able to ask” (B14). However, one student did note that they felt that because they had never needed to ask any questions to their academic adviser, they had never developed a relationship with them; the student wondered if this would be a problem later in their studies.

Prompt replies from staff to queries is especially helpful for students who had been nervous about approaching staff: “the prompt replies and efficient communication has really made me feel at ease” (S9). However, whilst some students spoke positively about responsiveness from staff, multiple other

students referenced not receiving responses to their queries or only after quite a long time had passed:

“I know there are a couple of members of staff who liberally reply to emails and don’t give real attention to their tutees, and this can be incredibly frustrating for them – so I don’t think the same courtesy I’ve experienced has extended to the entire department.” (N21)

Students really appreciate supportive and caring approaches from staff

When describing the move into university, one student was pleasantly surprised that staff weren’t as distant as she expected: “they do actually care about you and your grades” (B14). Many students felt that staff wanted them to succeed, which was an important part in feeling that they belonged. One student elaborated on how this was achieved by talking about how their tutor had helped them in “navigating [their] academic and professional goals by aiding [them] in establishing achievable plans (S6). Students emphasised the importance of building up relationships with staff who knew them personally and thus understood what their goals were. Students seemed to appreciate when staff held high expectations of them, however this wasn’t explicitly stated by participants themselves.

This aspect of personal connection and having students’ individual needs supported was referenced by many participants. This occurred in the context of students requesting support based on personal issues or staff being better able to support students’ development by better knowing their circumstances. This appreciation for each student’s individual needs seemed to help students find solutions to issues faster and more generally helped them to feel “heard and understood” (B18). Another student spoke extremely positively about a tutor who had proactively reached out to them by email when they were struggling and not attending classes as much. Conversely, one student talked about how their learning support needs had been “disregarded” by tutors, leading them to feel anxious and lacking in belonging (B9).

The concept of care was also considered by students with regards to how academic staff delivered their teaching. Students talked about how positive it felt when tutors were “prepared” (B20), “try to get [students] engaged in their lectures and discussions” (B6) and showing “immense passion” for their job and the subject (S13). When reflecting on the reciprocal nature of respect, one student commented on how their lecturer had “never been late to class” and that this was an important sign of respect for them (B20). This shows that at least some students can feel that they matter to staff even without any personal relationship, as long as they can see care and passion through staff members’ teaching delivery.

Students want both their identities and voices to be valued

Very few references were made by students about feeling valued based on their identities, but they are typically negative and made mostly by students from traditionally underrepresented demographics within UK higher education – e.g. students with disabilities, women, Black students. Some students perceived experiencing “unfairness” from staff, which hindered the development of positive student-staff relationships (B9). Others felt that they were not included within the class community because of being different from others. There was a notable absence of references to identities being respected for students from traditionally overrepresented groups.

However, when students discussed whether their voices were heard, students were generally much more positive:

“During November they released a survey and fed us back to the results in the following lecture. From the results, they informed us how they will be adapting to our feedback in the coming weeks. It was inspiring to see how much our feedback mattered to them. They do respect our learning journey and the proposed changes have been seen in our lectures since.” (N22)

Multiple other students referenced the presence of student voice mechanisms and linked this to feeling that they mattered to staff. Student feedback that had been acted upon at an individual level, recognise students’ unique needs was also seen as an important part of feeling respected:

“I did raise the problem that there were no gender-neutral toilets to my personal academic tutor, and she went out of her way to organise this, and there is now one in our new building. This really helped in terms of feeling respected.” (N21)

Students recognise that there are aspects outside of individual staff member’s control

Whilst mattering to staff was important to students, participants reflected on potential structural barriers to this occurring. Multiple participants reflected on the size of their classes as either an enabler or barrier to building meaningful relationships with staff and thus feeling that they matter to them. One student noted this particularly when reflecting on the different structures across their modules: “I don’t feel valued by these teachers, simply because there are far too many students in the class for the teachers to divide their time on” (S3). All comments on this topic suggested that larger class sizes made it harder for students to feel that they mattered to staff.

A couple of respondents also referenced industrial action as something that disrupted teaching, but neither saw this as a sign that they did not matter to staff. In fact, one participant reflected positively on how their tutor had communicated to them about upcoming strikes:

“I think we do matter to them, especially as during the strikes we had two lectures cancelled by the same lecturer, and he was so apologetic and looked very guilty that their strikes were impacting us in this way.” (N21)

Theme 4 – Engagement and belonging as virtuous or downward spirals

“Engaging with the university community more broadly also helped me to develop a sense of belonging. I got involved in academic pursuits, such as attending guest lectures and participating in research opportunities, as well as volunteering and participating in cultural events. By doing this, I felt more invested and connected to the institution and its values, and developed a sense of pride in being a part of this community.” (S17)

“At the start of the academic year, I was happy and felt a great big sense of belonging to my course community because it was so welcoming. That really encouraged me to arrive earlier to class, so that I could make more friends and stay on top of all the course material.” (S3)

The first quote above from participant S17 recognises the ways in which their various forms of engagement helped them to develop a greater sense of belonging. The following comment from participant S3 then acknowledges how their sense of belonging led them to take actions to engage further in their course. Both quotes are typical of many other responses from participants throughout the data. Despite this, no individual participant ever explicitly recognised the cyclical interplay between belonging and engagement. Furthermore, more of the responses that suggest how belonging leads to engagement were framed from a negative perspective – i.e. how their lack of belonging hindered them from future engagement.

As would be expected, there are also other enablers and barriers to both belonging and engagement. For example, one student noted that their own “failure to do pre-session work before coming to class” would then lead to them “seem[ing] too quiet and will not contribut[ing] to class discussions”. This provides an example of how other factors affected their engagement. Similarly, many other examples of factors, not related to engagement, that affect belonging can be found throughout this study – e.g. staff treating students with respect.

Those who attended either workshop were more likely to note the virtuous spiral connection between engagement and belonging and less likely to be in a place where they were experiencing a downward spiral. Perhaps this is to be expected as the students who did not attend either workshop may have had particular reasons why they could not engage, which also affected early engagement with other aspects of their studies.

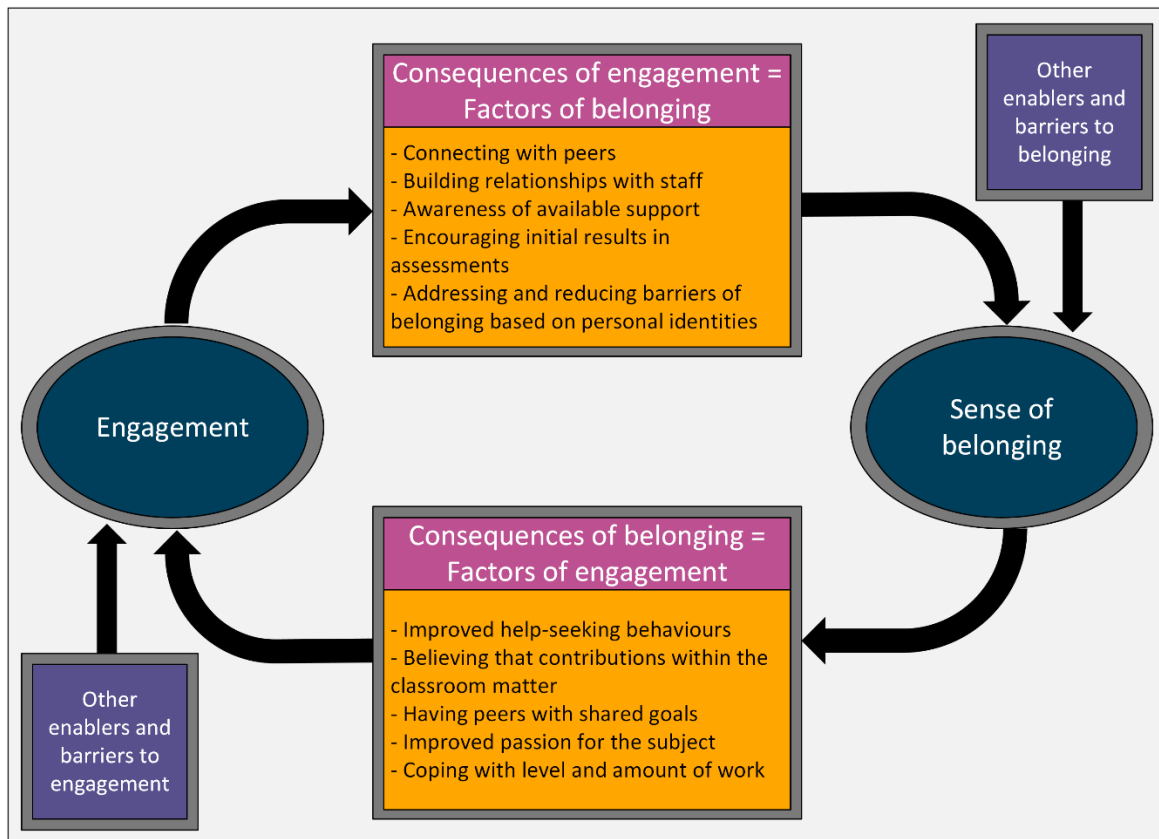


Figure 5.5 - Summary of the theme: engagement and belonging as a virtuous spiral. A downward spiral is not shown in this model, but was something discussed by participants

Engagement leads to more belonging

In previous themes, various prerequisites to belonging outside of students' control have been identified. However, for all of these areas, students also recognise that taking action, or 'engaging', is also a necessary prerequisite to them feeling a sense of belonging. For example, mattering to staff was identified as a prerequisite of belonging, however some students acknowledged that engagement within the classroom helped staff to then value their contributions:

“I feel like the staff respect me because they can see I attend class, work hard, and I have a liking for maths. I feel like they value me because I contribute to classes.” (S3)

It was attending class regularly that kept students “attached to [their] teachers” (S16). Participants also recognised that staff “really do try to get us engaged in their lectures and discussions and to find out our opinions” (B6) so that students can then feel that their contributions matter. This was more likely to happen when clear expectations were set for students around the benefits of engaging – both within classes, amongst peers and through independent study. Students recognised that academic engagement helps improve performance on initial assessments, which then leads to them feeling a greater sense of belonging:

“I need to put in more effort in independent study to achieve higher grades. When I am happy with my overall achievement, I feel more sense of belonging in the institution.” (B20)

Finding peers like oneself was also identified as another prerequisite theme, and similarly participants recognised that their own engagement is necessary for this to happen. As one student put it, “turning up is necessary to make friends in my class” (N11). These efforts help students to find peers that share their goals and therefore encourage things like the forming of independent study groups. In one case, a student commented on how they already knew people near to their university because they had lived there prior. They felt this prior engagement gave them “an extra sense of belonging.” (S11)

A lack of engagement was also noted by students as something that made them feel lower levels of belonging, however in most cases they attributed their lack of engagement to factors outside of their own control, such as part-time work, placements or other commitments. Students also noted that engagement, or lack thereof, from other students also affected their sense of belonging, as it made it “harder to keep up with friends and find that sense of comfort in each class.” (S3)

Overall, students recognised how “effort”, “attending events”, “joining clubs or organisations that align with [their] interests and “participating to class discussions” helps them to “connect with [their] classmates” and feel that they are “part of the academic community” (B11)

Belonging leads to more engagement

Whilst the consequences of belonging, and how this leads to future engagement, were discussed by fewer students, it was still a recurring theme within participants’ responses. In terms of belonging to surroundings, students who felt belonging to spaces on campus noted greater levels of attendance:

“I feel belonging at library a lot, so I spend more time there” (S16). For some students, their improved sense of belonging helped to mitigate negative aspects of poor mental health and thus remove barriers to helpful engagement:

“Looking six months on, I can see how much has changed and how I have gotten better at managing my anxiety when it comes to coming on campus and meeting up with friends and when I get assignments etc.” (S9)

Students who felt belonging through their relationships with close friends now were able to have people with whom they could: “regularly to check in and organise study sessions” (S3). This helped students to “feel more focused in my work” (N12) and thus encouraged further engagement.

Feeling a sense of belonging through relationships with staff, increased students’ confidence in help-seeking behaviours. Multiple students remarked that they felt confident to “go to [tutors] for help” (B14). In contrast, participants talked about “isolating in the library and not attending [their] lectures” when they felt insecure about their capacity to cope with the level and amount of work (N25).

Theme 5 – Balancing authenticity and pushing the boundaries of one’s comfort zone

Whilst few students used the exact term ‘authenticity’ or its derivatives, similar concepts were used frequently through participant responses. Students talked about how it was important to “always be [themselves] in front of people” (N17) and to not force themselves into “situations where [they] don’t belong just to fit in” (B3). Students described authenticity as the alignment between a person’s priorities and how they spend their time and therefore that the benefit of building belonging in an authentic way being that it means giving more time and energy to what actually matters. One participant even wrote an encouraging message to other students within one of their online diaries, encouraging students to remember what is most important to them:

“To the person reading this, whenever you find yourself questioning the course you chose, just remember why you chose it in the first place... Never forget that you are a strong and amazing person.” (B15)

Students clearly understand the concept and even reflected on how authenticity affected how they responded to different prompts throughout the online diaries: “This blog has been harder to write than the previous one, purely because building friendships doesn’t seem to be high on the agenda for me and therefore, I hadn’t given it much thought before” (S13).

Participants also recognise that authenticity does not mean the same as staying entirely within one’s comfort zone. Responses captured within this theme clarify how students balanced authenticity with approaching new activities where they did not always feel comfortable.

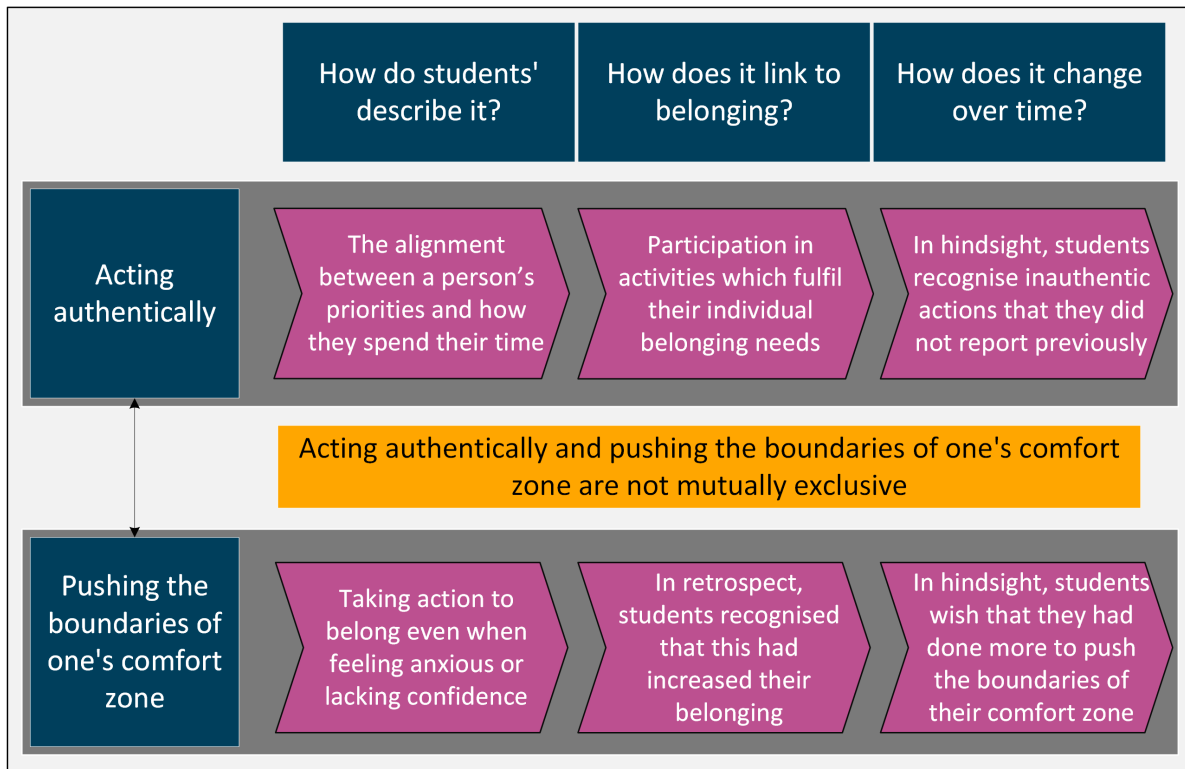


Figure 5.6 – Theme summary: balancing authenticity and pushing the boundaries of one’s comfort zone

When students act authentically this leads to them feeling a sense of belonging

Authenticity links closely to previous themes which already emphasised how students wanted to find spaces that aligned with their personal preferences and to find peers who shared their goals and priorities. One of the most common ways that students spoke about authenticity was in not attending events that were heavily based around drinking if this is not what they wanted to do. Students generally spoke about how they found alternatives that aligned with their preferences. Including making friends who also “don’t really drink” (S11) or attending non-drinking events to make friends “who have similar personalities and interests” (N9) to them. Students often talked about being naturally introverted and extroverted and how this had made them initially concerned that they would not be able to belong in certain spaces, but in almost all cases these initial fears did not result in any alienation as students were able to find settings that played to their strengths. Extroverted students

talked positively about participation in class discussions and introverted students felt able to connect meaningfully with smaller groups of friends and staff.

Some students reflected on their priorities, with some emphasising that social belonging or making friends was not that important to them: “personally, what is more important to me isn't social belonging so much as knowing that I'm in the right place to grow for myself” (S10). Belonging amongst friends was a specific prompt for one of the diary entries, so it's not surprising that some students would then want to talk about how this was not a priority. However, there were no students who said that they did not prioritise belonging within the classroom context when this was one of the prompts. Other students noted that their priorities had changed over the course of the academic year, which allowed them to change what actions they took to belong, whilst still being authentic:

“My priorities have changed a lot since September. I initially wanted to belong to as many groups and societies as possible, but now I've realised that the key is to focus on building solid relationships with a select few people. I've also become much more aware of the importance of academic success, and I'm now putting a lot more time and effort into my studies.” (S6)

It is also positive that students explicitly referenced how their priorities were different from other students, but that this was okay: “Importantly I have learned that it's okay to not feel as large a sense of belonging to societies as other people. I have seen other students get intensely involved with societies, which brought them a lot of joy and support” (B4).

Some students left responses which suggested that there were barriers to them being able to build a sense of belonging in authentic ways. The vast majority of these comments referenced the prerequisites to building belonging identified in the first three themes of this study. Students who had attended the belonging intervention were much less likely than other intervention group students to talk about these barriers when reflecting on building belonging authentically. Study skill group students were mostly likely to talk about the importance of grades and academic success for belonging in an authentic way. Few students recognised that they were acting in inauthentic ways, and the majority of those that did talked about this retrospectively – i.e. how they recognised being inauthentic earlier in the academic year. Students described these inauthentic actions as “not setting boundaries (people pleasing) and looking for acceptance and validation outside of [themselves]” (B9) and doing “activities that didn't align with [their] beliefs just to fit in” (S17).

Students' recognise that there are benefits to pushing the boundaries of their comfort zone

Multiple students talked in their diaries about feeling “anxious” (S9) or lacking “confidence” (B12), but still pushing themselves to “step out of [their] comfort zone” (S17). This was mostly in relation to connecting with other students, but students also talked about wanting to feel more confident to engage in course activities and interact with staff. Whilst many students talked about the benefits of pushing the boundaries of their comfort zone – “I do like the change that I can see in myself and it is 100% a very positive change” (N3) – the process itself was described very negatively like it was a “constant battle” (S17). Participants were often open about sharing how mental health conditions affected their confidence and energy to push their comfort zone. This suggests that any efforts to encourage students to push the boundaries of their comfort zones need to carefully consider students' mental health.

When reflecting back on pushing the boundaries of their comfort zone, multiple students used very similar language around how they “wish [they] had known the importance of actively seeking opportunities to connect with others” (S6), especially students on their course of study. This suggests that in retrospect, participants clearly recognise the benefits of going beyond their comfort zone and, in most cases, this was related to being proactive in trying to make friends. Students who had done more to step outside of their comfort zone spoke positively about this, whilst some other students suggested an element of regret that they hadn't done this more or earlier in their journey.

However, this regret was not shared by all students. Some participants who had not pushed the boundaries of their comfort zones as much, talked in terms of acceptance; in most cases suggesting that they were fine not having made friends or not belonging in all aspects of their university life: “I hadn't found any friends yet, but I am happy alone right now” (B17). For some students this reflected a changing of priorities and recognising that they needed to prioritise: “I now think that I belong with the people of my course more and that I belong doing coursework and more projects rather than spending my time attending events that the society hosts” (B14). Whilst some students talked about this positively or at least neutrally, others recognised how “isolated” they felt (B16).

Summary: prior exposure to belonging interventions affects how students take action to belong

Across all five of the thematic results of this chapter, some variance was discovered based on students' prior intervention status. Students who had previously taken part in the belonging intervention were more likely to discuss breadth vs. depth of peer connection (theme 1), talk about mattering to staff (theme 3), and reflect on how specific attributes of spaces aligned with their own personal

preferences, as part of their belonging journey (theme 2). Students who attended either the belonging or the study intervention groups were more likely to note the virtuous spiral between engagement and belonging (theme 4) – with those in the no-intervention group being most likely to suggest they were in a downward spiral. Belonging group students were less likely to acknowledge how acting authentically presented them with barriers and those from the study skills intervention group were most likely to talk about how acting authentically meant prioritising grades and academic success for their sense of belonging (theme 5). These were the only variances across intervention groups across the themes included in this chapter.

Process evaluation – do students perceive benefits in reflecting on their sense of belonging?

Within the last diary entry, participants were asked to answer some questions reflecting on their experience taking part in the online diaries aspect of the research project ([Appendix 5.4](#)). These results show that most participants found it easy to submit via the online diary platform, found it helpful to be able to choose which medium they wanted to submit their answers through (e.g. written, audio or video) and did not wish they had other options of how to submit their online diaries. 74% of respondents felt that the number of opportunities to submit online diaries was about right and the reasons that participants sometimes missed diary entry requests was split evenly between not seeing the email requests and not having enough time. The Amazon voucher incentives was an option that participants could have selected as a reason for missing online diaries, but only one participant did so, suggesting that the vast majority were satisfied with this approach. 77% of respondents felt that they could share everything that they wanted, but 20% said that there were a few things they chose not to share due to it being too personal. Participants were split evenly between whether they only reflected on belonging when producing their diary entry vs. those who did some reflecting beforehand, but made no notes and those who did make notes between diary entry completions. This means that over 60% of respondents did do some reflecting on belonging between diary entry requests.

Participants were also asked whether the process of reflecting on their belonging was helpful in itself and 83% responded positively. Some students appreciated the encouragement to reflect, which seemed to have an inherent feeling of usefulness: “It allowed me to put in words certain things that I have not necessarily voiced out loud to other people which, although providing no concrete changes to my problems, still felt beneficial” (N25). The process of reflecting seemed to help validate students’ feelings, or as one participant put it, it helped them to “accept how I truly feel” (B12). This led to students feeling a sense of enjoyment, as the diaries provided them with a “nice reminder” (N22) of what was currently supporting their sense of belonging. Multiple students commented on how this

process of reflection allowed them to better appreciate the journey that they had been on across the academic year: “It has been helpful to keep a record of my sense of belonging as I can see how much has changed since the beginning and how I have grown more confident and dealt with the change in different ways” (S13).

Some participants also felt that there were other tangible benefits that they acquired through the reflection process. A couple of students noted how reflecting on their sense of belonging encouraged them to “move forward in a purposeful and positive manner” (S3). Whilst some students felt that the process allowed them to develop skills around introspection and how they articulated themselves. One participant suggested that they had elements of their course that required reflection and they could apply skills that they had gained through the diaries towards that assessment. Although they recognised that this was a research project, one student felt that the diaries helped them to “gain a sense of support” (N9) by being able to share their stories.

Not all participants added much detail when reflecting on the process of taking part in the diaries. This was especially true for participants who left comments suggesting that the process was not helpful. Only one participant explained their negative sentiment, suggesting that they found the concept of belonging too “vague” (N12) to be able to know what to really talk about in their diaries.

Discussion

This chapter looks at the actions that students take to belong within their first year of study at two UK universities; the barriers that they face, to what extent perceptions changed over the course of the academic year, and whether students’ actions to build belonging varied based on prior exposure to belonging interventions. The findings from this chapter recognise the potential and limits of students’ agency to build belonging by addressing what students require within different domains before they feel able to build their own belonging.

RQ2.1: What barriers need to be addressed before students can take action to belong?

Building on previous research (Read et al., 2003; Pascale, 2018; Russell and Jarvis, 2019; Kahu et al., 2022), the findings from this study re-assert the importance students place on being able to find peers like themselves. However, whilst most existing research has focused on demographic similarities, within their online diaries students’ focused as much on finding peers with shared priorities and study goals, as they did on finding peers who looked like themselves. This builds on previous research

showing how important students' perceptions of their peers are to their own sense of belonging (Muenks and Yan, 2024). Overall, the strong overlap between how students connect with peers and perceive themselves speaks to the intersecting ways in which students belong and the different domains for them to build this at university (Ahn and Davis, 2020).

Whilst few participants used the exact terminology of 'cliqueyness', a broad variety of participants emphasised how they struggled to build peer connections due to the existence, or at least perception, or other students already having made strong friendship groups and no longer being as welcoming. This challenges some previous research which suggests that cliques may only be a problem for international students trying to integrate with home students (Jones et al., 2018) or that students generally perceive university to be free of cliques, especially compared to their previous educational experiences (Buckley, 2022). This also challenges the theory that belonging is defined as inherently positive, as when some belong this can lead to the alienation of others. These findings indicate that belonging is at most inherently positive to the individual who feels it. For practical considerations, it also emphasises the importance of considering the timeliness of approaches, as most belonging interventions are often targeted at students when they first begin at university (Johnson et al., 2007; Thomas, 2013; Slaten et al., 2016), however the barrier of cliqueyness emerges most prominently later into students' academic journey.

Whilst most students are looking for peers who share similarities, some students did emphasise the benefits of connecting with those completely different from themselves. These students seemed to encounter much fewer issues in building their social connections. This builds on previous research where other students have also talked positively about connecting with peers from different backgrounds (Strayhorn, 2008; Viola, 2021). It also connects with research showing that students feel a greater sense of belonging when institutions display positive approaches to diversity (Maestas et al., 2007; Keyser et al., 2022). This suggests that institutions that take a proactive role in celebrating diversity could have a double-effect on building students' sense of belonging; firstly, through a direct route of showing students that their identities are respected, and secondly through encouraging more students to recognise the benefits of connecting with peers completely different from themselves.

This research has also provided key insight into students' requirements to be able to find spaces to belong at university. Previous research has already emphasised how surroundings play a role, albeit often less prominently than other factors, in contributing to students' sense of belonging (Ahn and Davis, 2020; Askarizad et al., 2021). This study progresses the discussion in this area by highlighting the key barriers that institutions must address for students to be able to feel a sense of belonging to their surroundings; namely in providing spaces flexible enough to cater to students' personal

preferences (Stahl and McDonald, 2024), encouraging students to explore and utilise facilities (Birkenhauer, 2023) and recognising that it takes time to build this sense of spatial belonging. This latter component is especially important, given the existing research that notes time and competing commitments as a barrier more generally to belonging (Gilani, 2023). Institutions must recognise that these time pressures affect some students more than others when planning how to encourage students to explore and utilise campus spaces, otherwise it could lead to further alienation of students who are already most at risk of lacking a sense of belonging. It should also be noted that whilst most students talked positively about being able to find spaces that worked for them, this didn't mean that there were not spaces that felt isolating to students. These were more often larger spaces – including both physical and digital spaces – where students felt exposed to a larger number of their peers at once and therefore a perceived pressure on how to behave.

Students' desire to feel respected by and mattering to staff as part of their journey to building a sense of belonging is well replicated within existing research (Hausmann et al., 2007; Thomas, 2012; Kane et al., 2014; Jones et al., 2018), so it is unsurprising that this came up consistently throughout the findings in this study. Whilst approachability of staff has been covered within existing research (Luo et al., 2022), this study adds to this by exploring what determines whether students perceive staff as approachable; highlighting the importance of being non-judgemental in responding to student queries, the benefits of offering multiples ways for students to make contact, and the importance of prompt responses. Offering students multiple communications routes to ask questions allows students to avoid channels that they may not be as comfortable with, however it is important to recognise that this could mean students do not develop key skills in these areas – e.g. professional email etiquette. The staff resource required to 'manage' these different channels of communication also has to be balanced with the benefits that it brings to students' sense of belonging.

What has been discussed less in previous research are the factors that allow students to feel that they matter to staff, which may be out of the control of individual staff members. Students discussed class sizes, industrial action and natural breaks in the academic year as all creating distance between them and their staff members, which hindered their ability to feel that they mattered. However, for all of these factors, students showed a degree of understanding that they were institutional issues and therefore they did not propose these issues could be addressed by any individual member of their teaching staff. This could be perceived positively, as it suggests that students understand that a number of different actors – institutional leaders, professional services and academics – need to collaborate in order to remove any barriers for them to take action to belong.

RQ2.2: How do students take action to belong?

Whilst many studies have captured factors of student belonging that students in theory have control over – e.g. time spent studying (Strayhorn, 2008) and attendance in induction activities, timetabled sessions and broader university events (Kane et al., 2014; Cruz and Grodziak, 2021; Byl et al., 2022) – this study's unique contribution to knowledge is through looking practically at what actions students take to belong. Through this study, two key themes have emerged to answer this research question: firstly, that students balance acting authentically and pushing the boundaries of their comfort zones, and secondly, that students' actions to belong create a virtuous cycle.

Students built their sense of belonging across the three domains discussed above – social, academic and surroundings. When they did so, participants in the study recognised how these actions were having direct effects on their sense of belonging. This indicates that whilst students acknowledge there are barriers or conditions that need to be enabled for them to build belonging (RQ2.1), they then accept that taking actions to build belonging are then their own responsibility. In particular, students discussed how they took actions to build belonging in ways that aligned with their own priorities – so that they were acting authentically.

This aligns closely with the concept of agentic engagement – the idea that students constructively contribute to the way instruction is directed during classroom learning activities based on their own learning preferences (Reeve and Tseng, 2011). However, this suggests that agentic engagement is a one-way, wholly student-led process and that it only exists within the classroom context (Cook-Sather and Seay, 2021). In this study, students' reflections recognise how their actions to build belonging were interconnected with actions from other students, staff and broader university processes, and these actions existed both within and outside of the classroom context. This suggests that in order for students to feel agency in developing their sense of belonging – agentic belonging – they need to know that supportive conditions and opportunities are in place.

The positioning of authenticity as central to how students built their sense of belonging critiques the idea that the personal domain of belonging is separate from social, academic and surroundings (Ahn and Davis, 2020). Instead, this suggests that the personal domain is central to how students prioritise in what ways they want to build belonging and how they go about this. The remaining three domains then present the actual arenas where students take actions to belong. This aligns closely with previous research showing the benefits to belonging when students take part in self-reflective activities, supporting the development of growth mindsets (Murphy et al., 2020). Findings from this research indicates that such self-reflective activities may be beneficial because helping students to better

understand their own priorities is a crucial component in then being able to act in authentic ways when building their sense of belonging.

Whilst students questioned whether they should push the barriers of their own comfort zones when taking actions to belong, this was not positioned as acting inauthentically. Instead, these reflections from students were more about being able to address their own lack of confidence so that they could follow what was important with them to belong. Given that several students wished they had done more earlier on in their studies to push the barriers of their comfort zone, especially with regards to building positive relationships with peers on their course, this suggests there is a role that institutions can take to encourage students more in this area. This is further backed-up by the recognition from some participants that initial perceived barriers – e.g. that other students would not accept them – did not often turn out to be true. However, for students to realise this, it required them to take a “leap of faith” (Ajjawi et al., 2023, p.9). Universities have a responsibility to recognise that level of vulnerability this takes from students and ensure that they don’t regret such brave actions.

Finally, given the strong evidence that actions students take leads to belonging, which subsequently encourages students to engage further, institutions should recognise the importance of building belonging interventions as early as possible into students’ journeys. This is especially important given that some students described their situation as a downward spiral between belonging and engagement, which may be harder to address through supportive interventions, as lower engagement could mean that it would be harder to reach these students.

RQ2.3: To what extent do students’ belonging reflections vary based on experience of prior belonging interventions?

Whilst this study did find some variance in the extent to which students commented on certain topics based on their prior experience of belonging or study skills interventions, the methodology was not designed to explore how those interventions led to students taking different actions to belong. Students were not prompted to and rarely did specifically reference the initial interventions within their online diaries. Given the qualitative nature of this study, no statistical significance tests were used to investigate the increased presence of discussion on a topic by participants from one of the intervention groups. Despite this, some of the themes that were more readily discussed by participants who had the belonging intervention experience do align with the subject matter and learning outcomes of those prior interventions e.g. reflecting on how specific attributes of spaces aligned with their own personal preferences. Further research that more explicitly prompts students

to reflect on their experience through belonging interventions and how this affects later actions to belong could help better understand the variances across intervention groups found in this study.

RQ2.4: To what extent do students perceive benefits in reflecting on their sense of belonging?

That over 80% of participants perceived benefits to their sense of belonging through the process of reflection is unsurprising given the previous positive connections drawn between self-reflective activities and student belonging (Murphy et al., 2020). Reflective practice, where students take time to consider and make sense of their experiences, is well-documented as being a beneficial activity for students' learning (Dewey, 1933; Schön, 1983; Moon, 1999). "We do not learn from experience... we learn from reflecting on experience (Dewey, 1933, p. 78). In this case, the online diaries provided students with a regular opportunity to engage in "reflection-on-action"; exploring their recent experiences, why they acted as they did, and what could be done differently in the future (Schön, 1983). In addition, some students may have participated in "reflection-in-action", as they commented on how they reflected on what they would include in their online diaries ahead of time.

Crucially, the online diaries provided students with structure to help guide their reflections to the issues of most importance for each participant (Moon, 1999). Whilst Moon argued for the benefits of reflection primarily in the form of writing (Moon, 2024), many of the benefits could also be attributed to reflective story telling in the form of voice notes or video recordings, utilised by some of the participants for their online diaries.

The process of reflecting on belonging seemed to both improve belonging directly – through validation of students' beliefs and recognition of progress made in belonging up to that point – and indirectly – through development of skills and plans, which allowed them to better build belonging subsequently. Whilst this should be perceived positively from a practice perspective of trying to enhance students' sense of belonging, it presents a challenge for future research on the topic. These findings suggest that the inclusion in research around belonging in itself is enough to improve students' sense of belonging, which challenges our ability to observe effects of prior interventions without altering the outcome.

Limitations and recommendations for future research

From a process evaluation perspective, at the beginning of the study communications were sent to the participants giving them the dates when they would be asked to submit their online diaries throughout the rest of the academic year. However, within these initial communications participants could have also been given details of the prompts (Table 1) that would be used. This would have allowed participants to begin preparing thoughts on those particular aspects of belonging, which may have led to greater participation – in terms of numbers of responses and depth of response. This is especially relevant given that roughly two thirds of participants said that they carried out some level of reflection about their belonging between submitting their diary entries. Furthermore, other approaches to diary studies have allowed participants to submit entries at any point throughout the study, which again may have given participants more flexibility in how to contribute their reflections (Baker, 2021). However, within this study, the decision was made to request diary submissions at set points throughout the year, as the consistency of when entries were submitted better allowed the usage of set prompts and comparing how the content of entries changed over time in a more consistent way. Whilst varying some of the prompts given in entries encouraged students to reflect on different aspects of their overall sense of belonging, which greatly aided gathering a broader understanding from participants, it also makes it harder to compare how participants' sense of belonging changed over time.

Some other limitations are based on the chapter's analytical approach. Firstly, whilst students were given the option to submit online diaries in different formats, all video and audio recording responses were transcribed into text before analysis was conducted. This meant that no analysis was carried out around the tone, facial expressions or body language that students included in their submissions. Further research could look into whether participants reflect on belonging in different ways depending on the medium of data submission.

Secondly, the approach used to blind demographic data could have been improved through the introduction of a secondary researcher. Demographic data for participants was only added into NVivo after initial coding had been completed. This approach of partially blinding the data was followed to remove some of the potential for researcher bias when coding participants based on characteristics, such as institution studied at, prior intervention status or other demographic details (Spiegelhalter, 2019). However, in participants' submissions to the online diaries some included details which either alluded to or explicitly referenced some of these criteria. This meant that the data was not fully blinded from the researcher when coding was carried out. Future research with multiple authors could

introduce an additional stage of data cleansing to remove any content, which could either allude to or explicitly reference demographic data.

Thirdly, some limitations in how to fully answer the research questions arise due to the focus in this chapter on the qualitative approach of utilising Reflexive TA. Given the longitudinal approach, the results have been able to contribute to our understanding of how a student's sense of belonging changes over time and is reflected upon in retrospect. However, further research could utilise quantitative analyses more rigorously to investigate the changes in students' sentiments across the academic year. Furthermore, given the qualitative approach, no statistical tests were carried out when looking at the differences in contributions from students between different intervention groups. Whilst some variances were found in the results across intervention groups, future research again utilising more quantitative methodologies could explore the statistical significance of these variations. Whilst the longitudinal approach has partially addressed gaps in existing literature around how belonging changes over time, having multiple data collection points does introduce a limitation. As many students did not complete all surveys and online diary submissions, and given the close connections between engagement and belonging identified, it is likely that participants were more likely to submit diaries when feeling a greater sense of belonging. This possible skew to the data is analysed in the subsequent chapter.

Finally, through the process evaluation aspects of the chapter to answer RQ2.4, respondents were asked whether the process of reflecting on their belongings itself influenced their levels of belonging in a positive way. Such self-reported measures, whilst useful, could be built upon in future research through the evaluation of outcome measures that may be more reliable (TASO, 2020). For example, future studies could utilise a more objective self-reported measure by analysing participation in online belonging diaries against scores in a validated belonging scale. Studies could also examine whether different types of reflective activities are more helpful towards building belonging. Furthermore, studies could also investigate whether there is a dosage effect – where greater participation in reflective activities leads to a greater benefit to sense of belonging. Such studies would have to account for potential participation bias – as those who personally enjoy the reflecting process are likely to take part more than students who do not.

Conclusion

Given the important links between students' sense of belonging and their success, higher education institutions are rightly placing increasing importance on developing strategies to enhance levels of student belonging. This longitudinal, online diaries approach has explored how students take action

to build their sense of belonging, what barriers they face through this process, and how supportive interventions from their university affected their approach. When students are able to take actions to belong, they speak positively. When barriers restrict their agency, they speak negatively. Universities have a role to play in addressing these barriers and encouraging students to engage in authentic ways to belong.

Students want to put in the effort to connect with their peers because they recognise that this helps to prevent feelings of isolation, opens access to future opportunities and improves motivation towards shared goals. However, for this to be possible they require ample opportunities to meet other students, course structures that encourage connection and to be able to find peers with shared identities and goals – peers like them. Throughout students' endeavours to connect with peers, their actions can be hindered by cultural barriers, cliqueness, peers who hold different attitudes and difficulties separating real and perceived barriers. For students to take action to belong to university spaces, they need to be provided with flexible spaces that allow students' personal preferences to be accommodated and encouragement to explore these spaces. It is also important to recognise that some students have time barriers themselves, which may also need support in addressing. This then enables students to spend the time necessary in these spaces to build belonging. Before students can engage meaningfully within academic spheres to build belonging they need to feel that they matter to staff. This can be achieved through staff being approachable, supported and valuing students' voices and identities. Students generally also recognise that there are systemic factors that may hinder their connections with staff members, such as class sizes. Students accept that these barriers cannot be solved by individual staff members, but require larger changes.

As these barriers are addressed and removed, students recognise that there is a direct connection between engagement and belonging. Engagement allows students to connect with peers and staff, build awareness of available support, make progress in initial assessments and help to reduce barriers of belonging based on personal identities. In turn, this enhances students' sense of belonging, which can then lead to more engagement through improved help-seeking behaviours, belief that their classroom contributions matter, having improved passion for the subject, and having peers with shared goals. Students generally recognise that they need to be authentic when taking actions to build their sense of belonging, but that this does not mean they should never push the boundaries of their comfort zone.

This chapter highlights that higher education institutions can encourage student agency in building belonging – agentic belonging – both indirectly, through the provision of requisite conditions, and directly, through appropriate expectation setting and interventions that encourage students to take

action to belong in authentic ways. Across the thematic results, some variance was discovered based on students' prior intervention status. Students who had previously taken part in the belonging intervention were more likely to discuss breadth vs. depth of peer connection (theme 1), reflect on how specific attributes of spaces aligned with their own personal preferences (theme 2) and talk about mattering to staff (theme 3). Students who attended either the belonging or the study intervention groups were more likely to note a virtuous spiral between engagement and belonging (theme 4) – with those in the no-intervention group being most likely to suggest they were in a downward spiral. Belonging group students were less likely to acknowledge how acting authentically presented them with barriers and those from the study skills intervention group were most likely to talk about how acting authentically meant prioritising grades and academic success for their sense of belonging (theme 5). Overall, this suggests that prior exposure to agentic belonging interventions can influence the actions that students take to build belonging.

The following chapter continues the longitudinal exploration of students' experiences across their first year of study. However, this subsequent chapter returns to a quantitative analysis approach, investigating how students' sense of belonging changed over the first-year.

Appendices for Chapter 5

[Appendix 5.1](#) – Demographic details of online diary participants

[Appendix 5.2](#) – Coding list for online diaries reflexive thematic analysis

[Appendix 5.3](#) – Stages of theme generation within online diaries reflexive thematic analysis

[Appendix 5.4](#) – Full results of online diaries process evaluation questionnaire

Chapter 6 – Changes in belonging

Introduction

This chapter focuses on addressing the third overarching research question of this thesis: What effect does attendance of the agentic belonging workshop have on subsequent changes in levels of belonging? Specifically, this chapter addresses how data from students' online diary submissions and belonging scale survey completions were analysed to answer the following sub-research questions:

- RQ3.1: How does students' sense of belonging change over the first academic year of study?
- RQ3.2: To what extent do students who attended the agentic belonging intervention differ from other students in their sense of belonging?
- RQ3.3: Do changes in students' sense of belonging vary based on demographic variables?

As discussed within the [literature review chapter](#) of this thesis, belonging is recognised as being dynamic, influenced by various factors such as social interactions, institutional support, and personal reflections (O'Shea, 2016; Means et al., 2017; Carruthers Thomas, 2018). Despite the acceptance of belonging as fluid, the majority of existing research into this topic investigates belonging as a static phenomenon, by only measuring or exploring belonging at a single point in time. Such approaches can only provide a limited understanding of how students' sense of belonging changes over time. Whilst some studies have suggested that belonging from year-to-year is quite stable (Barringer et al., 2023; Ruedas-Gracia et al., 2023), this may vary depending on students' demographic background or routes to joining university (O'Sullivan et al., 2019; Barringer et al., 2023; Ruedas-Gracia et al., 2023). Furthermore, within the first year of study, student belonging may decrease as time goes by (Hausmann et al., 2007). This chapter addresses this gap in existing research by focusing on the longitudinal approach of the overarching research study and analysing changes in students' sense of belonging over the course of their first academic year.

The fluid nature of this concept further complicates efforts to effectively evaluate initiatives to enhance students' sense of belonging. Depending on the aspect of belonging being explored and the times of measurement, some level of fluctuation in students' levels of belonging should be expected (Picton et al., 2017; Viola, 2021). Therefore, any measured change cannot be assumed to show efficacy of an intervention. Following approaches used by previous studies, this overarching research project took a quasi-experimental approach that compares changes in belonging to a non-participatory group (Caligiuri et al., 2020; Liu et al., 2022). In this chapter, changes in belonging from

students who attended the agentic belonging intervention is compared to both students who attended the study skills intervention and students who signed up for either workshop but did not attend.

The methodology section of this chapter recaps the what, how and why of data collection approaches related to all aspects of data used within the subsequent analyses. This chapter utilises demographic data provided by participants at the beginning of the overarching research study, baseline and subsequent measurements of student belonging using the Yorke (2016) belonging scale which was administered through online surveys, students' self-reported learning outcome measurements from the belonging intervention which was collected through online surveys, and sentiment coded values from students' online diaries submissions.

Preliminary analyses are utilised to explore potential risks in the methodological approaches of this chapter, such as the combining of student belonging data from two different sources – survey and online diaries – as well as the risks of missing data resulting in participation biases. The former of these potential limitations was explored through correlation analyses, which found that students' reported sense of belonging in surveys was moderately, positively and significantly correlated with their reported sense of belonging within the online diaries. Due to this initial investigation, this chapter has been able to contribute to knowledge through a novel methodological approach of including data from these two very different collection methods to produce a richer understanding of how students' sense of belonging changes over time.

The risk of missing data is an inherent potential limitation of this chapter, given the longitudinal nature of the thesis. To address this, binary logistic regression models – a regression approach used in multiple contexts within this chapter – was utilised to assess the relationship between students' sense of belonging and their likelihood of missing future participation opportunities. This analysis found that there was no significant relationship between students' sense of belonging and their likelihood to participate in either the next survey or online diary. This finding supports the methodological approach to ignore missing data in subsequent analyses without a concern that this would skew findings.

The second half of the results focus on the substantive analyses for this chapter, which address each of the three sub-research questions in turn. Reporting of descriptive data and visualisation through line graphs were utilised to answer RQ3.1: How does students' sense of belonging change over the first academic year. These analyses aligned with existing research (Hausmann et al., 2007), by showing that on average students' sense of belonging decreases throughout the first year of study. On a scale from 1 – 100, the change from those who filled out the October belonging survey to the average of

those who filled out the May belonging survey was a fall from 78.1 to 72.9 – just over a 5-point decrease.

Further exploration of data visualisations and linear regression modelling was used to assess RQ3.2: To what extent do students who attended the agentic belonging intervention differ from other students in their sense of belonging? Whilst data visualisations show clearly that students who attended the agentic belonging intervention experienced less decline in their sense of belonging compared to the other two workshop groups, linear regression analyses showed that this difference was not statistically significant. Linear regression analyses were also utilised to explore some of the online diaries results that appeared to show differences across students' workshop status, but again these were found to not be statistically significant. Further linear regression modelling was utilised to assess the relationship between the workshop learning outcomes of students from the agentic belonging intervention against their subsequent belonging scores. This was employed to investigate the efficacy of the intervention by looking at the outcomes of students who had experienced the workshop as intended – i.e. those who self-reported meeting all the workshop learning outcomes. This analysis found that for almost all subsequent measurements of students' sense of belonging there was a positive, but non-significant relationship between learning outcomes and belonging. When a regression model was developed that explored learning outcomes results against all subsequent belonging measurements together, this produced a positive and significant relationship.

The third sub-research question RQ3.3 was again investigated through linear regression modelling to examine whether changes in students' sense of belonging across the year were predicted by students' demographic details. This analysis found that first-generation status was the only demographic variable where participants reported significantly different levels of belonging. This was explored further through subsequent visualisation and regression modelling that focused on parents' educational status. This found that the least negative change in belonging was experienced by students who had just one parent or caregiver attend university, however this was not significantly different from students who had two or more parents or caregivers attend university.

Following the results, the discussion explores how these results complement existing research findings, identifies the need for further longitudinal studies, and includes questions for practitioners about the timing and targeting of belonging interventions. A section is also included on the limitations of the methodological approaches of this chapter, including where some of these limitations have been able to be addressed, and where others warrant consideration in future research.

Methodology

Participants and data collection

One hundred and one participants have been included within the analyses for this chapter because they provided baseline measurements for their sense of belonging and participated in at least one follow-up measurement activity, through either the online diaries or follow-up belonging surveys (Figure 6.1)

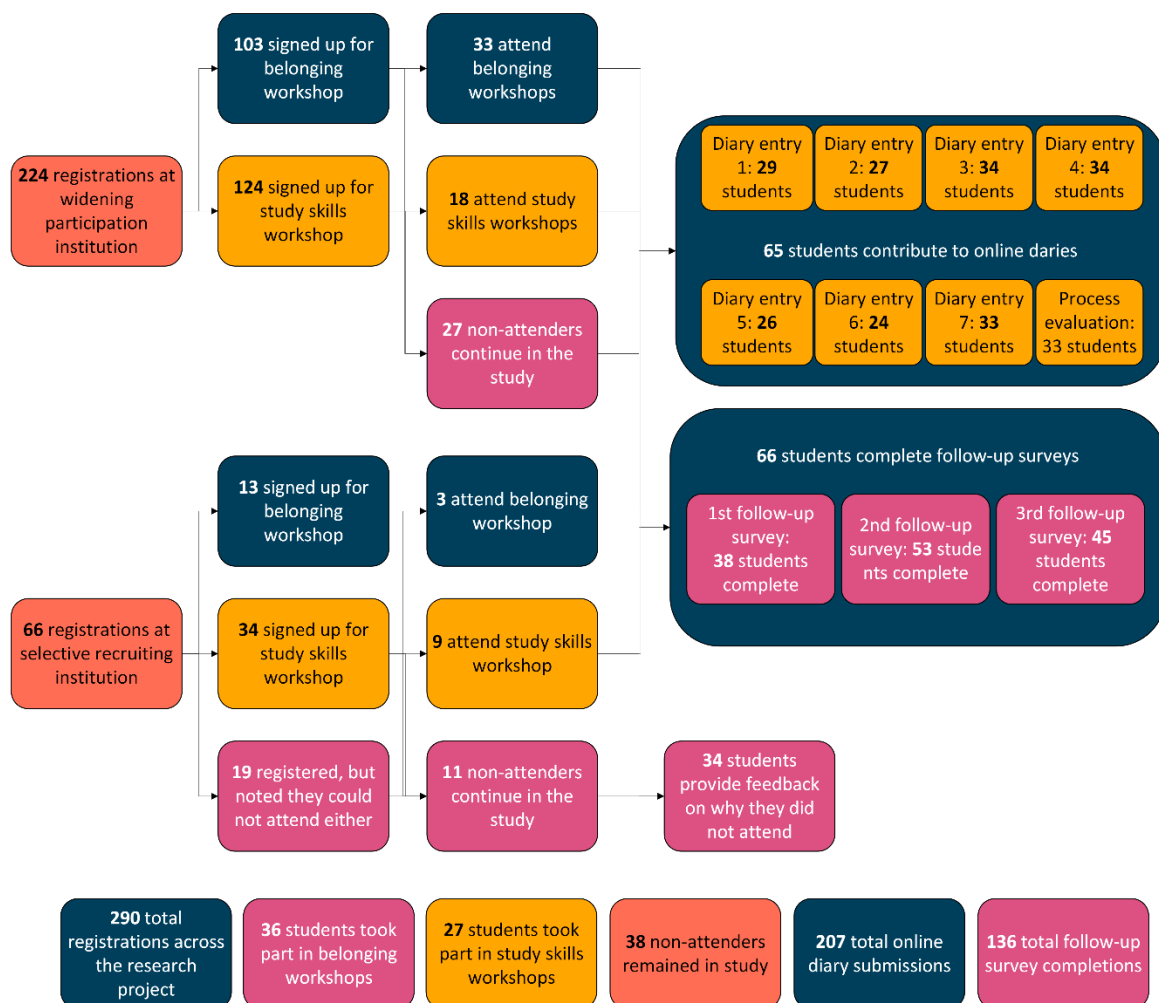


Figure 6.1 – Details of participation across the workshop interventions, online diaries and follow-up surveys used for analysis within this chapter.

Thirty-six students took part in belonging workshops, 27 attended study skills workshops and the remaining 33 did not attend either workshop, but requested to remain in the study. Following the initial recruitment and workshop running, 65 students contributed to the online diaries aspects of the

study, submitting a total of 207 diary entries. Sixty-six students contributed to the follow-up surveys, submitting a total of 136 follow-up surveys.

Participant consent was gathered when students signed up to take part in the overarching research study, in line with the ethical approval provided by the University of York. All students were provided with full details of the study, including what data they would be asked to provide and how this would be processed.

Questions to gather a baseline reading of students' sense of belonging were not included within the initial sign-up form to minimise the chance of priming effects linked to the prior questions about student demographic information. Instead, the baseline readings of belonging were captured from students via an online Qualtrics survey within the workshops that they attended. Non-attending participants who wished to continue in the study were invited to complete an equivalent Qualtrics form via email that was sent shortly after the workshops took place. The extent to which students felt their workshop learning outcomes had been met was gathered via a brief Qualtrics form at the end of the workshops that they attended.

Follow-up belonging surveys were issued to students three times in the academic year (December, February and May). For Southampton participants, due to a delay in the organisation of their workshops, they did not complete the October survey, instead they completed the December survey slightly earlier and only had two subsequent belonging surveys.

Online diaries data was collected from students via Qualtrics forms that were emailed out to students at seven points throughout the academic year (roughly 3 weeks apart). Within the form, participants were able to choose whether to submit a blog, vlog or voice recording to provide their reflections on their sense of belonging. Participants were given a consistent set of prompts, as well as one unique prompt within each diary entry on a different aspect of student belonging (see the methodology section of the previous chapter for more information). Participants were given no structure of how much time or how many words to spend on each of these prompts, allowing participants to self-direct how they responded (Baker, 2021).

Measures

As already discussed within previous chapters, the Yorke belonging scale (2016) was utilised for both the baseline measurement of students' sense of belonging and follow-up surveys. This was utilised due to it being created and tested within the context of UK higher education, covering a breadth of domains of belonging (Ahn and Davis, 2020) and due to its relatively short length, which is especially

important to reduce fatigue in a longitudinal study. Learning outcomes from the belonging workshop were measured through a bespoke scale (Table 6.1), which was partially validated through the use of Cronbach’s alpha measurement within [Chapter 4](#) ($\alpha = 0.510$). Within the initial Cronbach’s alpha analysis, it was recognised that scores below 0.6 are often considered poor, despite these boundaries being somewhat arbitrary. To address this, a correlation matrix was created to investigate the low score. This showed that question two of six – “Every student has a different path to belonging at university” – had least relatedness to all other items in the scale. This could be because whilst all the other questions were asking participants to reflect on their own abilities, understanding and experiences, this question is about beliefs relating to others. Cronbach’s alpha for the belonging workshop scale was calculated again with question two removed and received a higher, but still questionable score ($\alpha = 0.607$).

Yorke belonging scale	Learning outcomes questions within belonging workshop
All questions asked as statements on a five-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree	
1. I feel at home in this university	1. I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university)
2. Being at this university is an enriching experience	2. Every student has a different path to and definition of belonging at University
3. I wish I’d gone to a different university (reversed scale)	3. I have a clear idea of what my own path to belonging at University may look like
4. I have found this department to be welcoming	4. I understand some of the potential opportunities and barriers to my own belonging needs being met at university
5. I am shown respect by members of staff in this department	5. I found the workshop fun and engaging
6. Sometimes I feel I don’t belong in this university (reversed scale)	6. I know a lot more about being a successful student than I did before this session

Table 6.1 - Scales used to measure student belonging and assess learning outcomes from belonging workshop

Data analysis

To prepare survey data for analysis, results for the six Yorke scale items were converted to numeric values (i.e. strongly agree = 5, strongly disagree = 1), added together and then normalised to produce an overall belonging score between 0 and 100. This same approach was used for workshop learning

outcome data and also online diaries sentiment data. All online diaries have been coded as part of the broader research study using reflexive thematic analysis (see [Chapter 5](#)). To calculate online diary sentiment scores, lines from each online diary entry were coded as either 'positive', 'mixed', 'neutral' or 'negative'. These codes were then converted to numeric values mirroring the process for survey data. Positively coded diary entries were scored as 4.5 as this represents an average of the 4 and 5 scores that denote positivity within survey data. Similarly, negatively coded diary entries were scored as 1.5. Both mixed and neutral-coded diary entries were scored as 3. It is recognised that this is somewhat arbitrary, given that mixed diary entries may not be completely balanced in their mix of positive and negative sentiment. Correlations between the online diaries data and survey data were examined to assess how appropriate it would be to include the two datasets together in subsequent analyses.

Binary logistic regression was used to assess whether baseline or subsequent levels of belonging were predictors of students missing future surveys or diary entries. Descriptive data around students' changing level of belonging is presented at an overall level and broken down by students' workshop (also known as 'intervention') status. Analysis was carried out to show this graphically, as well as through further regression models.

The creation of visualisations of the data is an important aspect of the methodology of this chapter and wider thesis. As discussed in more detail within the [methodology chapter](#); visualisations are created for two reasons. Firstly, due to the belief that data visualisations help to ensure that research results are accessible and engaging to a wider audience (Healy, 2019). Secondly, such visualisations also play an important role in the process of analysing data. Whilst, a plan for all analyses within this thesis are created in advance, visualisations surface underlying patterns within data, which can then prompt areas where further analyses could be beneficial. For example, within this chapter, Figure 6.2 visualises students' sense of belonging over the academic year through survey results. Within this visual, it is apparent that it is only in the later surveys that some students reported a much, much lower sense of belonging. This visual prompted an exploration into whether these lower scores could be artificially skewing the average results. To investigate this, a further analysis was carried out to explore whether there was a noticeable difference between mean and median sense of belonging.

In instances where regression models involved multiple data points from the same students - to explore changes in belonging over time - clustered standard errors were calculated. In instances where statistical significance was found between variables, but not between others, recoding of the regression models was utilised to change the reference group and test whether the difference

between those significant and non-significant variables were in themselves significantly different (Gelman and Stern, 2006).

To account for variations in students' baseline levels of belonging, a variable was created to denote changes in belonging; calculated from each of the follow-up belonging surveys, minus that student's baseline belonging (e.g. May change in belonging = May belonging – Oct belonging).

Ordinary Least Squares (OLS) regression models were then also utilised to explore any variations in belonging changes by different student demographics, as well as based on students' workshop learning outcomes scores. All analyses were conducted in R Studio, except for the initial coding of sentiment analysis, which was conducted in NVivo before then being imported into R Studio.

Results

Given that future analyses within the results are based on data from both students' survey results and online diaries, preliminary investigation is needed to assess the correlation between these datasets. Full details about these preliminary analyses can be found in [Appendix 6.1](#), with a summary of findings below. Correlations between online diaries and survey results were measured in two ways - at a participant-level and at a submission-point-level. At participant-level, Pearson's correlation coefficient was calculated showing a significant, moderate, positive correlation between each student's average online diary sentiment score and their average Yorke scale survey results ($r = 0.550$, $p < 0.001$, $n = 49$). When exploring correlations between the average online diary sentiment score for a particular submission point against the closest Yorke survey result, results were more mixed, with only some submission points seeing significant correlations. This suggests that future analyses that include online diaries data alongside survey data should focus on investigation of overall 'trajectories' in belonging, rather than examination by specific timepoints. Logistic regression analyses were then conducted to explore the relationship between students' sense of belonging and the likelihood of participants missing the next available diary or survey submission point. These analyses found no significant relationship ($\beta = 0.003$, $p = 0.051$, $n = 380$), suggesting that future calculations do not need to compensate for missing data points.

Following these preliminary analyses, the results focus on presentation of data and analyses to directly address the three sub-research questions of this chapter. How belonging changes over time (RQ3.1) is investigated through the reporting and substantive interpretation of descriptive statistics from each survey and online diary data point. Line graphs are utilised to visualise these changes for readers,

including a set of analyses to explore the differences over time between cohort means and medians. Regression analyses are used to explore the extent of changes in belonging over time.

The above descriptive data, visualisations and regression models are also used to explore the differences in belonging changes across students from different workshop statuses (RQ3.2). To further address this sub-research question, a set of analyses have been included investigating the connection between belonging workshop participants' learning outcome scores and their subsequent sense of belonging. The belonging workshop has been newly developed as part of this wider research study and so is considered experimental in nature. The first set of analyses are focused on assessing the effectiveness of the belonging workshop – i.e. did those who attend the workshop significantly differ from other students in their sense of belonging. Investigation into the connection between learning outcomes and subsequent belonging changes is instead focused on establishing the efficacy of the workshop – i.e. when the workshop delivers on its intended initial outcomes for students, do they differ in subsequent belonging compared to other attendees who reported lower learning outcome scores?

Finally, multiple linear regression models and box-plot visualisations are utilised to explore changes in belonging across different demographic groupings to address RQ3.3. These analyses are important, given the breadth of student belonging literature which examines differences based on student demographics. Given that significant differences were established based on students' prior educational status and parents' educational status, further regression analyses and visualisations were used to explore these differences.

How belonging changes over time

This chapter's main contribution to knowledge exists in further exploring how students' sense of belonging changes over time. This is to address the lack of existing longitudinal research on the topic of student belonging. The results reported within this section focus on exploring the descriptive data from students' survey and online diary responses. Each participant's belonging journey is visualised, also allowing for discussion of the average – both mean and median – results across the entire study population, as well as by participants' workshop status. Investigation on this last point helps to address the second sub-research question around how sense of belonging for students who attended the agentic belonging intervention may vary from other students. Whilst the previous chapter focused on exploring the factors that affect changes in students' sense of belonging and the actions that they take to belong, this chapter – and this section of the results in particular – focuses more on exploring the extent of these changes in students' sense of belonging.

Means and standard deviations for each survey and online diary data point, including breakdowns by students' workshop status are presented in Table 6.2 and visualised in Figures 6.2 – 6.4. Figure 6.2 helps to visualise the absolute belonging scores that students reported within surveys and how these change across the academic year, whilst Figure 6.3 prioritises reporting the relative change in students' sense of belonging in each subsequent survey data point.

These data show, more prominently, that students' sense of belonging decreases through the first year of study for these undergraduate participants. On average, students' sense of belonging decreased about two percent at each survey measurement point, resulting in an overall decrease in belonging from 78.1 to 72.9 – representing a five-point decrease. Whilst, on average, each workshop status group of participants saw their sense of belonging levels decrease through the year, students who took part in the agentic belonging intervention saw the smallest decrease – less than one point.

Curiously, students who attended the study skills workshop intervention had the sharpest decrease in sense of belonging across the year. Their sense of belonging scores dropped 11.5 points from their first to last survey measurement. Whilst the group of students representing those who did not attend either workshop did see their sense of belonging decrease across the year, this resulted in a more modest decrease of 4.5 points.

Linear regression modelling was used to explore whether survey timepoints and workshop status are predictors of changes in belonging. This is important to explore whether these changes in belonging are statistically significant – overall and by workshop status. Given that this analysis uses multiple data points from the same students, introducing the risk of multiple uses of correlated data, clustered standard errors were calculated to account for this. Overall, whilst the increasingly negative estimate values for the survey points reflect the decreasing levels of belonging, these are not significant. Similarly, whilst the two other workshop status groups have lower estimates than the reference group of the belonging workshop attendees, these variances are not significant.

In addition to the changing nature of belonging, these results also highlight differences in the variability of the data across timepoints and workshop statuses. Standard deviations for each survey increase over time; from 12.8 for the overall October survey data to 17.1 for the May survey. As is clearly visible within Figure 6.2, almost no students report a sense of belonging below 50 within the October survey measurement, however more students do report such variability in their belonging in later surveys. Furthermore, the belonging workshop students' student belonging scores have lower variability, as measured through standard deviation, than those of the other workshop groups. Students who attended the belonging workshop could have less variability in their sense of belonging, due to a shared understanding of the concept gained through the workshop. However, this could

potentially also be explained due to belonging workshop students having on average higher sense of belonging, especially in later surveys, which leads to a naturally lower variability due to the ‘ceiling’ in the belonging scale. As can be seen within Figure 6.2, multiple participants report a score of 100 in their sense of belonging throughout the survey measurements.

To explore these variances across timepoints and workshop status, linear regression modelling was utilised to explore whether the standard deviation levels were predicted by either survey timepoint or workshop status. Table 6.4 reports the results of this modelling, showing that whilst all survey timepoints and workshop statuses report higher standard deviation estimates compared to the October belonging workshop reference group, these are not statistically significant. Therefore, any interpretation of increasing variability across time or between workshop groups should be taken with caution.

Data point	Overall		Belonging group		Study skills group		Non-attend group	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Oct survey	78.1	12.8	78.1	12.4	80.1	13.0	76.6	13.3
Dec survey	76.2	15.3	77.2	12.4	75.7	16.0	75.8	17.1
Feb survey	74.3	15.8	77.5	16.0	70.3	19.9	75.2	11.1
May survey	72.9	17.1	77.4	12.5	68.6	15.7	72.1	20.2
Spaces diaries	67.1	22.8	67.9	25.9	67.1	12.0	66.1	28.1
Classroom diaries	57.7	23.4	60.0	21.4	50.2	26.7	63.7	22.2
Friends diaries	62.3	24.4	64.9	26.3	68.4	21.3	53.7	25.4
Academics diaries	68.7	28.2	68.5	30.6	69.5	25.5	68.0	31.2
Changes diaries	65.2	20.4	66.3	22.3	67.3	18.7	63.0	21.6
Journey diaries	63.6	23.5	68.8	16.9	59.7	25.2	63.4	26.6

Table 6.2 - Descriptive statistics of means and standard deviations (SD) from each survey and online diary submission point, split by intervention status

term	Estimate	Std error	p-value
(Intercept)	79.452	1.875	0.000
Survey point - December	-0.831	2.475	0.737
Survey point - February	-3.679	2.705	0.175
Survey point - May	-5.549	2.909	0.058
Workshop status – non-attend	-3.248	2.261	0.152
Workshop status – Study skills	-3.623	2.504	0.149

Table 6.3 – Linear regression model analysing the extent to which workshop status and survey timepoints are predictors of changes in students’ sense of belonging. Calculated using clustered standard errors to account for multiple data points from the same students being used within the model (n = 137)

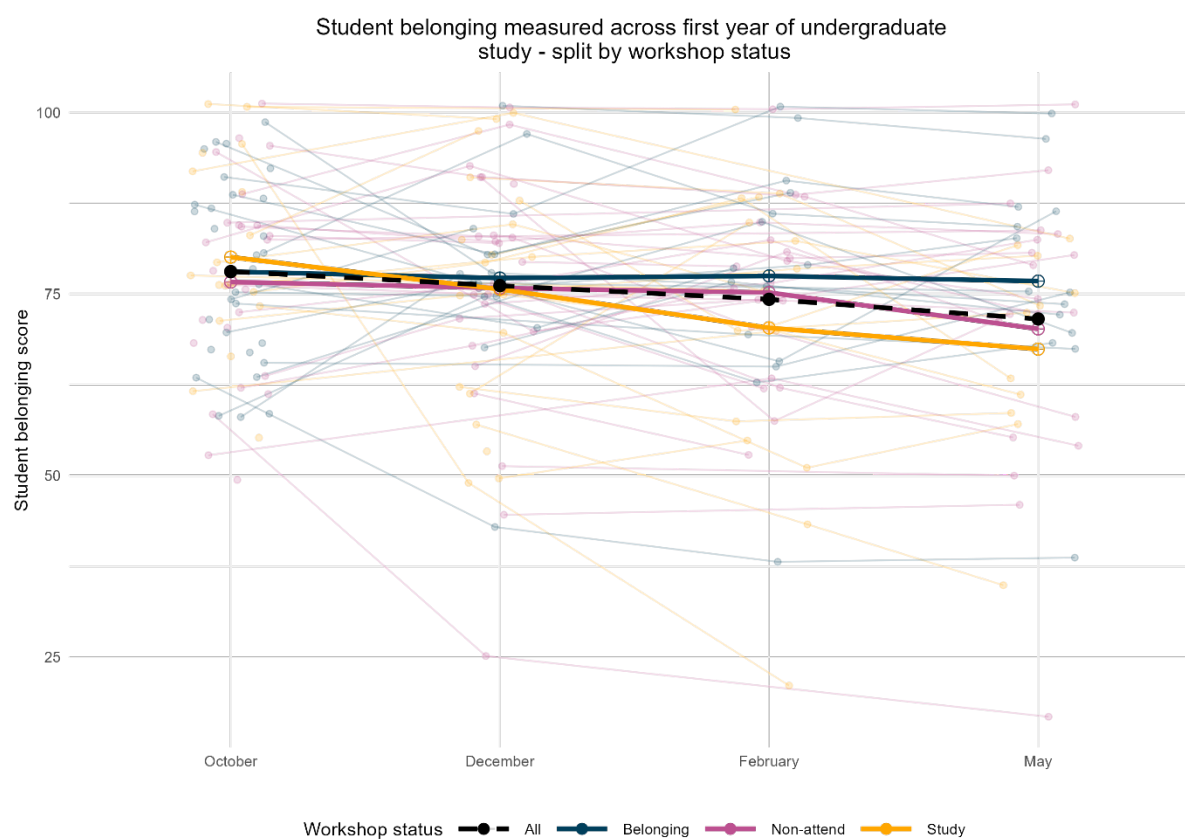


Figure.6.2 – Student belonging measured across first year of undergraduate study from survey data - split by intervention status

term	Estimate	Std error	p-value
(Intercept)	11.258	2.311	0.003
Survey point - December	2.267	2.669	0.428
Survey point - February	2.767	2.669	0.340
Survey point - May	3.233	2.669	0.271
Workshop status – non-attend	2.100	2.311	0.399
Workshop status – Study skills	2.825	2.311	0.267

Table.6.4 – Linear regression model analysing the extent to which standard deviations in summary descriptive data is predicted by timepoint and workshop status (n = 12)

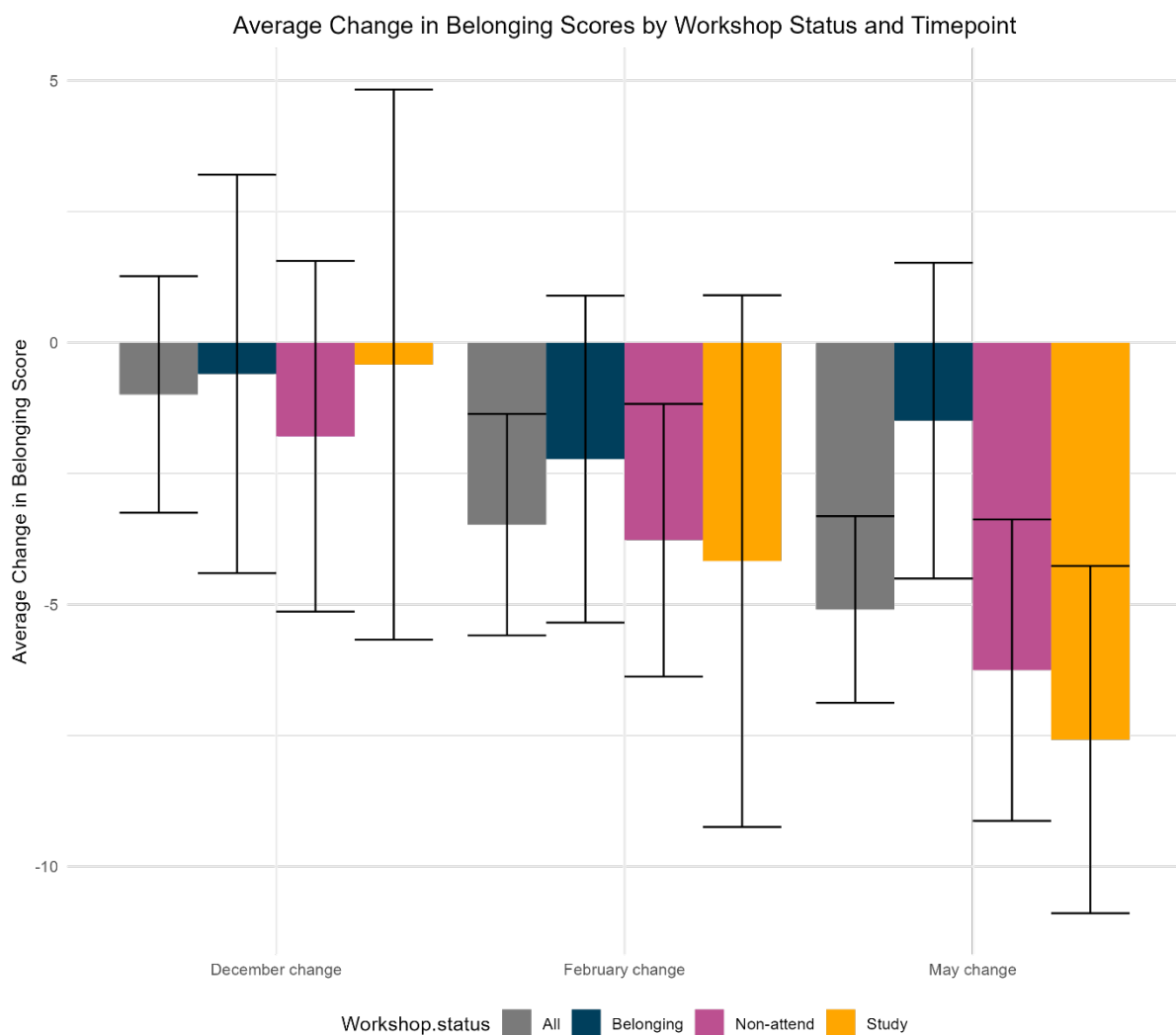


Figure 6.3 – Average change in belonging scores from student surveys, by workshop status and timepoint. Each timepoint represents the difference between students' average sense of belonging at that point in time

subtract students' baseline sense of belonging. As Southampton participants did not complete a belonging survey in October, they have been excluded from the December change calculation.

It is noticeable within Figure 6.2 that as the academic year progresses there are a small number of students who report substantially lower levels of belonging. Given that analyses so far have focused on mean values from each workshop status group, there is a risk that this does not represent the experience for the majority of students. Whilst mean values suggest that students' sense of belonging decreases through the year, if these results are skewed by potential outliers – or students with particularly lower sense of belonging – then it could still be the case that a majority of students have stable or even increasing belonging. To explore this, students' levels of belonging were plotted across the academic year and then summarised with both mean and median values at each survey timepoint (Figure 6.4).

Contrary to the above concerns, mean and median values are almost identical throughout the year. The only exception to this is a slight divergence for the May survey results, where the median value is 75, compared to a mean of 72.9. Overall, this suggests that most students participating in the study saw a decrease in their sense of belonging from the start of the year. For students who took part in both the October and May surveys, 31% had an increase in their sense of belonging, 22% no change and 47% a decrease.

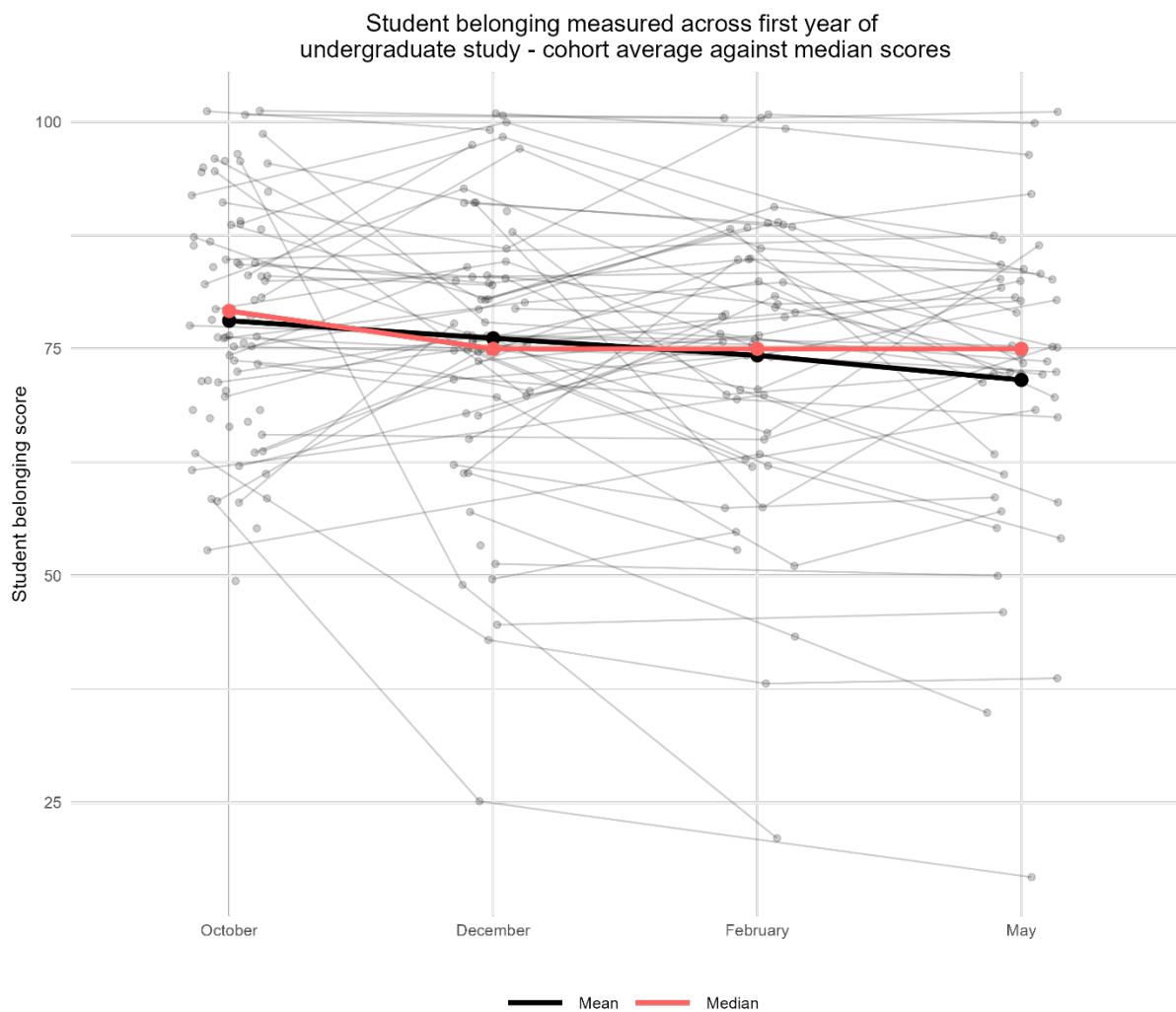


Figure 6.4 - Change in student belonging - mean against median scores

One novel aspect of this chapter is the inclusion of sentiment-coded online diaries data alongside survey data. Summary statistics of the online diaries data is presented alongside the survey data in Table 6.2 and is plotted visually in Figure 6.5. Given the previous preliminary analyses finding a significant moderate correlation between survey and online diaries data, plotting these two different types of data together provides an additional set of data points to explore how students' sense of belonging changes over time.

One substantive difference that can be seen between the online diaries and survey datasets from both Table 6.2 and Figure 6.5, is that the online diaries data have higher variability than the survey data. This is likely due to both the self-guided nature of the online diaries as a methodology and the changing prompts used throughout the different diary submission points. Each diary entry had a series of prompts and students were allowed to choose how much time they spent reflecting on each of them.

Some students would answer each of the prompts – three overarching prompts present in each diary entry request and one timely prompt on a different aspect of belonging – whilst some students would just pick one or two prompts to focus on. This self-led nature of the online diaries is a strength of the method, as it allows students to talk about belonging in whatever way is most important for them. However, it also introduces an expected increase in variability between how students respond in terms of topics. This variability in topics covered by students could explain why there is then greater variability in the sentiment scores for each diary entry. Secondly, the higher variability could be explained by the additional, timely prompt included within each diary entry request. As is explained within the methodology section, each diary entry request has a prompt about a different aspect of student belonging. Following the underlying theory of this thesis, students will have different belonging needs and priorities; therefore, it could be expected that students may talk more or less positively about a specific aspect of belonging compared to their peers. This is especially true compared to the belonging surveys which create a score based on averaging students' responses to a number of questions about belonging. This averaging of the six belonging questions in the Yorke scale is likely to reduce the variability of results, compared to the method of calculating the sentiment score for the online diaries.

A second clear difference between the online diaries and survey data is that the online diaries results are on average lower than the survey results in all cases. This is likely to be linked to the points above, as a wider variability in students' responses are likely to include lower responses which could bring down averages. This could also be simply explained as an artefact of the methodological steps taken to convert the online diaries' sentiment scores into a scale comparable to the surveys.

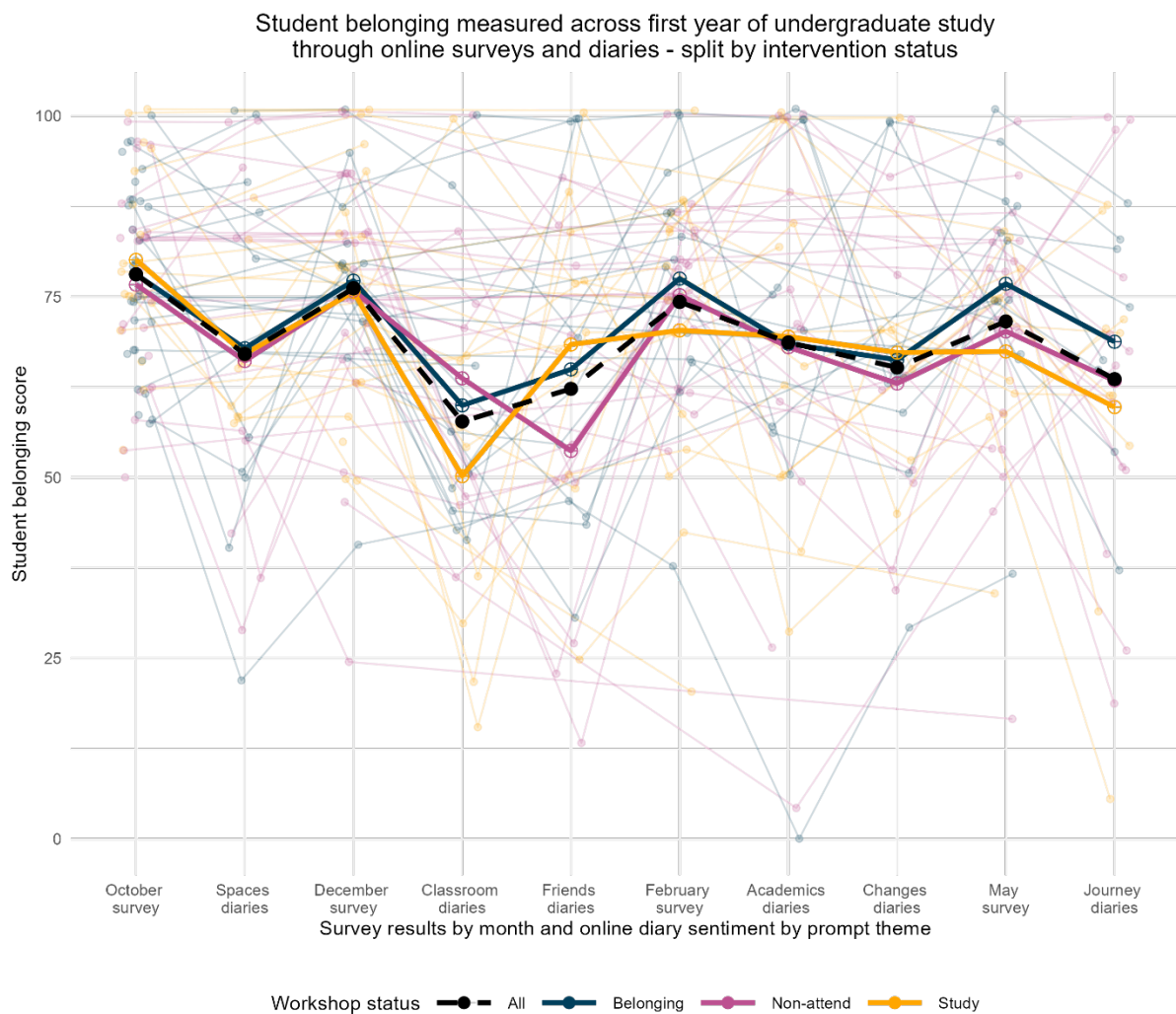


Figure 6.5 - Student belonging measured across first year of undergraduate study from survey and online diaries data - split by intervention status

Overall, Figure 6.5 shows that the online diaries results track very closely with the survey results throughout the academic year, with little variance between students' workshop status. The only exceptions to this are for the diaries examining students' sense of belonging within the classroom setting and also belonging from peer-to-peer friendships. In the case of classroom belonging, students from the study skills group had the lowest sense of belonging. Given that attendance at the workshops was selected by the students – i.e. they chose which workshop to sign up to – it could be interpreted that students who placed more importance on studies selected this workshop. These students may have then reflected more negatively on this particular prompt, given their higher expectations or desire to belong within the classroom setting. In a similar way, students from the non-attending group had the lowest sentiment scores for the online diary prompt around friends. Perhaps barriers that

prevented students from attending their registered workshop may have been reoccurring and stopped them from being as easily able to build a positive sense of belonging in terms of peer relationships compared to other students.

Whilst there are large differences between these diaries scores across the workshop groups – diaries scores were roughly 10 points lower for the groups discussed above compared to the other workshop groups – linear regression models were generated, showing that these differences were not significant (Table 6.5).

	term	Estimate	Std error	p-value
Classroom diary entry (n = 26)	(Intercept)	59.966	7.865	0.000
	Workshop status – non-attend	3.745	11.465	0.747
	Workshop status – study	-9.783	11.123	0.388
Friends diary entry (n = 32)	(Intercept)	64.940	7.708	0.000
	Workshop status – non-attend	-11.256	10.650	0.299
	Workshop status – study	3.445	10.650	0.749

Table 6.5- Linear regression results for workshop status as predictors of sentiment scores for the classroom and friends online diary entries. These models were generated as they were the diary entries with the clearest visible variation between scores based on students’ workshop status.

In summary, students’ sense of belonging decreases throughout the first academic year of study. Whilst not to a statistically significant degree, students who took part in the belonging intervention were more likely to see their levels of belonging remain constant as the year progressed. Although not significantly, the variability of students’ responses was larger later in the academic year. The inclusion of online diaries data alongside survey data also adds to our understanding of how students’ sense of belonging changes. Overall the diaries results match closely with survey results, however they are both lower and more varied.

Belonging scores by workshop learning outcome scores

Investigation into the connection between belonging workshop learning outcomes scores and subsequent belonging changes is included within these results as a method for establishing the efficacy of the workshop. Given its experimental nature as a newly developed type of belonging intervention, these analyses help to explore whether there was a significant change in sense of belonging for students who reported meeting the workshop’s learning outcomes.

Individual regression analyses were conducted for each survey measurement point against the belonging workshop learning outcomes, and whilst all of these showed a positive correlation, there was no significant outcome (Table 6.6 and Figure 6.6). When looking at the relationship between belonging workshop learning outcomes and all subsequent values of belonging (i.e. belonging from all post-baseline belonging surveys and sentiment scores from all online diaries) found that there was a significant, positive connection ($B = 0.421$, $p = 0.017$, $n = 133$). In essence, for each point increase in students' belonging workshop learning outcomes scores, they could then expect a 0.421 increase in subsequent sense of belonging scores. However, given that this model is averaging across multiple different data points, it is expected that this would reduce measurement error and therefore is more likely to produce a significant result.

	term	Estimate	Std error	p-value
December survey data point (n = 17)	(Intercept)	50.902	23.746	0.049
	Workshop learning outcomes	0.309	0.277	0.282
February survey data point (n = 15)	(Intercept)	35.833	35.932	0.337
	Workshop learning outcomes	0.500	0.428	0.264
May survey data point (n = 14)	(Intercept)	70.031	27.855	0.027
	Workshop learning outcomes	0.088	0.329	0.795
Spaces diary entry (n = 11)	(Intercept)	-8.368	92.258	0.930
	Workshop learning outcomes	0.890	1.074	0.428
Classroom belonging diary entry (n = 9)	(Intercept)	13.054	66.232	0.849
	Workshop learning outcomes	0.545	0.764	0.499
Friends diary entry (n = 10)	(Intercept)	-14.143	62.066	0.825
	Workshop learning outcomes	0.944	0.735	0.235
Academics diary entry (n = 10)	(Intercept)	51.977	84.158	0.554
	Workshop learning outcomes	0.194	0.983	0.848
	(Intercept)	-52.559	84.816	0.555

Changes diary entry (n = 9)	Workshop learning outcomes	1.387	0.987	0.203
Challenges diary entry (n = 6)	(Intercept)	59.238	123.616	0.657
	Workshop learning outcomes	-0.254	1.398	0.865
Belonging journey diary entry (n = 8)	(Intercept)	-51.195	58.792	0.417
	Workshop learning outcomes	1.379	0.674	0.087
All survey and online diary data points (n = 133)	(Intercept)	37.001	13.615	0.007
	Workshop learning outcomes	0.421	0.163	0.011

Table 6.6 - Linear regression results for belonging workshop learning outcomes as predictors of subsequent belonging scores. The final model for all survey and online diary data calculated using clustered standard errors to account for multiple data points from the same students being used within the model

Whilst this overall regression model was the only one that produced significant results, almost all other models within this analysis generated a positive relationship between workshop learning outcome scores and future sense of belonging. The only exception to this was the online diaries that asked participants about their challenges with sense of belonging. Students with a greater understanding about the individual and personal nature of belonging, with its many opportunities and challenges – as was communicated through the belonging workshop – may have been better able to reflect on those challenges openly within their diary entry. This could be a possible explanation for the negative relationship between workshop learning outcomes and belonging scores as measured through this particular diary entry. Given that all of the models for each individual survey and diary are not significant, this may also just be an anomaly within the data.

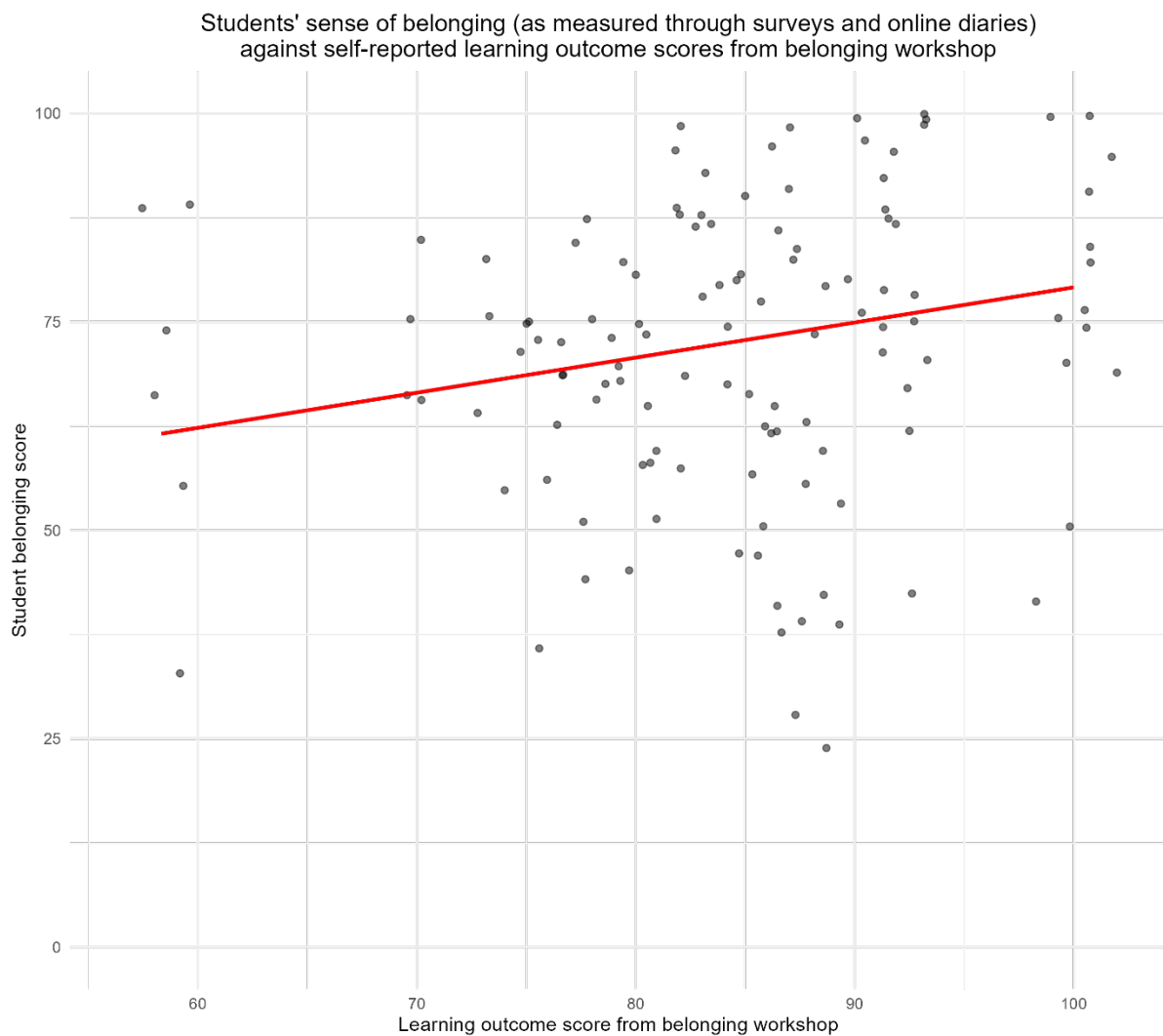


Figure 6.6 - Participants' workshop learning outcome scores plotted against subsequent levels of belonging (through survey and online diaries). Correlation coefficient (r) = 0.21

Changes in belonging amongst different demographic groups

The [literature review chapter](#) of this thesis demonstrated that student belonging is a concept often tied closely to quality, diversity and inclusion. In many studies across many different contexts, research has investigated how sense of belonging varies by different demographic groups. Whilst most research looking at differences in belonging amongst demographic groupings focuses on single measurements of belonging, the longitudinal nature of this study allows us to explore whether *changes in belonging* amongst demographic groups also shows expected variations.

To begin, the changes in levels of belonging – as measured by the difference between students' first and last survey measurement – against demographic factors was visualised through boxplots (Figure

6.7). This shows that for most demographic variables there were differences of roughly five points in median changes in belonging. The exception to this was the gender demographic variable, which had the smallest difference in median result, but still a noticeable difference in interquartile range. The other exception around medians was the age variable, where under 25s had a much higher median than over 25-year-old participants.

Whilst boxplots are useful for visualising the median, interquartile range and outliers within each of the demographic variables, they cannot account for intersectionality across the different variables. To address this, a further set of analyses were conducted using multiple linear regression models.

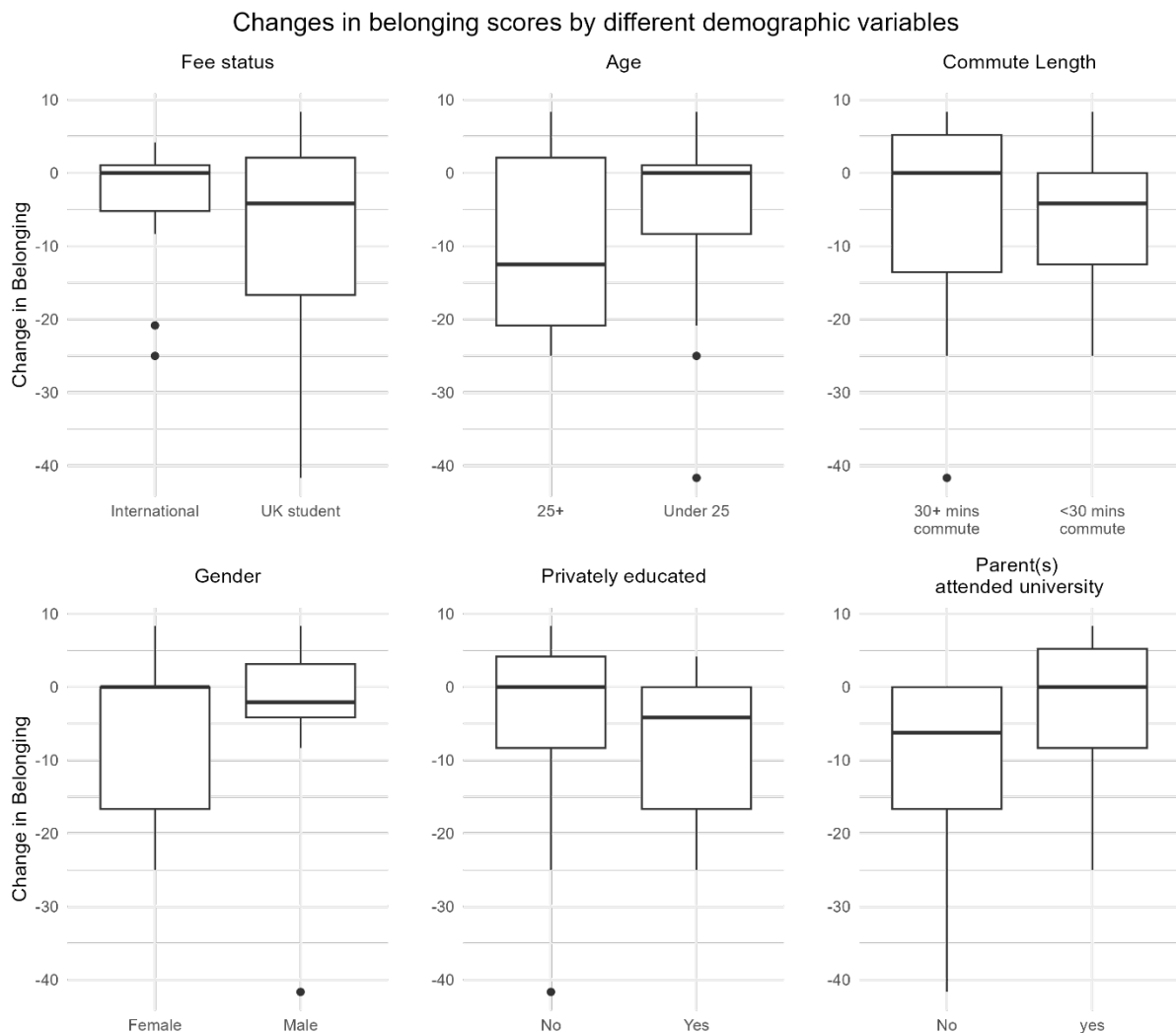


Figure 6.7 - Changes in belonging (from baseline belonging survey to final survey measurement) by demographic variables

Linear regression analysis was used to investigate the relationship between changes in levels of belonging – as measured by the difference between students’ first and last survey measurement – against demographic factors (Table 6.7). This found that parents’ education status was the only significant predictor of change in students’ sense of belonging. First-generation students – students who had no parents or caregivers with prior experience of higher education – had significantly greater decreases in their sense of belonging, compared to their non-first-generation counterparts.

term	Estimate	Std error	p-value
(Intercept)	-1.629	7.129	0.821
Gender - Male	-4.798	4.922	0.337
Age - Non-mature	2.758	5.428	0.615
Commute length - Short	-1.393	4.107	0.737
Prior education - Privately educated	-9.318	5.112	0.078
Fee status - UK student	-8.396	5.156	0.114
Parents’ education status – attended university	9.987	4.326	0.028

Table 6.7 - Multiple linear regression analysing demographic variables as predictors of change in belonging (n = 38)

Given the extensive literature already existing around parents’ educational status and sense of belonging, this demographic variable was explored further, looking at whether it makes a difference how first-generation status is defined (one parent or caregiver having attended university vs. two or more). It was the group of students with just one parent or caregiver who saw the least negative change in belonging. This was significantly different compared to the reference group of students with no parents or caregivers having attended university (B = 9.097, p = 0.036, n = 43; Table 6.8). This regression analysis was recoded to then establish whether there was a significant difference between the change in belonging for students with one parent or caregiver having attended university, compared to students who had two (or more) of them attend. This model showed that there was not a statistically significant difference between these two groups (B = -6.319, p = 0.169, n = 43).

term	Estimate	Std error	p-value
(Intercept)	-9.375	2.913	0.003
Yes - one of them has	9.097	4.188	0.036
Yes - two (or more) of them have	2.778	4.450	0.536

Table 6.8 - Linear regression results for parents' education status as a predictor for changes in belonging (n = 43)

The changing sense of belonging amongst students by parents' educational status is explored further through line graph visualisation in Figure 6.8. Here it can be seen clearly that at the start of the academic year – as measured through the October belonging survey – there was almost no difference in sense of belonging across these different demographic groups. However, in all future surveys, differences by parents' educational status emerge. Near the end of the first term – as measured through the December belonging survey – students who had two or more parents or caregivers attend university had the highest sense of belonging compared to students with other parents' education status; however, this group's sense of belonging then fell in the subsequent survey. By the end of the academic year – May belonging survey – it was students' who had just one parent or caregiver attend university that had the highest sense of belonging – although this still represents a slight decrease from their sense of belonging at the start of the academic year.

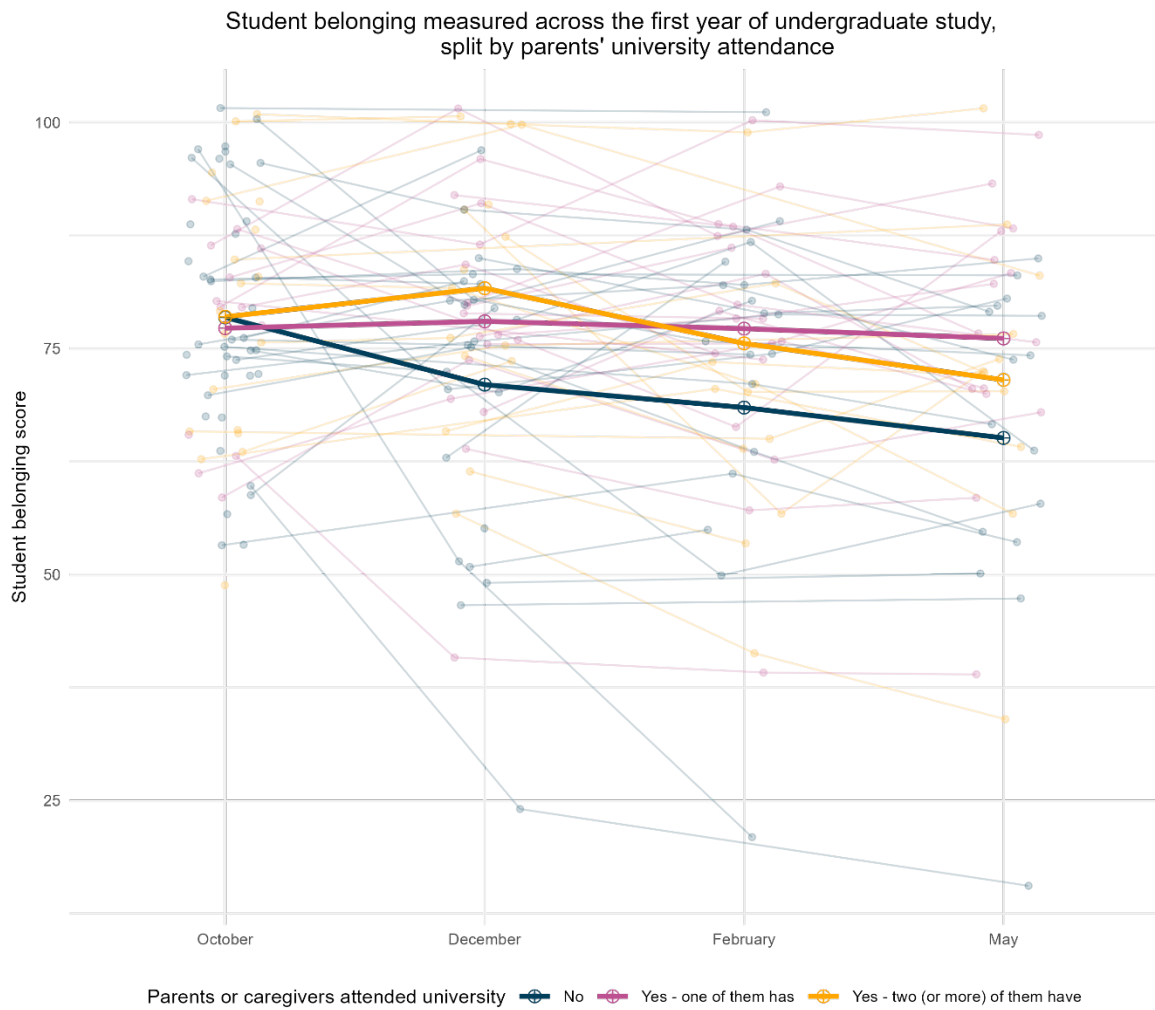


Figure 6.8 - Student belonging survey measurements across the first year of undergraduate study - split by parents' education status

In summary, whilst there are some differences in how students' sense of belonging changes over the first academic year across all demographic groups, the only demographic variable that showed a significant difference in changes in belonging was parents' education status. Further analysis into this variable showed, perhaps counter-intuitively – that it was students who had just one parent or caregiver attend university who had the least negative change in their sense of belonging. Recorded regression analysis did show that the difference between students with one parent or caregiver who attended university and students with two or more of them was not in itself significant.

Discussion

The results of this chapter provide three main areas of contribution to knowledge on the topic of student belonging: methodologically through its examination of combining diaries and survey data, enhanced understanding of how students' sense of belonging changes over the first year of study, and

practically through the evaluation of belonging changes based on previous supportive interventions. This chapter explores these three areas of contribution in turn by critically examining their place amongst existing literature.

Whilst previous studies have looked at longitudinal belonging data from both a qualitative (Picton et al., 2017; Viola, 2021) and quantitative (Hausmann et al., 2007; O’Sullivan et al., 2019; Murphy et al., 2020) approaches, the methodological approach within this chapter is novel in *combining* both qualitative and quantitative student belonging data from students, whilst maintaining a longitudinal lens. The significant, moderate-to-strong, positive correlations found between online diaries and surveys suggest a consistency in how students reflect on their own sense of belonging even if through very different reporting mechanisms. Despite these significant correlations, there were notable differences. Results from students’ online diary submissions were on average lower than their survey results and more varied. It is not possible to explore through this study’s design whether these variations between survey and diary results are due to an artefact of how the diary sentiment coding was scaled to match surveys or whether this represents a more inherent difference based on the different methods. The higher variance within online diary submissions is perhaps to be expected given the flexibility that students were given in how to respond; both in terms of which prompts to address and medium of submission. This builds on previous qualitative research that has already explored how different domains of student belonging overlap and may be more prone to fluctuation over time (Kahu et al., 2022; Axxe, 2023). Whilst the highest correlation between diaries and survey data was for students who had attended the belonging intervention, further regression analysis into the correlations by workshop status found that they were not significantly different from one another.

The results from this chapter show that students’ sense of belonging slightly decreases through the first academic year of study, aligning closely with previous studies (Hausmann et al., 2007; O’Sullivan et al., 2019). Further research is still needed to explain why this phenomenon occurs. Previous studies have already questioned when students develop a meaningful understanding of their own sense of belonging at university (Ruedas-Gracia et al., 2023). The small decrease seen in students’ sense of belonging across the first year could be explained by students not having a proper understanding of the concept when completing their baseline measurement. However, this does not explain why the first survey measurement of belonging is, on average, higher than all subsequent surveys. This could be explained by different experiences – students receive a lot of support through transition and welcome activities at the beginning of the first year, which often then fade away once further into term – or psychological reporting reasons – students may be putting on a ‘brave face’ at the start of their university journey and so give inflated survey responses. The former would suggest that institutions should consider how activities to support students’ sense of belonging can be continued

longer into the first year of study. The latter suggests that early measurements of students' sense of belonging may be artificially high and therefore should be used cautiously.

Results also further complicate literature on first-generation students and sense of belonging. Whilst previous studies generally find that first-generation students have lower levels of belonging (O'Shea, 2020; Kreniske et al., 2022), this can depend on whether first-generation status is defined as having neither parents or caregivers as previous attendees of university or not both parents or caregivers (Pedler et al., 2022). This chapter found that initial measurements of belonging, at the start of the academic year, were almost identical regardless of parents' education status. However, by the end of the first academic year, students who had no parents or caregivers attend university had significantly lower sense of belonging compared to non-first-generation students. Curiously, it was students who had only one parent or caregiver attend university who ended the year with the highest sense of belonging; even higher than students who had both parents or caregivers attend university. However, further regression analyses found that the difference between students who had one parent or caregiver attend university and those who had two or more of them attend was in itself not significantly different. These findings could be seen to support earlier, qualitative research suggesting that first-generation students lack clarity around expectations towards university compared to their non-first-generation counterparts (Collier and Morgan, 2007). Any negative impact on sense of belonging from unclear expectations would be likely to impact students more as the academic year progresses, which could help explain the steeper decline in belonging for first-generation students.

The final area of contribution from this chapter is around the effectiveness of a belonging intervention, developed from the theoretical framework of the Bronfenbrenner model of human ecological development, to positively influence later measures of sense of belonging. Replicating positive findings from previous action research studies (Hausmann et al., 2007; Murphy et al., 2020), this study has found that students who previously attended a belonging workshop intervention saw more consistent levels of belonging through the first year of study, compared to control groups of students who saw decreases in their sense of belonging. However, this difference between workshop status groups was not significant. Practically this suggests that whilst there may be a moderate association between workshop statuses and changes in students' sense of belonging, further investigation and testing would be needed to have confidence in the significance of the intervention. From a theoretical perspective, the content of the belonging workshop included discussions around growth mindset and preparing students for potential barriers and challenges to their sense of belonging. This content could have helped prepare these students to show resilience in the face of eventual challenges, thus allowing them to better maintain a consistently positive sense of belonging than other students. However, again the lack of significance in the results across workshop statuses must be emphasised.

An additional set of analyses was conducted to investigate the efficacy of the workshops. Linear regression modelling was able to find a significant, positive correlation between belonging workshop learning outcomes scores and eventual levels of sense of belonging. This suggests that students who benefited most from the workshop went on to have the highest levels of belonging later in the year. This underpins the potential that the belonging workshop may have, when its learning outcomes can be met, however, this result should not be taken on its own to suggest that there was a significant relationship between those that attended the workshop and their subsequent levels of belonging. The relationship between learning outcomes and subsequent belonging is only able to show when students did achieve the workshop learning outcomes, they then saw relatively positive changes in their sense of belonging. Whether the belonging workshop intervention should be rolled out for broader student audiences remains questionable, given the positive results from this chapter were not statistically significant. However, these findings suggest that evaluation of learning outcomes from these workshops could be used to identify students at risk of lower levels of belonging for targeting of future supportive activities. Potential next steps for development of the belonging workshop intervention and recommendations for practitioners are addressed within [Chapter 8 - Discussions and conclusions](#).

Limitations and future research

The primary limitation for this study has been its sample size of participants. Whilst 101 participants took part in the study, not all participants completed each follow-up survey or online diary submission (Figure 6.1). This is a challenge with any longitudinal research study and has been addressed in this chapter through analysis to test whether students' sense of belonging was a predictor of completing or missing future data collection points. To address the limited sample size, some analyses combined data points throughout the study to assess correlations – such as the correlations between online diaries and survey data and the correlations between belonging workshop learning outcomes and subsequent levels of belonging. The limitations to sample size have meant that this chapter was not able to look at intersectionality between student demographics in a meaningful way. Furthermore, no analyses were conducted comparing results between the two institutions, due to lower participation from the selective-recruiting university, Southampton. In addition, as not all follow-up surveys or diary submission opportunities were taken up by every student, this led to varying response rates in each case. The number of observations included within each individual analysis have been included either in the caption or within Tables themselves to address this.

Whilst the online diaries overall were significantly correlated with survey data, and thus included in subsequent analyses, the changing prompts used within each online diary limit the ability of this chapter to explore whether changes in students' responses were driven by the time in the year that they were completed or by the different prompts. Future research that either mixes the order of the prompts or keeps all prompts consistent throughout a longitudinal study could help to investigate this further.

Students' rich reflections in their online diaries have been explored more comprehensively within [Chapter 5](#), whilst only the coded sentiment analysis from the diaries were explored in these analyses. This quantitative focus to this chapter means that it has not explored what has contributed to students' sense of belonging changing throughout the academic year. It also means that further research is needed to explore how robust students' understanding of their sense of belonging can be when they start their studies. This can help to explore whether student belonging is meaningfully decreasing through the first year of study or if any decrease is explained by a lack of understanding of the concept, leading to unreliable measurement at the beginning of students' studies.

Conclusion

This chapter has explored how students' sense of belonging changes over the first year of study and how this is predicted by attendance at one of two supportive workshops in the first term. Building on previous research, results show that students' sense of belonging decreases throughout the first year of study, however this varies by parents' educational status and prior intervention status. Whilst beginning the year with similar levels of belonging, first-generation students saw decreasing levels of belonging compared to their non-first-generation counterparts.

Furthermore, whilst students who attended a study skills intervention or attended no workshop intervention saw decreases in their sense of belonging, students who had attended an agentic belonging intervention in the first term saw no decrease across the academic year; although this variation between groups was non-significant.

Results suggest that universities should consider developing interventions to support students' sense of belonging later into the academic year to address expected decreases in belonging. Furthermore, the significant, positive relationship between workshop learning outcomes and eventual belonging scores, suggests that practitioners may be able to identify students at risk of eventual lower levels of belonging through their intervention evaluation approach. By gathering feedback from belonging

intervention participants, and noting where students have not felt learning outcomes have been met, institutions can identify the students who may benefit most from follow-up support.

The subsequent chapter addresses the final research question of this thesis by exploring how students' attendance of the agentic belonging intervention correlates with their intention to persist and eventual continuation into the second year of study.

Appendices for Chapter 6

[Appendix 6.1](#) - Full preliminary analyses around missing data and correlations between online diaries and survey data

Chapter 7 – Belonging and retention

Introduction

The overarching research question for this chapter is identified within the [introduction and context chapter](#) of this thesis as Research question 4: To what extent is sense of belonging a predictor of student retention, measured by continuation of first-year undergraduate students?

Similar to previous results chapters, to focus the analyses conducted a set of sub-research questions were developed. Whilst the previous chapter addresses how the intervention impacted participants' sense of belonging, this chapter introduces two sub-research questions to investigate the associations between students' workshop status and both their intention to persist and eventual continuation status. Finally, given the close links between student belonging work and aspirations of improving student equity – as discussed within the [introduction](#) and [literature review](#) chapters of this thesis – a final research question was introduced to look at whether attendance within the workshops was associated with closing of continuation rate gaps across student demographics.

Sub-research questions:

- RQ4.1: To what extent is students' sense of belonging a predictor of students' intention to persist?
- RQ4.2: To what extent is students' sense of belonging a predictor of retention?
- RQ4.3: To what extent do students who attended the agentic belonging intervention differ from other students in their intention to persist?
- RQ4.4: To what extent do students who attended the agentic belonging intervention differ from other students in their continuation rates?
- RQ4.5: Was attendance of either of the workshop interventions associated with closing of institutional continuation gaps across demographic variables?

This chapter builds on the results of previous chapters to explore how students' sense of belonging and their participation in the workshop interventions is associated with retention: their likelihood to successfully continue in their degree beyond the first twelve months of study. Given that there has already been substantial exploration into the relationship between student belonging and both intention to persist (Hausmann et al., 2007; Booker, 2016; Russell and Jarvis, 2019; Boyd et al., 2022; Kahu et al., 2022; Pedler et al., 2022; Kelly et al., 2024) and eventual retention outcomes (García et al., 2019; Soria and Stubblefield, 2015; Davis and Hanzsek-Brill, 2019; Fink et al., 2020; Murphy et al.,

2020; Gopalan and Brady, 2019; Russell et al., 2022), readers may be wondering why it was necessary to include further investigation of this relationship with the theory of change for this thesis.

Whilst many studies have shown a significant positive relationship between belonging and both intentions to persist and retention, it is important to re-assess this relationship for two main reasons. Firstly, as discussed within the literature review section of this thesis, most existing literature around students' sense of belonging has taken place within the US context. As both of the institutions within this research study are based in England, this may affect the relationship between these two variables, given the difference in higher education systems and student demographics. Existing research has found that well-documented relationships between students' sense of belonging and associated student outcomes are not always replicated, especially when looking at different demographics of students (Meeuwisse et al., 2010; Gopalan et al., 2022). Secondly, it is important to investigate the relationship between belonging and retention, due to the action research design of this overarching study. Other examples of student belonging action research has led to enhancements in students' sense of belonging, but then found no significant improvement in student outcomes (Chen et al. 2020). This suggests that interventions targeted at improving student belonging may impact the otherwise well-documented connection between belonging and student retention.

The rest of this chapter follows a similar structure to previous research chapters. The methodology section expands on the approaches used to gather all data that was used within this chapter's analyses; including how a bespoke intention to persist scale was developed to address the lack of consistent approaches to measurement in existing research. This section also defines key terms used throughout the chapter – such as continuation and provides the justification for why specific approaches to data analysis were used.

The results split into two sections. They begin with a set of preliminary analyses which help to address underlying assumptions ahead of substantive analyses of the chapter. These preliminary analyses provide an initial reflection on the continuation data collected from the two participating institutions, show that the intention to persist scale has high internal consistency, and provide reassurance that missing data within any of the follow-up surveys was not associated with students' continuation results.

The substantive results sections within this chapter address each of the research questions. Whilst it has been acknowledged that previous research has extensively explored intention to persist and retention, few studies have looked at both of these outcome variables together. Therefore, analyses for this chapter split out to explore the relationship between belonging and each of these variables in turn. This allows the results of this chapter to connect with all existing literature on the association

between belonging and retention. The central argument of this thesis is that a newly developed agentic belonging intervention may be able to enhance both students' sense of belonging and subsequent retention.

The results show that students' sense of belonging is almost perfectly correlated with intention to persist scores. Changes in student belonging were also a predictor of changes in students' intention to persist scores, suggesting very promising opportunities for practitioners to enhance students' intention to persist through their efforts to enhance sense of belonging. A novel analysis, not explored within existing studies, also found that students' sense of belonging was a significant predictor of intention to persist at future time points in the academic year. Sense of belonging was also found to be a strong predictor of eventual continuation status for all time point measures of belonging except for the October survey. The discussion section of this chapter explores the implications of these findings further.

Regression analyses exploring the association between students' workshop status – whether they attended the agentic belonging workshop, the study skills workshop or neither – and intention to persist found a non-significant difference between groups. However, when regression analyses were utilised to explore the relationship between workshop status and continuation, this found that belonging workshop attendees were significantly more likely to have a positive continuation status than both the study skills and non-attending groups. Students from the non-attending group were 25% less likely to successfully continue in their degree than belonging workshop students, whilst study skills workshop attendees were still 16.5% less likely to continue than the belonging workshop group. This suggests that the belonging intervention better prepared students for the challenges that may have led to non-continuation, compared to the study skills intervention. However, there is also the risk of false positives given the study sample size, which is discussed further within the limitations section of this chapter.

Finally, a set of data visualisation approaches to explore whether participation in the research project led to closing of demographic continuation gaps found no significant findings. This is suggested to be mainly due to participation numbers being too low for these types of analyses to be meaningful. This is discussed further within the limitations section of this chapter, along with other mitigations that were made to address potential methodological risks.

Methodology

Participants and data collection

From the overarching study, 101 participants have been included within the analyses for this chapter because they provided baseline measurements for their sense of belonging and continuation data was able to be provided for them from their respective institutions. Sixty-six of these 101 students also participated in at least one follow-up measurement activity of their sense of belonging and intention to persist score. All of these 101 students have been allocated a 'workshop status' based on their early involvement with the research project. Thirty-six students across the two participating institutions attended the agentic belonging workshop intervention, 27 students attended the study skills workshop, and an additional 38 students did not attend either workshop but continued in the study, providing a baseline measurement of their sense of belonging.

All participants also provided demographic data for their gender, age, fee status (UK or international), their commute length, whether they attended private schooling and their parents' education status. More information about why these demographic variables were included is discussed within the overarching [methodology chapter](#) for this thesis. Data was also collected from students at the end of both the belonging and study workshops to gather their reflections on the extent to which the learning outcomes had been met. Learning outcome scores from the belonging workshop participants are included briefly within the analyses of this chapter. A full process map for the participant and data collection journeys relevant to this chapter are visualised in Figure 7.1.

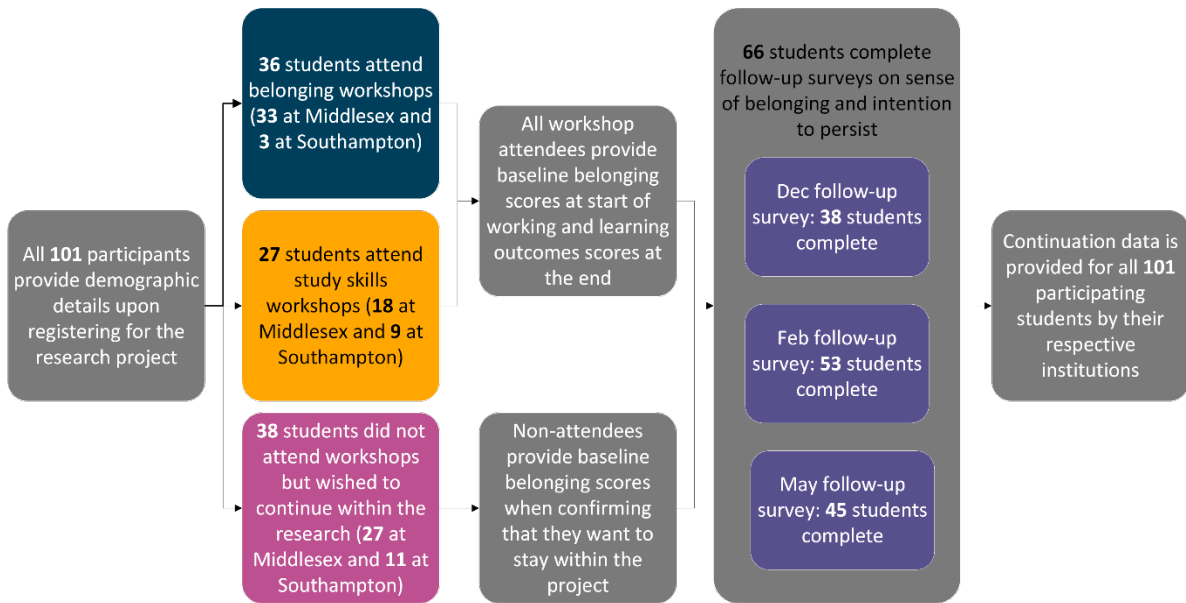


Figure 7.1 – Research participant and data collection journey for all aspects of data utilised within the analyses in this chapter. Colours used to denote each of the workshop statuses are utilised consistently throughout this chapter in data visualisations (belonging workshop in blue, study workshop in yellow, non-attending students in pink)

Online surveys through the Qualtrics platform were used for the vast majority of data collection; including participants’ initial registration for the research project and provision of demographic data, baseline belonging measurements at the beginning of workshops, learning outcome score measurement at the end of workshops, collection of baseline belonging scores for non-attending students, and follow-up collection of belonging and intention to persist scores.

As discussed within the overarching methodology section of this thesis, it was expected that relying on students to self-confirm their own continuation status would result in a biased sample; with students who had left university being much less likely to still respond to research questions in the following academic year. Therefore, to ensure that continuation data could be supplied for all participating students, this was requested directly from their universities. Students consented to having their continuation data shared with the research project when registering themselves, however additional data sharing agreements were developed between each of the participating universities and the University of York, where the research project was based.

Measures

Most literature that looks at student belonging and its relationship to student success focuses on the terms ‘retention’ and ‘persistence’. However, exactly what is meant by these terms varies across higher education systems internationally and studies rarely discuss exactly how they are defining these measures. For this study, retention has been defined based on the concept of ‘continuation’ used by the Office for Students (OfS) in assessing student outcomes in the UK context (Office for Students, 2024): a student who has continued studies at the same higher education provider one year and 14 days after they have started their studies.

The OfS also includes two other categories of students within their reporting definition of continuation, however they have both been excluded from the definition used within this chapter. The OfS definition also includes students who have qualified and received a higher education qualification; however, as this study is only focusing on first-year undergraduate students, this would not apply to any of the students considered within the study.

The OfS also defines students as having a successful continuation status if they have continued their studies at *another* higher education provider. This has been excluded from the definition of continuation used in this study for two reasons. Firstly, as it was unlikely that institutions would be able to assess and provide data on whether students had transferred by the point that they needed to share continuation data. Furthermore, this definition of continuation which includes students who have changed institutions, whilst accurate from a regulatory point of view, does not align conceptually with what is trying to be tested within this research study around belonging. To assess the connection between students’ sense of belonging and retention, whilst including students who have left the institution to study elsewhere, would not align with how this connection has been tested in other studies. There is a conceptual incompatibility between assessing belonging and whether students have changed institutions as a positive connection. This disconnect is made clearer by considering the questions used to measure belonging within the Yorke scale (Table 7.1) where references are made to belonging with students’ current institution – “*this university*” – rather than any university. Therefore, it is only students who have continued at their original institution that have been defined as having a positive continuation status in this study. Following on from the provision of this definition, the terms retention and continuation are used interchangeably within the rest of this chapter.

Scales relevant to the analyses of this chapter are shared below in Table 7.1, including the intention to persist scale. This scale was newly developed for this thesis, as there was no consistent measure of intention to persist found in existing literature. More detail on the approach that was taken for

deciding questions to include in the scale has been included within the overarching [methodology chapter](#) for this thesis.

Yorke belonging scale	Learning outcomes questions within belonging workshop	Intention to persist scale
All questions asked as statements on a five-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree		
1. I feel at home in this university	1. I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university)	1. I intend to complete my course at university
2. Being at this university is an enriching experience	2. Every student has a different path to and definition of belonging at University	2. I sometimes consider withdrawing from university (reversed)
3. I wish I'd gone to a different university (reversed scale)	3. I have a clear idea of what my own path to belonging at University may look like	3. I sometimes consider changing my university (reversed)
4. I have found this department to be welcoming	4. I understand some of the potential opportunities and barriers to my own belonging needs being met at university	4. I have doubted whether I should stay at university (reversed)
5. I am shown respect by members of staff in this department	5. I found the workshop fun and engaging	
6. Sometimes I feel I don't belong in this university (reversed scale)	6. I know a lot more about being a successful student than I did before this session	

Table 7.1 - Scales used to measure student belonging, assess learning outcomes from belonging workshop, and measure students' intention to persist

Data analysis

For each of the research questions, a combination of either linear regression or binary logistic regression models, along with data visualisation are utilised. As discussed before, data visualisation is an important part of the methodology of this thesis to both ensure engaging results to readers and to uncover underlying patterns that can guide subsequent analyses (Healy, 2019).

As was used in [Chapter 4](#) to evaluate the relationship between predictor variables and students' likelihood of attending the workshop interventions, binary logistic regression has been utilised again in this results chapter when the binary outcome variable of continuation is being investigated. Given

that estimate values for binary logistic regression models cannot be reliably used to interpret effect measures across different groups (Mood, 2010), average marginal effects have been added into the results of logistic regression models in this chapter. Average marginal effects provide a much more intuitive way of interpreting the strength of the relationship between predictor and outcome variables. As all belonging and intention to persist scores have been normalised to sit between 0 and 100, the average marginal effect values within this chapter represent the association between a one percent difference in the predictor variable – for instance, student belonging scores – and a percentage difference in the outcome variable: student continuation.

Results

The results begin with a brief exploration of the top-level descriptive data included within this chapter, followed by a summary of preliminary analyses, which are discussed further in [Appendix 7.1](#). Following this, the remaining sections of the results focus on addressing each of the five substantive research questions for this chapter in turn.

As many of the analyses use students' continuation status as the outcome variable, descriptive data of the count and percentage of students with positive continuation statuses is presented in Table 7.2. These top-level statistics are also visualised in Figure 7.2.

		Both institutions		Middlesex		Southampton	
		Count	%	Count	%	Count	%
Study participants	Continued	84	83.2%	72	92.3%	12	52.2%
	Not	17	16.8%	6	7.7%	11	47.8%
Overall populations	Continued	4471	79.7%	1933	75.9	2538	82.9%
	Not	1138	20.3%	614	24.1%	524	17.1%

Table 7.2 – Descriptive data showing the count and percentage of students with a positive continuation status across the overall study population and split by institutional status

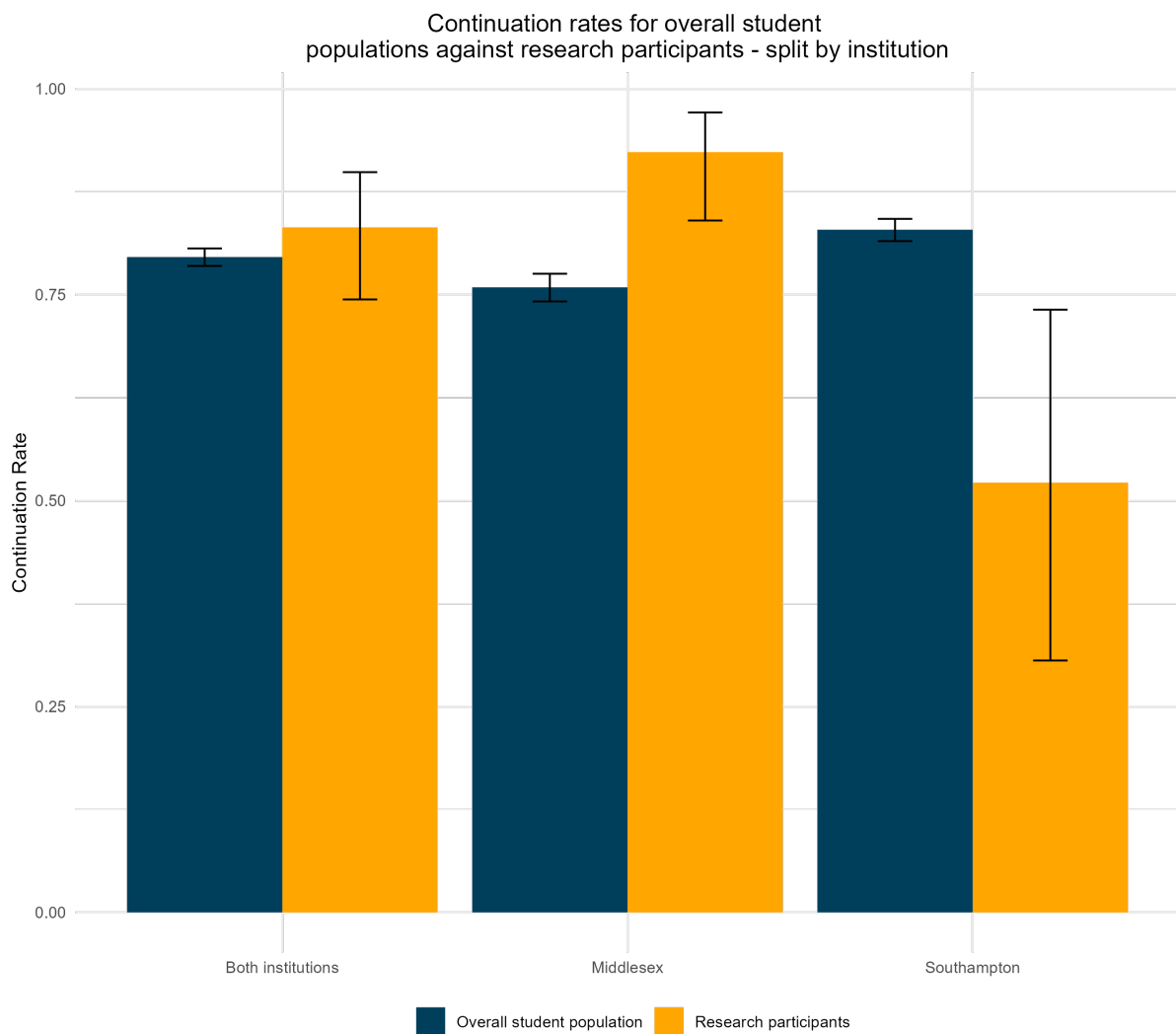


Figure 7.2 – Continuation rates between overall student populations of new undergraduate students and research participants, split by institutional status

These continuation values amongst study participants are somewhat unexpected. At an institutional level, there was a noticeable difference between the continuation rates of the overall population and study participants, however in different directions for each institution. Middlesex research participants had a higher continuation rate than the overall Middlesex continuation rate; however, the Southampton research participants had a lower continuation rate than the overall Southampton continuation rate. Given that students who took part in the research study may have been more likely to be engaged compared to the average student, the Middlesex variance is perhaps to be expected. However, this makes the lower continuation rate for the Southampton participants even more surprising.

One potential explanation for this unexpected result is through looking at the proportion of research participants from each institution who did not attend the original intervention. Table 7.3 – also shown in [Chapter 4](#) – presents the breakdown of original registrations and attendances across each institution.

Institution type	Middlesex University	University of Southampton	Total
Total registrations	224	66	290
Belonging workshop registrations	103	13	116
Study skills workshop registrations	121	34	155
Total attendances	51	12	63
Belonging workshop attendances	33	3	36
Study skills workshop attendances	18	9	27
Total attrition rate (% non-attend)	77%	82%	78%
Belonging workshop attrition	68%	77%	69%
Study skills workshop attrition	85%	74%	83%
Non-attenders continuing in study	27	11	38
Total students remaining in study	78	23	101

Table 7.3 - Participant registration, attendance and attrition numbers

After the workshops had taken place, students who had registered but not attended their registered workshop were emailed and invited to continue within the research study. For Middlesex, 27 non-attenders chose to remain within the study, representing 34.6% of all Middlesex participants. For Southampton, 11 non-attenders remained in the study, representing 47.8% of all Southampton participants. As discussed further within [Chapter 4](#), non-attenders may have faced additional barriers at this early point in the student journey which meant that they were less likely to be able to attend their registered workshops. Perhaps the potential barriers faced by the higher proportion of non-attenders within the Southampton research participants dataset could explain their eventual lower continuation rate compared to new Southampton undergraduate students on average.

Preliminary analyses to validate methodological approach for remaining analyses

Similar to previous chapters, a set of preliminary analyses were carried out to explore assumptions in data that may problematise the planned methodological approach. Firstly, the intention to persist scale was analysed for internal consistency. Cronbach's alpha analysis of this scale resulted in a score of 0.823, which suggests a strong level of internal consistency. This positive result suggests that the scale can be utilised in subsequent analyses within this chapter. Secondly, a series of regression models were developed to assess the relationship between missing datapoints and students' eventual continuation. Similar analyses were carried out in chapters [4](#) and [6](#) around likelihood of attending the workshops and levels of sense of belonging, respectively. This analysis was included within this chapter to test whether missing data would need to be accounted for within future analyses. Binary logistic regression models showed that there was no statistically significant relationship between students' likelihood to miss any survey datapoint and their continuation status. Furthermore, there was no statistically significant relationship between the number of surveys that a participant completed and their eventual continuation status. This suggests that missing data can be excluded from future analyses without a risk of skewing the data. Further detail on these preliminary analyses including regression data tables can be found in [Appendix 7.1](#).

RQ4.1: To what extent is students' sense of belonging a predictor of students' intention to persist?

For all substantive results sections of this chapter, a combination of data visualisation and regression models were used in combination. As discussed within previous chapters, data visualisation both helps to make the connections between variables more obviously apparent to readers, but also assists in guiding further quantitative analyses that could best explore the strength of relationships within the data.

To address this particular research question, plots have been developed to show the absolute levels of students' sense of belonging and intention to persist at each of the four survey points (Figure 7.3). Two additional plots were created to show these variables split by institution to address the fact that Southampton students missed the first measurement of both the belonging and intention to persist scales, due to the rescheduling of their initial workshops.

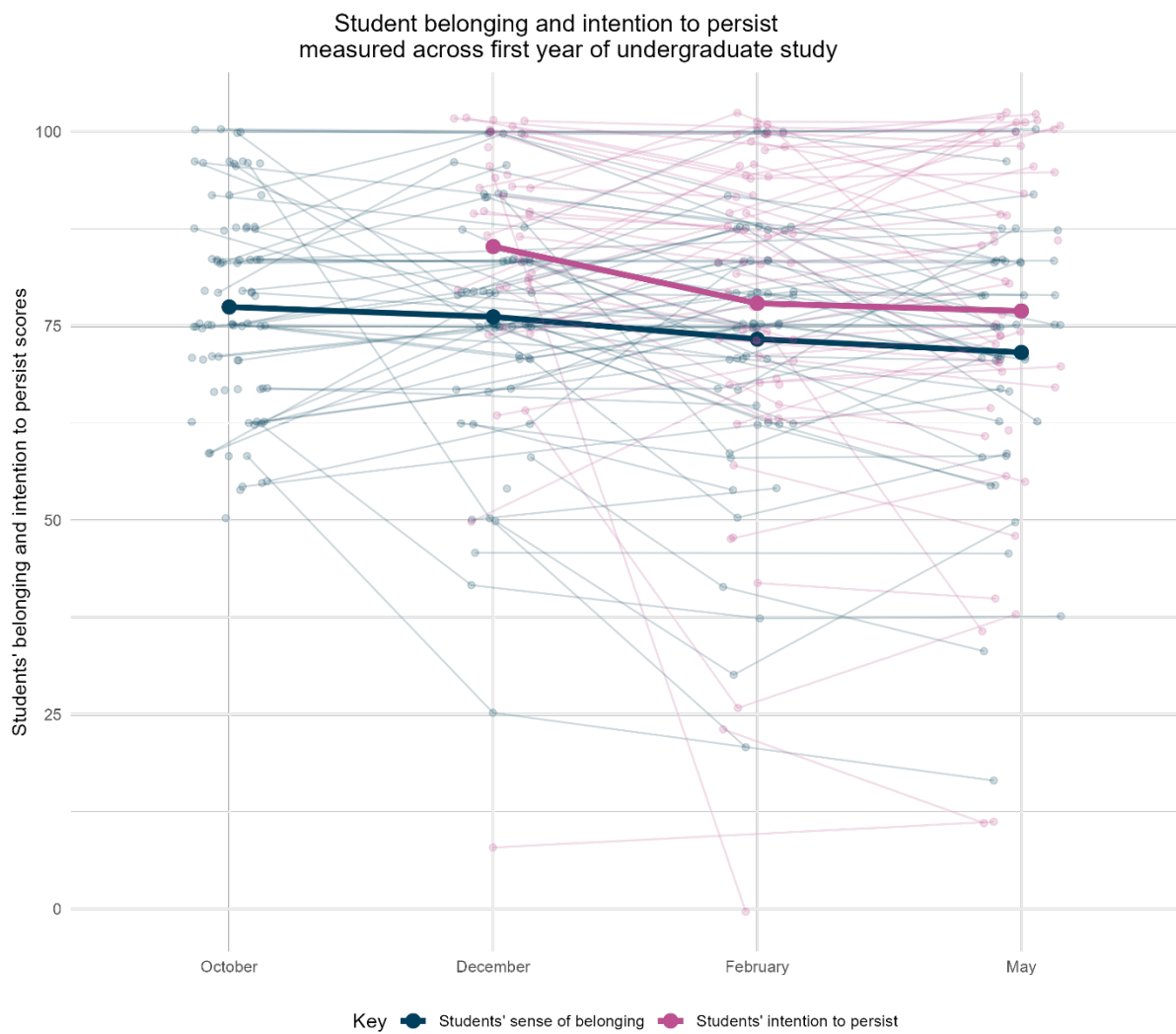


Figure 7.3 - Changes in students' intention to persist and sense of belonging - including averages for all participants

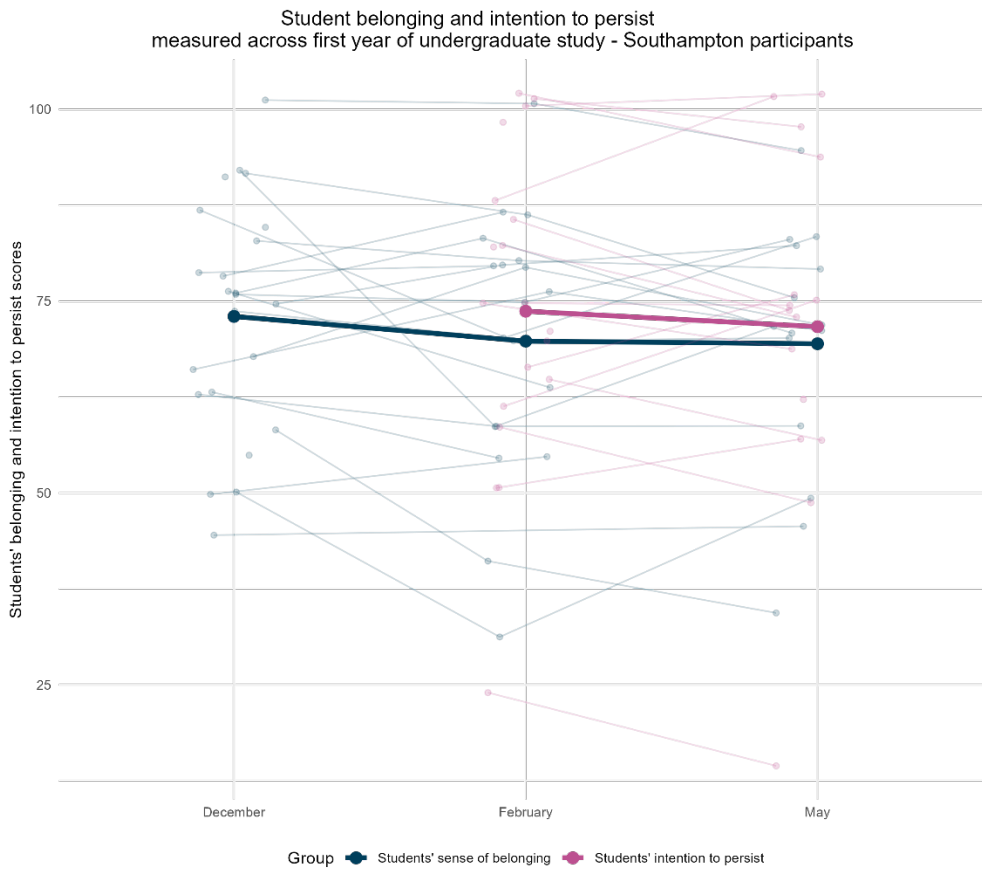


Figure 7.4 - Changes in students' sense of belonging and intention to persist - just for Southampton participants

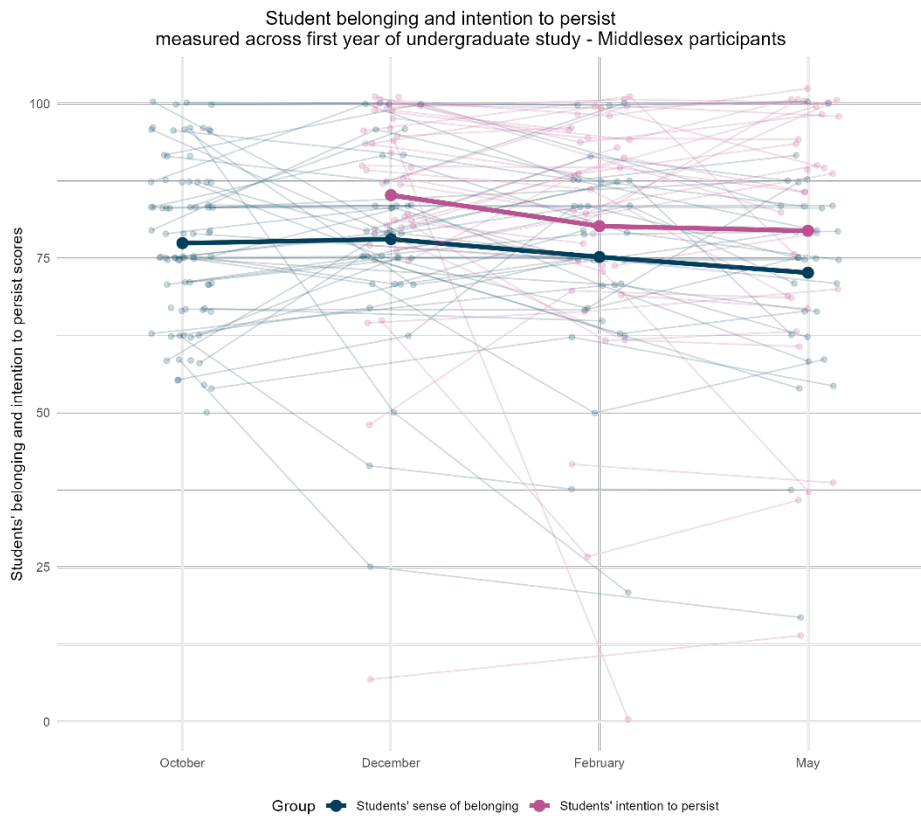


Figure 7.5 - Changes in students' sense of belonging and intention to persist - just for Middlesex participants

Figures 7.3 – 7.5 build on visuals presented in the previous results chapter, focusing on exploring how students' sense of belonging changed over the first academic year of study. In these cases, the inclusion of the intention to persist measurement shows a consistent pattern in that students' sense of belonging and intention to persist are closely linked.

Given that they were measured by separate scales, little focus should be given to the fact that intention to persist was consistently greater than students' sense of belonging at all measurement points. Whilst, the questions in each scale were devised using the same Likert scale – from strongly disagree to strongly agree – they are different scales. Instead of focusing solely on absolute values, instead more insight can be gained by exploring changes over time. Through this lens, it is clear that both students' sense of belonging and intention to persist decreased slightly on average through the first academic year of study.

The strength of connection between these two constructs is explored further through the use of linear regression analyses. Given the longitudinal nature of this study, there are multiple ways to assess the connection between student belonging and intention to persist through regression analyses. Four connected analyses were conducted to explore this looking at the strength of the relationship between:

- 1) Belonging and intention to persist at each survey measurement point (Table 7.4) – *to explore whether the relationship between the variables is stronger / weaker at certain points in the year*
- 2) Average sense of belonging against average intention to persist (Table 7.5 and Figure 7.6) – *to explore the strength of the relationship between the variables when looking at a students' experience across all data points*
- 3) Students' sense of belonging and intention to persist at the next survey measurement point (Table 7.6) – *to explore whether sense of belonging is a reliable predictor of future intention to persist. This could then indicate how belonging could be used as a lead indicator of intention to persist – in a similar way to how intention to persist is seen as a lead indicator of continuation itself*
- 4) Change in students' sense of belonging against change in students' intention to persist (Table 7.7) – *to explore whether efforts to affect students' sense of belonging could be expected to have corresponding shifts in students' intentions to persist*

For all of these regression models, whilst the focus of the analyses was exploring the relationship between sense of belonging and intention to persist, students' demographic variables were included

in the models so that any differences across demographic categories could be accounted for. As none of the demographic variables showed statistically significant relationships with intention to persist in these models, they have not been presented in the below results tables for clarity of presentation. Full regression results tables can be found in [Appendix 7.2](#).

	term	Estimate	Std error	p-value
December intention to persist (n = 32)	(Intercept)	25.589	15.593	0.114
	December belonging	0.919	0.169	0.000
February intention to persist (n = 44)	(Intercept)	18.724	15.248	0.227
	February belonging	0.920	0.154	0.000
May intention to persist (n = 38)	(Intercept)	28.799	16.068	0.083
	May belonging	0.955	0.190	0.000

Table 7.4 – Multiple linear regression analyses to explore the extent to which belonging at each measurement point is a predictor of students' intention to persist at that same measurement point. This was modelled as a multiple linear regression model to explore whether this relationship was explained by students' demographic factors. As there was no significance amongst students' demographic variables, these variables have not been included within this results table, but can be found within [Appendix 7.2](#). Number of observations are included within each model in the table

Table 7.4 shows the first of four linear regression analyses to explore the strength of the relationship between students' sense of belonging and intention to persist. At each survey measurement point there was a very strong, positive relationship between the two constructs. Estimate values ranged from 0.919 to 0.955, suggesting that each percentage increase in students' sense of belonging was associated with slightly less than a one percent increase in students' intention to persist. All coefficients had a statistical significance of less than 0.001.

Building on the above analysis, a regression model and scatter plot were created to show the relationship between each participant's average sense of belonging and average intention to persist.

term	Estimate	Std error	p-value
(Intercept)	5.596	9.196	0.545
Average sense of belonging	0.989	0.121	0.000

Table 7.5 – Multiple linear regression analyses to explore the extent to which students’ average sense of belonging is a predictor of students’ average intention to persist, as measured in surveys through the first academic year. (N = 66)

Given that belonging and intention to persist were strongly correlated within each survey measurement point, it perhaps could be expected that the relationship between the average values for these two constructs would be similarly high. In fact, average sense of belonging was almost a perfect predictor of students’ average intention to persist ($\beta = 0.989$, $p < 0.001$, $N = 66$).

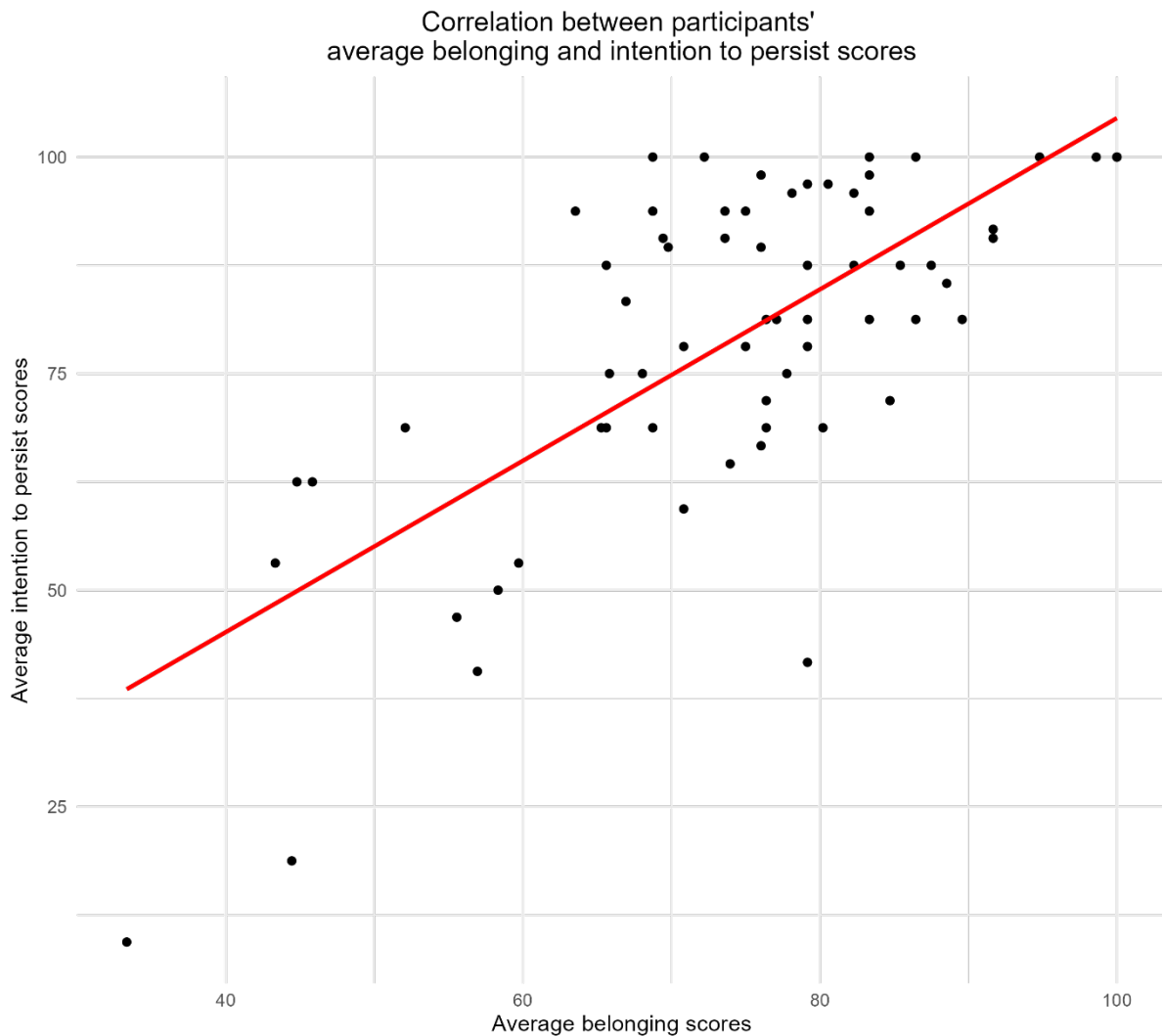


Figure 7.6 - Scatterplot showing the correlation between students' average sense of belonging scores and average intention to persist scores, as reported in surveys across the first academic year. Correlation coefficient (r) = 0.71

Whilst not true for all constructs measured in surveys, there is a risk that the extremely high correlations between these variables could be explained by common method bias, as students were completing their questions about sense of belonging and intention to persist within the same overarching questionnaire. There is a risk of acquiescence bias: that if students had been responding positively to the questions about belonging, then this could have primed them to also respond more positively to all subsequent questions: those around intention to persist.

To explore whether the relationship between sense of belonging and intention to persist remained beyond a single time point, a regression model was developed to explore the relationship between sense of belonging at any survey point and the corresponding intention to persist score at the *next* survey measurement point.

term	Estimate	Std error	p-value
(Intercept)	33.333	11.929	0.006
Sense of belonging	0.804	0.128	0.000

*Table.7.6 – Multiple linear regression analyses to explore the extent to which belonging at each measurement point is a predictor of students' intention to persist at the **next** measurement point – e.g. belonging in December as a predictor of intention to persist scores in February. (N = 103)*

The above regression model produced another very strong, positive and significant correlation, suggesting that even though both belonging and intention to persist are fluid concepts, students' sense of belonging can be a useful predictor of where students' intention to persist will be in the future. It should be noted that whilst this regression model produced a significant result ($p < 0.001$) the estimate value was slightly lower than in the previous set of models ($\beta = 0.804$), suggesting that students' sense of belonging has a stronger association with intention to persist at the same point in time than it does for future intention to persist measurements. Given this fluidity, one further analysis was carried out to explore the relationship between changes in students' sense of belonging and changes in intention to persist.

term	Estimate	Std error	p-value
(Intercept)	9.891	19.878	0.625
Change in sense of belonging	0.858	0.319	0.015

Table 7.7 - Multiple linear regression analyses to explore the extent to which changes in students' sense of belonging was a predictor of changes in students' intention to persist (as calculated by subtracting each participant's first survey measurement from their last for both the belonging and intention to persist scales) [N = 26]

Table 7.7 shows that when looking at the overall change in students' sense of belonging across the first academic year of study – in essence, their final self-reported sense of belonging score minus their first – this is once again very strongly, positively and significantly correlated with changes in students' intention to persist.

Overall, this suggests that students' sense of belonging is positively correlated with their intention to persist at an overall average level and at each individual time point. Sense of belonging is also a predictor of future intention to persist, as measured through the relationship between any belonging measurement and the intention to persist measurement for that same student within the next survey – for example, students' sense of belonging in December being able to predict students' intention to persist scores in February.

Given this strength of relationship between belonging and intention to persist, an immediate question to explore would be whether the two scales are just measuring the same constructs. Whilst most of the questions in the Yorke belonging scale do not appear related to the questions included within the intention to persist scale, there is one that has the risk of conceptual overlap. The question: "I wish I'd gone to a different university (reversed scale)" does seem at least somewhat conceptually related to the questions being asked in the intention to persist scale, as it is asking students to reflect on whether they perceive regret in choosing their current university of study. This is not asking exactly the same thing as any of the questions in the intention to persist scale, as it is asking the student to reflect back, rather than asking about their commitment to make a forward-looking decision that would involve them leaving their current university. However, it is somewhat conceptually related as a question to the intention to persist scale. How this potential conceptual overlap should be addressed is included within the discussion section of this chapter. Another possible explanation is that sense of belonging and intention to persist may be reflecting deeper psychological traits within participants, which explains why they are so closely correlated over time.

RQ4.2: To what extent is students' sense of belonging a predictor of continuation?

Similar to the previous section of this results chapter, this research question was explored through a combination of data visualisation and regression analyses. Unlike intention to persist, whether students continue in their studies or not is a binary variable. Therefore, binary logistic regression has been utilised to explore the strength of the relationship between this outcome variable and students' sense of belonging. As noted within the methodology section of this chapter, average marginal effects have also been calculated and included within the regression tables to support meaningful interpretation of the strength of relationships.

To begin the analyses to address this research question, students' sense of belonging was plotted across the first academic year of study, but split based on students' eventual continuation result (Figure 7.7).

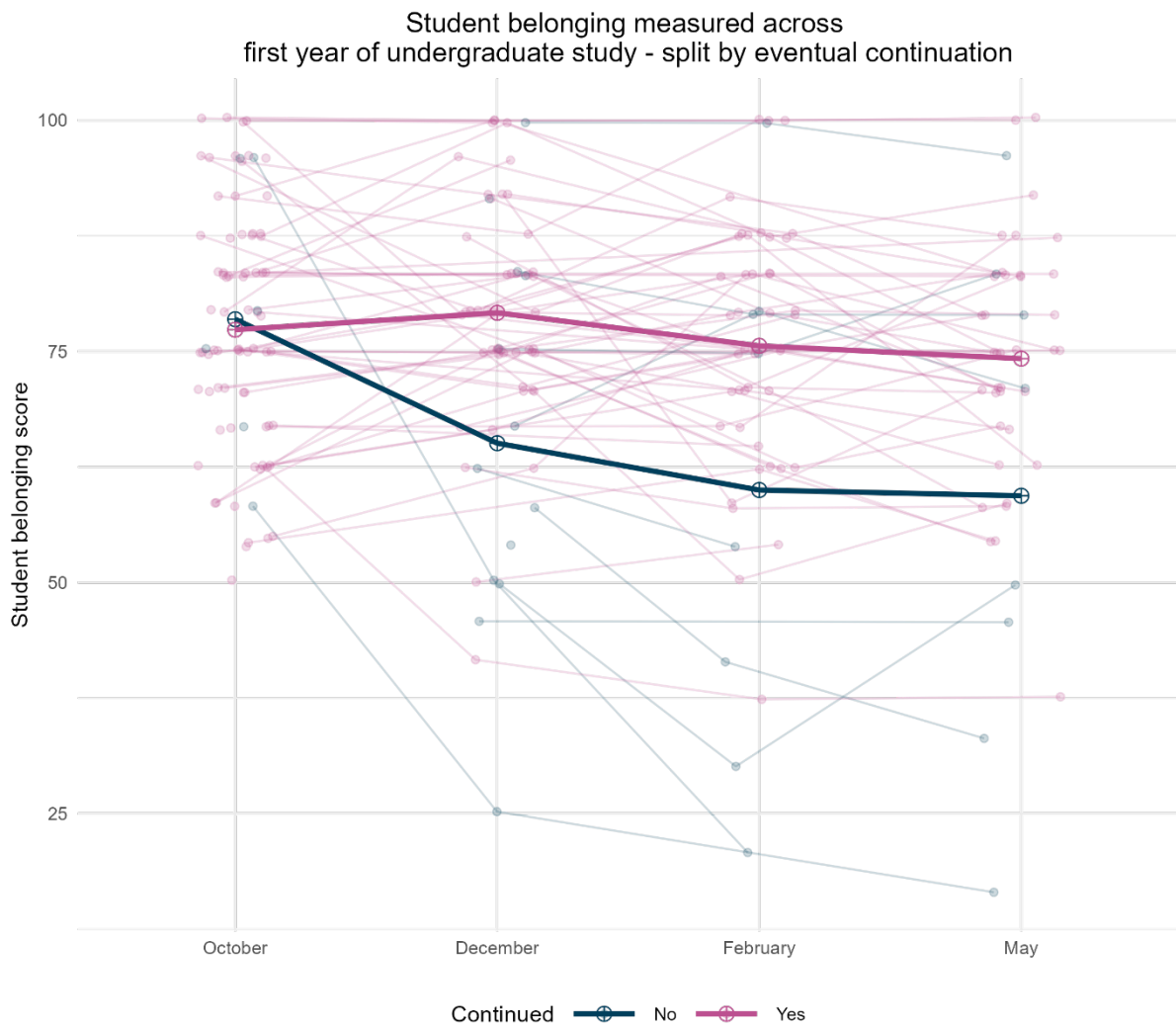


Figure 7.7 - Plot showing students' sense of belonging and intention to persist across the first year of undergraduate study - split by students' continuation status

This visualisation of students' sense of belonging, split by students' eventual continuation status, begins to show that there is a clear connection between these variables. Interestingly, the average October survey measurements for belonging, which were only completed by the Middlesex participants, are almost the same across the continuation-split. This suggests that this October measurement of belonging was no indicator of students' eventual continuation status. However, all subsequent average measurements of belonging show a clear separation for those who continued and those who did not.

Binary logistic regression analysis was then utilised to explore the extent of the relationship between students' sense of belonging and continuation. Given the previous analyses, which showed that the

relationship between belonging and intention to persist is incredibly strong, only belonging has been included in these analyses, rather than including both belonging and intention to persist – as the inclusion of another highly correlated item would not be valuable in the regression model. Furthermore, my theory of change focuses on belonging as a predictor of continuation. These regression models were developed to include students’ demographic variables for consistency with previous analyses within this chapter; however, the results shown below only include the results of the overall intercept, belonging values and average marginal effects. Full demographic details of these regression results are included within [Appendix 7.2](#).

term	Estimate	Std error	p-value
(Intercept)	4.478	3.890	0.250
October belonging (n = 67)	-0.021	0.039	0.598
Average marginal effects	-0.001	0.003	0.598
(Intercept)	-4.654	2.299	0.043
December belonging (n = 52)	0.071	0.029	0.016
Average marginal effects	0.008	0.003	0.003
(Intercept)	-5.735	4.256	0.178
February belonging (n = 44)	0.161	0.068	0.019
Average marginal effects	0.010	0.003	0.002
(Intercept)	-4.866	3.201	0.128
May belonging (n = 38)	0.108	0.055	0.047
Average marginal effects	0.009	0.004	0.018
(Intercept)	0.884	1.684	0.600
Change in belonging (n = 38)	0.046	0.049	0.352
Average marginal effects	0.005	0.005	0.333
(Intercept)	-2.881	1.786	0.107
Average belonging (n = 87)	0.053	0.022	0.016
Average marginal effects	0.006	0.002	0.008

Table 7.8 – Multiple binary logistic regression analyses to explore the extent to which belonging at each measurement point, along with students’ demographic variables, are predictors of students’ eventual continuation status. Multiple binary logistic regression models were also calculated with students’ change in belonging (last survey measurement minus their first) and students’ average belonging across all surveys that

they took part in. Average marginal effects for each model are also presented to help better interpret the strength of the relationships between belonging measurements and continuation. Average marginal effect estimates represent a predictive percentage change in continuation. For example, February belonging's average marginal effects of 0.010 represents that every percentage point increase in belonging represents a percentage increase in the likelihood of a student successfully continuing. Number of observations are included within each model in the table

The above regression models show that there are positive and significant relationships between students' sense of belonging and eventual continuation. As was noted from Figure 7.7, October sense of belonging survey results were not a predictor of eventual continuation – with a very low estimated coefficient value and no significance. However, all subsequent belonging surveys were strong, significant predictors of belonging. For each additional percentage point in students' sense of belonging, students' likelihood of successfully continuing also increased by roughly 1 per cent for the December, February and May surveys. Students' change in belonging was not a significant predictor of continuation. Students' average belonging was a significant predictor of belonging, however this is more likely to be expected, as averaging across the different surveys reduces measurement error, thus increasing the chances of a significant result. Furthermore, each percentage point increase in belonging predicted an increase in students' continuation rate of 0.6%, less than when looking at the December, February and May surveys individually.

Overall, these results align with the theory of change developed for this overarching thesis. Students' sense of belonging is a significant predictor of students' eventual continuation. However, two important caveats to this are that students' measurement at the start of the academic year – in October – was not significantly associated with students' eventual continuation and neither was students' change in sense of belonging.

RQ4.3: To what extent do students who attended the agentic belonging intervention differ from other students in their intention to persist?

Similar to previous approaches to analysis in this chapter, this research question was addressed through a combination of data visualisation and multiple linear regression analyses. Figure 7.8 shows the changing levels of students' sense of belonging and intention to persist throughout the first academic year. Whilst changes in students' sense of belonging has already been more thoroughly discussed in the previous chapter, these data are replicated within the top panel of Figure 7.8, with the changes in students' intention to persist visualised in the bottom panel. As this research question

is focused on exploring whether intention to persist levels were different for those who attended the agentic belonging intervention, all participants' individual intention to persist trajectories have been colour-coded based on their workshop status. Similar to the plots created for the previous chapter, average scores for each workshop status were added to the plot with a full line to show changes in sense of belonging and a dashed line to depict changes in intention to persist. This visualisation approach allows for exploring individual student trajectories, averages by workshop status and the connection between changes in belonging and intention to persist.

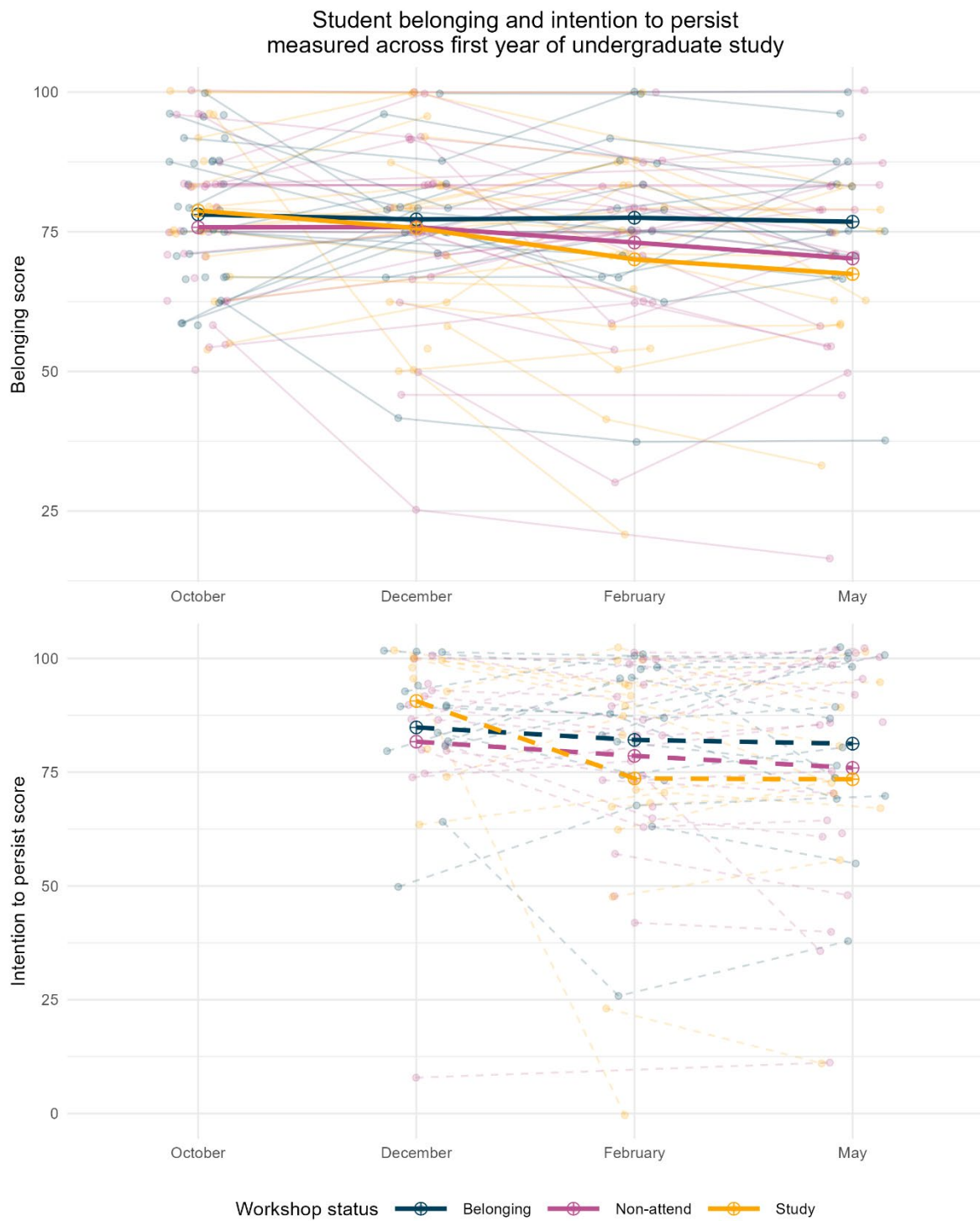


Figure 7.8 - Changes in students' sense of belonging and intention to persist - split by workshop status. Both scales normalised to represent values between 0 to 100. Students' intention to persist was not included within the October survey, so values are only displayed from December onwards.

Figure 7.8 shows that intention to persist scores by workshop status mirror students' sense of belonging in a few ways. Firstly, as the academic year progressed, intention to persist scores were highest for those who attended the belonging workshop, followed by those who did not attend either and then lowest for those who attended the study skills group. The differences between the workshop groups appear quite small, so the extent of the differences was explored further through linear regression analyses. Given the finding from the previous chapter that eventual sense of belonging was not significantly predicted by workshop group status and that belonging and intention to persist seem very similar from Figure 7.8, it seems unlikely that there would be a significant relationship with intention to persist. However, regression models were developed to verify this.

	term	Estimate	Std error	p-value
December intention to persist (n = 38)	(Intercept)	80.643	16.071	0.000
	Workshop status – non-attend	-2.514	10.060	0.805
	Workshop status – study	11.581	9.133	0.217
February intention to persist (n = 54)	(Intercept)	79.554	17.041	0.000
	Workshop status – non-attend	-2.076	10.662	0.847
	Workshop status – study	-5.704	10.581	0.593
May intention to persist (n = 46)	(Intercept)	84.646	16.290	0.000
	Workshop status – non-attend	2.913	11.151	0.796
	Workshop status – study	0.012	12.055	0.999
Average intention to persist (n = 66)	(Intercept)	88.145	10.601	0.000
	Workshop status – non-attend	-4.356	7.880	0.583
	Workshop status – study	-0.795	7.968	0.921
Change in intention to persist (n = 38)	(Intercept)	-0.799	23.177	0.973
	Workshop status – non-attend	2.741	13.039	0.836
	Workshop status – study	-11.982	13.218	0.377

Table 7.9 – Multiple linear regression analyses to explore the extent to which workshop status (either belonging workshop, study skills workshop or non-attendance at either workshop) was a predictor of students' intention to persist scores at each measurement point across the first academic year of study. Additional models were created to include average intention to persist and change in intention to persist as outcome variables.

Demographic variables were included within all regression analyses, but not reported with the above tables for

clarity of presentation. Full regression models that include demographic variable coefficients are included within [Appendix 7.2](#). Number of observations in each model are displayed within the corresponding row

As expected, the above regression results show that there is no significant relationship between students' workshop status and their intention to persist. Within Figure 7.8, the intention to persist scores of those who attended the study workshop started out the highest – when measured in December – but then ended the lowest of all intervention groups. The regression models reflect this by finding that having attended the study skills workshop was associated with a much higher intention to persist score in the December survey when compared to the belonging workshop reference group, albeit not significantly so ($\beta = 11.581$, $p = 0.217$, $n = 38$). Similarly, the change in intention to persist score was much lower for study workshop attendees, although again not significantly ($\beta = - 11.982$, $p = 0.377$, $n = 38$). There were two surprising coefficients within the May survey regression model, which are likely explained by the impact of including demographic variables within the models. Whilst students who attended the belonging workshop had on average higher intention to persist scores within the May survey compared to students from the other intervention groups, within the regression models, membership of both the study skill workshop group and non-attendance group was associated with slightly higher intention to persist scores, when demographic factors were accounted for. However, once again, these results were not statistically significant. This is further emphasised through the changes in coefficients from model to model, which suggests a lack of any consistent relationship.

In summary, intention to persist scores when split by workshop status appear to match the trajectory of belonging scores throughout the first year of undergraduate study. Whilst in most of the regression models attendance of the belonging workshop was associated with slightly higher intention to persist scores, there were no models that presented statistically significant findings. Therefore, these analyses have not been able to show that attendance of the belonging workshop was associated with statistically significant differences in students' intention to persist scores.

RQ4.4: To what extent do students who attended the agentic belonging intervention differ from other students in their continuation rates?

The final research question of this chapter – and therefore final set of analyses – deals with the relationship between students' workshop status and their eventual continuation after their first year of study. The research question is once again addressed through a combination of data visualisation

and binary logistic regression analyses. Given the findings of the previous research question – in essence, that students’ workshop status was not a significant predictor of students’ intention to persist – it seemed unlikely that workshop status would be a significant predictor of students’ continuation status. However, the visuals and models for this research question include a greater number of students than the previous analyses. The difference in sample sizes, and therefore statistical power, may lead to different results even when exploring similar constructs. Not all students within the study completed measures of their intention to persist scores, whereas continuation data for all study participants was provided by their respective institutions, following the approved data sharing agreements discussed within the methodology section of this chapter. Whilst the binary nature of continuation separates it from the percentage point scale used in the previous analyses around intention to persist scores and may attenuate any effects, continuation is measured much more directly, rather than the self-reported intention to persist scale.

The continuation rate for each workshop group is visualised in Figures 7.9 and 7.10 – initially across all study participants, and then split by institution. Within the institutional bar charts, the cohort average – representing the continuation rate for all new, undergraduate students who were part of the same cohort as the study participants – is also included alongside the continuation rates for each workshop status. Across all research participants, across the two institutions, those who attended the belonging workshop had the highest average continuation rate, followed by the study skills workshop attendees. Students who registered to take part in the study, but did not attend their registered workshop had the average lowest continuation rate. The non-attending group having the lowest continuation rate was expected, as these students may have had some early barriers in their studies that meant they were more likely to not be able to attend, as well as missing out on the hopeful benefits of attending either of the workshops.

However, this pattern was not uniform across the two institutions. At Middlesex, whilst all research participant groups had higher continuation than the overall cohort – building on the data visualised in Figure 7.1 – study skills workshop attendees did not have higher continuation rates on average than the non-attenders. Whilst, at Southampton, all research participant groups had lower continuation rates than the cohort average, and non-attending students did have lower continuation rates than the two workshop groups. However, for Southampton the low numbers of participants is reflected in the wider standard error bars.

As discussed within the [introduction](#) and [literature review](#) chapters, there is already a well-established body of evidence around the links between students’ sense of belonging and continuation. Therefore, whilst it is not surprising that the belonging workshop attendees had the highest continuation rates,

it is somewhat surprising that this difference in continuation rates occurred even though this group did not report significantly higher levels of belonging (see [Chapter 6](#)). To investigate the extent of this variation and its statistical significance, binary logistic regression analysis was carried out looking at the association between workshop status and continuation (Table 7.10).

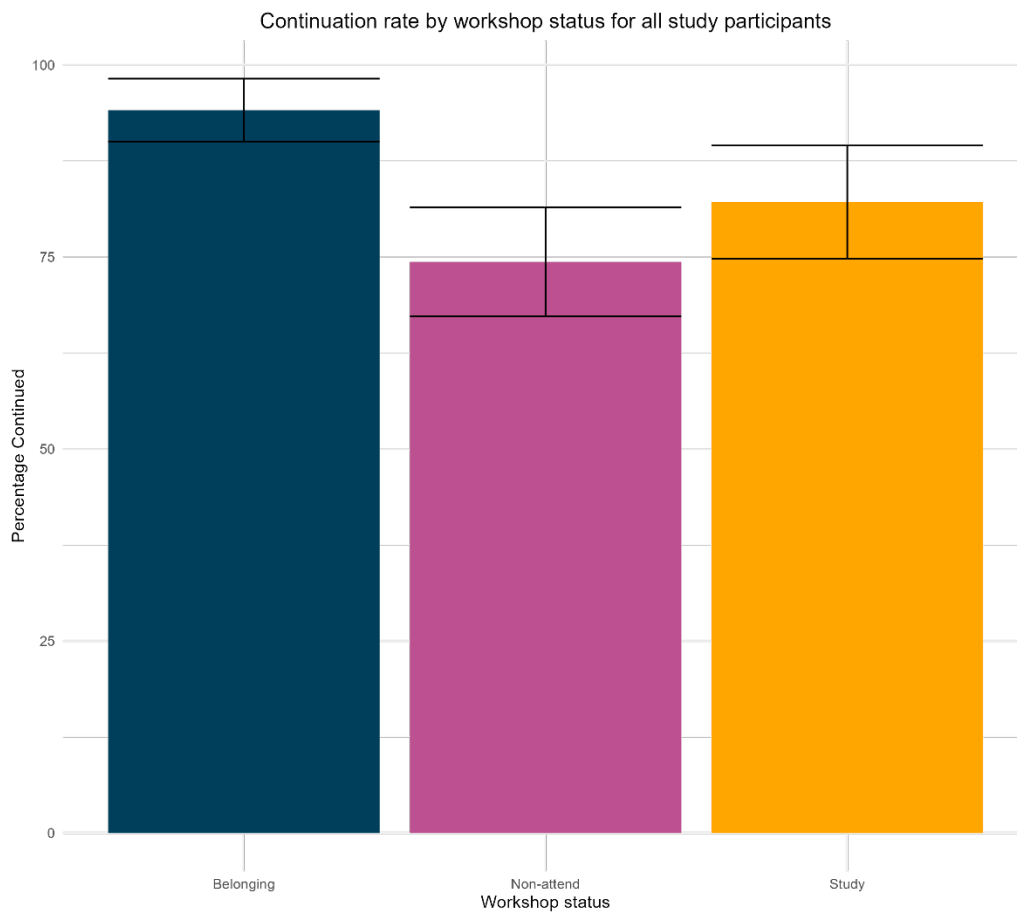


Figure 7.9 - Bar chart showing the continuation rate for all study participants by their workshop status

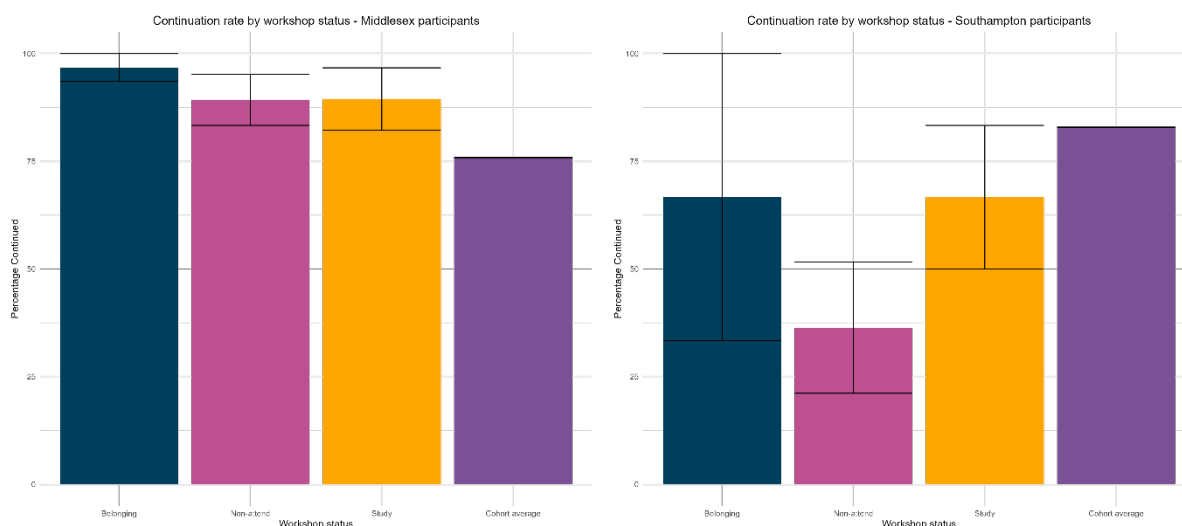


Figure 7.10 - Bar chart showing the continuation rate for study participants by their workshop status, split by institution; first Middlesex (left) and then Southampton (right)

term	Estimate	Std error	p-value
(Intercept)	2.474	1.356	0.068
Workshop status – Non-attend	-2.804	1.167	0.016
Average marginal effects (Non-attend)	-0.252	0.083	0.002
Workshop status – Study	-2.193	1.203	0.068
Average marginal effects (Study)	-0.165	0.083	0.047

Table 7.10 – Binary logistic regression analysis to explore the extent to which students’ workshop status (belonging workshop, study skills workshop or non-attendance at either workshop) is a predictor of continuation. Students’ demographic variables were also included within the regression model, but not reported above due to no significant relationships existing. Average marginal effects were calculated separately and added to the results for each workshop status as compared against the reference group of the belonging workshop (N = 89)

The above regression analysis shows that both study skills workshop attendees and non-attendees had negative continuation estimates compared to the reference group in the model – those who attended the belonging workshop. From examination of the average marginal effects, both the non-attending students and those in the study skills workshop were significantly less likely to continue. Students who did not attend either workshop were 25% less likely to continue compared to students who attended the belonging workshop ($p = 0.002$), whilst those who attended the study skill workshop were 16.5% less likely to continue ($p = 0.047$). These logistic regression models were run again split by

institutional status, however at this level, neither institutional model resulted in statistically significant differences in continuation by workshop status. This regression analysis was recoded to then establish whether there was a significant difference between the study workshop attendees and non-attendees. This model showed that whilst non-attendance of the workshops was associated with a lower continuation rate – even once all demographic factors were accounted for – this was not a statistically significant difference (AME = -0.100, β = 0.111, p = 0.368, n = 89).

Furthermore, given the positive, significant relationship found in [Chapter 6](#) between belonging workshop learning outcomes and changes in students’ sense of belonging, a similar logistic regression model was developed to explore the association between belonging workshop learning outcomes and continuation.

term	Estimate	Std error	p-value
(Intercept)	0.579	0.418	0.179
Belonging workshop learning outcomes	0.006	0.005	0.173
Average marginal effects	0.006	0.005	0.159

Table 7.11 – Binary logistic regression analysis to explore the extent to which the workshop learning outcomes scores for students who attended the belonging workshop, as well as their demographic variables, are predictors of eventual continuation. Students’ demographic variables were also included within the regression model, but not reported above due to no significant relationships existing. Average marginal effects were calculated separately for consistency with previous logistic regression results, but show very similar results to the coefficient results of the original binary logistic regression model (N = 30)

Interestingly, this regression model found a very low estimate of the association between belonging workshop learning outcomes and continuation, with no statistical significance. This suggests that whilst learning outcome scores for those attending the belonging workshop may link to positive changes in sense of belonging, this did not also associate with increased likelihood of successful continuation.

RQ4.5: Was attendance of either of the workshop interventions associated with closing of institutional continuation gaps across demographic variables?

As discussed within the [introduction](#) and [literature review](#) chapters of this thesis, the topics of belonging and continuation are often linked within higher education discourse to the concept of equity. Higher education providers report on the variance in continuation rates across demographic variables as part of their Access and Participation Plans to the Office for Students. In addressing previous research questions, participants' demographic variables have been included within regression models, so that any differences across these variables can be accounted for. For this research question, demographic variables are the focus.

To answer the above research question, data visualisation was utilised to plot the continuation gaps for each demographic variable. In this context, a continuation gap refers to the difference in continuation rates by a demographic factor. For instance, the difference between the continuation rate of Male students against Female students. Figure 7.11 plots the continuation gap for four demographic variables: gender, age, fee status and parents' education status – this is also the order that these variables are plotted in Figure 7.11; from left to right and top to bottom. These four demographic variables were included within the analysis because they were the variables where institutional continuation data was able to be provided. As institutions did not have comprehensive breakdowns of continuation data by students' commute length or whether students had prior experience of private education, no analyses were able to be conducted against these variables.

Given that each institution has different continuation rates, Figure 7.11 plots the continuation gaps for Middlesex students. A similar set of plots was not created for Southampton due to the smaller number of students participating from this institution. Each plot shows the demographic continuation gap for students by workshop status and the overall cohort average continuation gap for all new, undergraduate students at that institution in the same year that this research study took place. Binomial confidence intervals are set at 0.95 and displayed in the plot to signify where values are statistically significant from one another.

Continuation gap analyses by demographic variables for Middlesex students

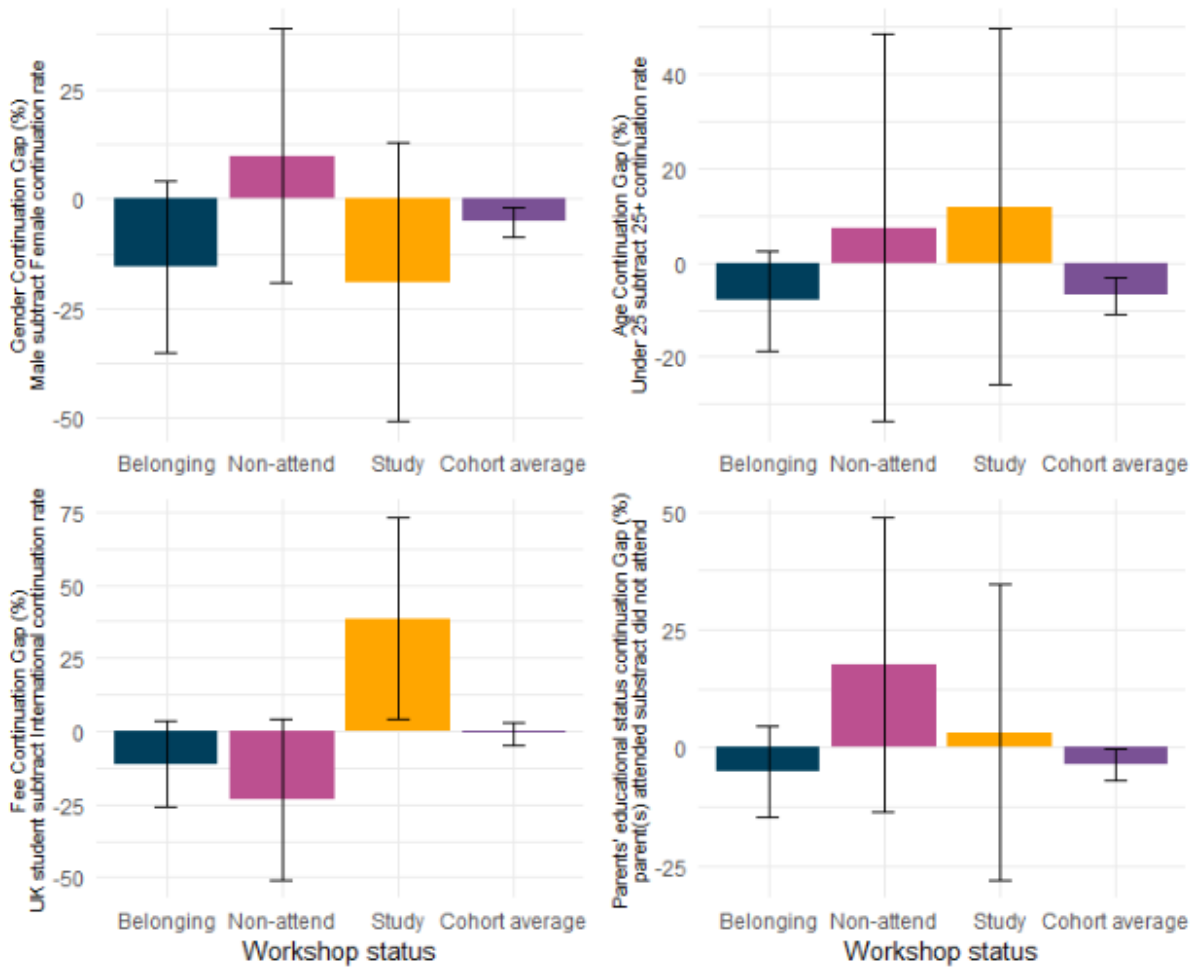


Figure 7.11 – Bar charts depicting the demographic continuation gap for Middlesex students; comparing continuation gaps by students’ workshop status and against the institutional cohort average continuation gap. Each plot shows a different demographic variable: gender (top-left), age (top-right), fee status (bottom-left) and parents’ education status (bottom-right)

Overall, the plots show very little conclusive evidence of either closing or expanding continuation gaps by demographic variables. The immediate interpretation of Figure 7.11 is that the numbers of students involved in each analysis are too low, resulting in very large binomial confidence intervals. This is to be expected as each plot is separating students by both demographic variable and workshop status. In most cases, the continuation gap of all workshop statuses – including belonging workshop and study skills workshop attendees and non-attendees – is larger than the continuation gap for the cohort average. However, again, these differences are well within the confidence intervals provided, so we are unable to conclude that participation in the research project increases continuation gaps. The only

exception to this is the continuation gap by students' fee status – the continuation rate for UK students minus the continuation rate for international students. In this instance, students who attended the study skills intervention had a sizable continuation gap – with UK students having a much higher continuation rate than international students. The confidence intervals for the study group sit outside of the cohort average, suggesting that the study skills group has a statistically larger continuation gap than the cohort average.

In summary, whilst it is important to explore the extent to which student interventions may help mitigate existing inequalities in student outcomes, the analyses for this research question are severely limited. To explore continuation gaps by demographic variables requires a higher number of participants to allow for meaningful interpretation of any variances. From the analyses conducted in this chapter, it is not possible to suggest that the workshop interventions for either agentic belonging or study skills has been able to reduce demographic inequities in students' continuation rates.

Discussion

The results of this chapter explore the final part in the theory of change for this overarching thesis; how did participation in the workshop interventions and subsequent changes in students' sense of belonging predict students' likelihood to successfully continue in their studies beyond the first academic year. This outcome variable of continuation was itself investigated through two lenses: through the proxy measure of students' self-reported intention to persist, and through actual continuation data, shared by institutions following completion of their Higher Education Statistics Agency (HESA) data returns. This discussion is focused on critically connecting the key findings from the results to existing literature, including a particular focus on evaluating the extent to which this chapter has been able to begin to fill the gaps in literature identified within the overarching literature review of this thesis.

*Students' sense of belonging is a strong predictor of intention to persist **and** eventual continuation*

The results of this chapter closely align with previous research establishing the close relationship between students' sense of belonging and their intention to persist (Hausmann et al., 2007; Booker, 2016; Russell and Jarvis, 2019; Boyd et al., 2022; Kahu et al., 2022; Pedler et al., 2022; Kelly et al., 2024). Given that a near perfect relationship exists between these two variables, this chapter briefly explored the conceptual overlap between the scales measuring belonging and intention to persist. The Yorke (2016) student belonging scale has been used throughout this study and one of its six

questions does at least somewhat overlap conceptually with the questions included in the intention to persist scale. More detail about how intention to persist scales vary across different studies is discussed within the [methodology chapter](#) of this thesis. Given that sense of belonging is measured in many different ways within existing research, and often with just single-item measures (Lingat et al., 2022), more criticality is welcomed in future research into the conceptual overlap between sense of belonging and potential outcome variables being investigated – such as intention to persist. If this criticality does not exist, then there is a risk that we are not measuring the relationship between two distinct concepts, but instead the extent to which two different scales overlap. Furthermore, these two concepts could both be strongly influenced by other underlying psychological variables.

Beyond the top-level alignment to previous research, the longitudinal nature of this study provides opportunities to explore the nature of this relationship in ways that have not been investigated before. This chapter was able to find that students' sense of belonging was a statistically significant predictor of future intention to persist scores at the next available survey opportunity. Furthermore, changes in students' sense of belonging was a significant predictor of changes in intention to persist. This latter finding is especially promising for practitioners hoping to positively influence students' sense of belonging as a means to positively affect student outcomes. However, whilst there was a significant relationship between changes in belonging and changes in intention to persist, changes in belonging was not a significant predictor of students' eventual continuation status. Whilst there have been previous studies that have measured sense of belonging and intention to persist at multiple measurement points and found a significant relationship (Pedler et al., 2022), this study is novel in its analyses exploring how sense of belonging can predict future intention to persist and how changes in sense of belonging predict changes in intention to persist.

Given that students' intention to persist is just a proxy for whether students will actually continue in their degrees, this study also sought to build on previous research by investigating the association between students' sense of belonging and continuation beyond the first year of study. Similar to the relationship with intention to persist, the results of this chapter align with previous research in finding a strong, positive and significant association between students' sense of belonging and retention – as measured by continuation beyond the first twelve months of study (García et al., 2019; Soria and Stubblefield, 2015; Davis and Hanzsek-Brill, 2019; Fink et al., 2020; Murphy et al., 2020; Gopalan and Brady, 2019; Russell et al., 2022). Each percentage point increase in students' sense of belonging was associated with a percentage point increase in the likelihood of successfully continuing beyond the first year.

This is not to suggest that it was only students with consistently high sense of belonging scores that continued into their second academic year. Previous qualitative research has already provided useful insights into the reflections of graduates – those who had successfully completed their degree – around their sense of belonging during their degree (Caldwell, 2023; Vang and Schademan, 2023). These studies show that even students who go on to achieve successful degree outcomes still experience plenty of challenges to their sense of belonging. This chapter contributes to our understanding of this phenomenon through its visualisation of belonging and continuation data, showing how each participant’s sense of belonging changed throughout the first academic year and whether they then successfully continued in their degree.

In summary, this chapter provides more insight into the close relationship between students’ sense of belonging and retention that has been explored in previous research. However, there is one large caveat for this, which is addressed within the next section.

*Students’ sense of belonging **when measured in October** is **not** a reliable predictor of continuation*

One advantage of the longitudinal nature of this study has been the ability to explore not just how students’ sense of belonging changes over time ([Chapter 6](#)), but how its relationship to other variables changes over time. Whilst there was a positive, significant relationship between continuation and students’ sense of belonging at all subsequent measurement points, there was no such relationship established in the October survey data. In essence, students’ sense of belonging in October had no relationship to whether they were likely to continue beyond the first year of study. This result links to previous research that has questioned how early we can begin reliably asking students to self-report their sense of belonging at university in a meaningful way (Ruedas-Gracia et al., 2023).

This presents a problematic situation for those seeking to enhance students’ sense of belonging. The beginning of students’ time at university is often regarded as the most important for developing a positive sense of belonging (Slaten et al., 2016; Johnson et al., 2007; Cruz and Grodziak, 2021). Transition periods often present many challenges to feeling a strong sense of belonging (Russell and Jarvis, 2019; Tang et al., 2022). However, if this is also a period of time when students may be less able to meaningfully understand and report on their own sense of belonging at university, then this problematises attempts to evaluate the success of efforts and interventions on this subject.

Another interpretation of the results in this chapter could be that the October measurements of belonging are reliable – in the sense that they accurately capture what students are feeling at that point in time – but that it is too soon into the academic year to be reliable predictors of their eventual

continuation. There is so much that students are yet to experience, which may also affect their sense of belonging and retention. A way to potentially explore this would be to look at the sense of belonging for continuing students at the start of the second academic year and see whether this predicts their likelihood to still be at that university a year later. This would allow exploration into whether the lack of association between October sense of belonging and eventual continuation found within this study is a reflection on there simply being too long a time gap between the two variables. This would also be especially valuable as most research into students' sense of belonging and retention focuses on the first-year experience. Some research has been scoped to investigate sense of belonging and retention within second-year students, which is welcomed (Mackay, 2023).

*Workshop status is a statistically significant **predictor of continuation***

Building on previous research showing the effectiveness of belonging interventions to improve student retention rates (Murphy et al., 2020; Chrobak, 2024), this study found a significant difference between the continuation rates of students who attended the belonging workshop and both other workshop status groups. This suggests a breakdown in the original Theory of Change developed for this thesis, as workshop status was not a significant predictor of students' changes in belonging or eventual belonging scores – discussed within the previous chapter. Students who attended the belonging workshop did have higher average sense of belonging and positive changes in sense of belonging relative to students from the other workshop groups, but not to statistically significant levels. This may be explained by methodological differences in how sense of belonging and retention were measured, however it may also be explained by a substantive difference in how the agentic belonging workshop intervention affected students compared to what was expected. As discussed in chapters [3](#) and [4](#), one intended outcome of the agentic belonging intervention was to normalise periods of non-belonging as something experienced by most students, at least some of the time. This may have meant that the intervention increased students' resilience, which then separately was a positive contributor to their likelihood to continue in their studies. The workshop may not have given students the tools to overcome all barriers to a positive sense of belonging, but did give them resilience to persist through these challenges. This could explain why belonging workshop students saw significantly higher rates of retention than the other workshop groups. Further research could explore this by measuring students' resilience (Tudor and Spray, 2017), before and after delivery of the agentic belonging intervention.

Students who took part in the research study but did not attend their workshop were 25% less likely to continue in their studies than students who attended the agentic belonging workshop. This

difference was expected, given that students who did not attend were expected to be facing additional early barriers which may have explained their non-attendance and also been a barrier to other aspects of their first year of study. Furthermore, as explored more within [Chapter 4](#) – non-attending students did not receive any of the supposed benefits of the workshops themselves. More surprising was that students who attended the study skills workshop were 16.5% less likely to continue in their studies than belonging workshop attendees, even though they did not report significantly lower levels of belonging. This statistical difference in continuation rates by students' workshop status was not found when breaking down results by institution. The risk of false positives in regression results is explored more within the following limitations section of this chapter.

Limitations

Missing from the previous section of this chapter was any discussion into the final research question which sought to explore whether attendance in either of the two workshop groups affected the demographic continuation gaps. As is reported within the results section, this study had too few participants to be able to produce useful investigation into these associations. Exploring whether attendance in the workshop intervention closed demographic continuation gaps meant splitting down participants across three variables: workshop status, demographic variable and institution. Given that 101 students took part in the overarching research study, once participants were broken down across these three variables, the numbers were too small to find any statistical significance. Another study that involves delivering an agentic belonging intervention to a larger population of students – perhaps to an entire cohort, rather than through optional student registrations – may be able to explore this research question more rigorously.

Participation rates also limited the analyses within this chapter through the much lower number of participants from the University of Southampton compared to Middlesex University. This has already been discussed in previous results chapters, but the disparity in participation rates affected the ability to explore meaningful comparisons between continuation rates by workshop status at an institutional level. This would have been especially useful, given the counter-intuitive finding that by workshop status, all Middlesex participant groups had higher continuation rates than the overall Middlesex cohort average; whilst all Southampton participant groups had lower continuation rates than the overall Southampton cohort average.

Southampton participants only entered the study at the December measurement point, due to rescheduling of their original workshops. This has meant that this chapter was not able to investigate

whether the lack of association between sense of belonging measured in October and eventual continuation was linked solely to one institution – Middlesex University participants – or is representative of a wider phenomenon. This limitation is partially addressed through the linking of this result to previous studies that have also questioned the reliability of measuring sense of belonging at the beginning of the academic year. Furthermore, this finding connects with the questions around the reliability of early online diary submissions, discussed within [Chapter 5](#).

Missing data is an underlying limitation of longitudinal studies, as has been discussed in previous research chapters. Once again, this limitation was mitigated through the use of regression models to assess the relationship between students' likelihood to miss surveys and their eventual continuation. These results found that there was no significant association, which suggests that it is acceptable to ignore missing data in the substantive analyses.

This chapter builds on previous analyses in this overarching thesis, by investigating the differences in outcomes for students against their workshop status. It is therefore important to recognise the inherent limitations in utilising a quasi-experimental approach, rather than a randomised-control trial methodology. All results linked to variation in outcomes by workshop status must recognise that there is a risk of self-selection or participation bias. Whilst some underlying differences between the workshop groups has been mitigated in this chapter through inclusion of demographic variables within all regression analyses, this cannot account for all potential differences across workshop status groups. Other possible confounding variables that could not be accounted for within this study include religious affiliation (Holloway-Friesen, 2018), personality types (Stahl and McDonald, 2024; Stubblebine et al., 2024), sexual orientation (Fernández et al., 2023) and ethnicity (Lewis et al., 2019). However, whilst there are limitations of quasi-experimental approaches, they are a recognised methodological approach that has already seen multiple uses to assess student belonging interventions (Caligiuri et al. 2020; Liu et al., 2022).

One final limitation of the analyses within this chapter – and throughout the rest of this thesis – has been the approach taken to assess statistical significance. Given the number of significance tests carried out within this chapter – let alone across the entire thesis – there is a risk that at least one of them may be a false positive (Spiegelhalter, 2019). Two mitigations have been used across this thesis, including within this chapter, to address this risk. Firstly, significance values are always reported when regression models have been carried out. This allows readers the ability to see whether a relationship may only just go below the somewhat arbitrary value of 0.05 or indeed be way beyond this boundary. The second mitigating action has been to also report and discuss the meaningful interpretation of

coefficient values within regression results, so that the focus is not just on significance, but the strength of the association between variables.

Conclusion

In conclusion, whilst this chapter has aligned with previous research by showing very strong, significant relationships between students' sense of belonging and both intention to persist and retention, this chapter's main contribution has been through utilising the longitudinal design to build upon these previously explored findings. Firstly, regression analysis in this chapter found that students' sense of belonging was able to predict future intention to persist scores ($\beta = 0.804$, $p < 0.001$, $n = 103$) and that changes in sense of belonging also predicted changes in intention to persist ($\beta = 0.858$, $p = 0.015$, $n = 26$). Whilst this may seem promising, as it suggests that efforts to enhance sense of belonging may lead to improvements in students' intention to persist, changes in sense of belonging was not significantly associated with increased retention likelihood. Through these analyses, this chapter has also highlighted that students' October measurements of belonging were not associated with continuation. This aligns with previous research that questions the reliability of asking students about their sense of belonging so early in their time at university.

The second half of this chapter focused on investigating whether students who attended the agentic belonging intervention had different intention to persist or retention than students from the other workshop groups. Whilst belonging workshop attendees had higher intention to persist than both students who attended the study skills workshop and the non-attending group, neither of these differences were found to be statistically significant. Importantly, there was a significant difference in retention rates, with belonging workshop attendees having a higher likelihood of continuing in their studies than both the study workshop and non-attending group of students. This finding, especially given the prior lack of significant relationship between workshop status and changes in sense of belonging, suggests that critiques are required of the Theory of Change that underpins this research design. The implications of this are further explored in the subsequent discussion chapter.

Overall, this chapter provides more robust evidence of the utility of exploring students' sense of belonging as a predictor of retention, as well providing more promising evidence towards the benefits of workshop interventions that enhance students' understanding of belonging. The final chapter of this thesis pulls together and synthesises the results from all previous chapters, exploring how these findings can contribute to changes in practical efforts to support students' sense of belonging.

Appendices for Chapter 7

[Appendix 7.1](#) – Full preliminary analyses around scale internal consistency and missing data correlations with continuation

[Appendix 7.2](#) – Chapter 7 full regression results, including demographic variables

Chapter 8 – Discussions and conclusions

Introduction

The purpose of this chapter is to synthesise the findings that cut across the four individual results chapters of this thesis. Each prior results chapter has its own discussion section where findings are connected to previous research and wider contexts. To minimise repetition, this chapter begins with a brief summary addressing the extent to which the research questions of this project have been answered. Following this aspect, the chapter discusses three cross-cutting themes that connect the findings of this study to wider research and practice.

Firstly, findings from the intervention effectiveness analyses within [Chapter 4](#) and the reflective thematic analysis of online diaries from [Chapter 5](#) are synthesised to critique the content of the agentic belonging intervention designed for this study. This particular section addresses how the design and delivery of the workshop could be amended to incorporate lessons from how students subsequently took action to belong, discussed in [Chapter 5](#).

The second cross-cutting discussion point reflects on when belonging interventions and activities should be delivered for students. This section critiques the heavy front-loading of activities to enhance students' sense of belonging, given the findings from [Chapter 6](#) that students' sense of belonging was lowest at the end of the first academic year and highest at the beginning. This discussion also questions the ability to effectively evaluate belonging interventions delivered at the start of students' journey at university, given the lack of correlation between early measurements of belonging and likelihood of successfully continuing found within [Chapter 7](#).

The final cross-cutting discussion provides a reflexive critique of the quasi-experimental approach utilised for this research project. This section discusses the current policy stances of sector and Government bodies on the evaluation approaches used by universities, within the context of the original plans for this study to run as a randomised control trial (RCT). This section discusses what would have been lost in this thesis if it had progressed as an RCT, as well as a reflection on how a future RCT to evaluate an agentic belonging intervention could be designed.

Given the positionality of the researcher as a higher education practitioner, established at the very beginning of this thesis, an important part of this discussion chapter is how the top-level findings and these cross-cutting themes can translate into recommendations for practice. Towards this end, a full list of recommendations is captured later with this chapter. Recommendations focus around lessons for updating, delivering and evaluating agentic belonging interventions, how to embed and connect

these interventions to wider student experience strategies, and learnings from students' online diaries about required conditions for them to build a sense of belonging.

Whilst each of the results chapters also addressed the limitations of their respective part of the study, this chapter includes a thorough exploration of limitations and how these can be seen as opportunities for future research. A threats-to-validity approach is utilised to assess how this study, in its design and application, holds threats to internal, external, ecological, and construct validity. Each of these different elements of validity are assessed and discussed in turn, including how trade-offs were made in the design and implementation of this study across these different aspects of validity.

This chapter closes with a concluding statement that reflects on the story told within this thesis. This final conclusion provides a summary of contributions to knowledge and practice, acting as a call-to-action for readers to help more university students to find their path to belonging.

Addressing the overarching research questions and theory of change

This thesis has been structured so that each results chapter addresses an individual research question. Results and discussions for each chapter have therefore already addressed research questions in some detail. This section provides a high-level synthesis on the extent to which research questions have been addressed and answered by this study. Subsequently, this section contains a brief critique of the use of the theory of change approach that was utilised to design this study and connect its research questions.

Research question 1: To what extent can workshop interventions enhance first-year undergraduate students' understanding of belonging?

Students who attended the agentic belonging workshop reported significantly higher learning outcome scores than non-attendees for the majority of questions, even when controlling for demographic variables. Furthermore, belonging workshop attendees reported similarly high learning outcome scores as those attending the study skills workshop, suggesting that the belonging workshop content was understood to a similar degree as this well-established form of higher education support intervention (Murphy et al., 2020; Donoghue and Hattie, 2021).

However, low Cronbach's alpha scores for the belonging workshop learning outcomes scale, combined with a lack of qualitative questions to attendees on their experience of the workshops, limit this study's ability to confidently assert what the workshop learning outcomes scale is actually measuring.

Effectively measuring students' sense of belonging is well recognised as being challenging from a purely quantitative perspective, which is why supplementary qualitative approaches are often recommended to more effectively and inclusively measure this subjective construct (Mahar et al., 2013; Lingat et al., 2022).

Linear regression analysis was utilised to explore whether the immediate benefits of the belonging workshop – as measured through learning outcome scores – were felt equitably by attendees. Whilst learning outcomes of belonging workshop attendees was not significantly different across any of the demographic variables assessed within this study – age, gender, fee status, commute length, prior private education or parents' education status – it was significantly predicted by students' baseline measurements of belonging. Given that interventions to enhance students' sense of belonging are often introduced to help address existing inequalities in student outcomes (Johnson et al., 2007; Strayhorn, 2008; Kane et al., 2014; Barnes et al., 2021; Shaheed and Kiang, 2021; Gopalan et al., 2022); this finding is especially problematic, as it suggests that the belonging intervention may increase inequities in students' sense of belonging.

Research question 2: What actions do students take to build belonging during the first year of study?

Reflexive thematic analysis of students' online diaries throughout their first year of study was explored within [Chapter 5](#) to address this research question. Within this analysis, three themes were identified around the enablers or conditions that students needed to be in place before they could take actions to belong. These enabler themes were being able to find peers like themselves, feeling that they mattered to staff, and having time and encouragement to explore university spaces that they felt safe in. Whilst previous research has addressed the importance of peer connection (Read et al., 2003; Pascale, 2018; Russell and Jarvis, 2019; Kahu et al., 2022), mattering to staff (Hausmann et al., 2007; Thomas, 2012; Kane et al., 2014; Jones et al., 2018) and welcoming campus spaces (Ahn and Davis, 2020; Askarizad et al., 2021), one of this chapter's novel contributions is in how these enablers supported students' agency in building belonging over time.

Building belonging is recognised as a dynamic process (Gravett and Ajjawi, 2021; Allen et al., 2024) that requires both desire and action (Kuurne and Vieno, 2022). Through the longitudinal nature of the online diaries method, additional themes were identified about how students took action to build their sense of belonging at university. Firstly, whilst students described their actions to build belonging as authentic – in that their actions were based on their own preferences – there were still also reports of students regretting that they had not done more to push the boundaries of their comfort zone to

overcome feelings of anxiety. This acknowledges that in hindsight, students may focus just as much on the actions that they did not take, as well as the actions that they did take to build their sense of belonging.

Students were not prompted within the online diaries to specifically reflect on their workshop interventions, however variation was found between the contents of students' diaries across different workshop groups. Belonging workshop attendees were more likely to discuss how both their relationships with peers and attributes of university spaces aligned – or did not – with their own personal preferences. Furthermore, these students were less likely to acknowledge how acting authentically presented them with challenges, perhaps reflecting an internalisation of workshop messages about how belonging is subjective and that we should encourage each student pursuing fulfilment of their individual belonging needs. Whilst coding through the reflexive thematic analysis identified these above reflections either solely or more prevalently amongst belonging workshop attendees, the nature of this methodology means that no statistical tests were utilised to explore whether such reflections were significantly more prevalent than for students from other workshop groups.

Research question 3: What effect does attendance of the agentic belonging workshop have on subsequent changes in levels of belonging?

Findings from [Chapter 6](#) showed that students who attended the belonging workshop had a less negative change in their sense of belonging compared to both the study workshop and non-attendance control groups. However, linear regression analysis showed that the differences between intervention groups was non-significant. Students who attended the belonging workshop reported more stability in their sense of belonging scores across the first academic year, whilst students in both the study skills and non-attendee groups had declines in their sense of belonging from first to last measurement. These results align with previous studies that have suggested that students tend to report a decline in their sense of belonging across the first year of study (Hausmann et al., 2007; O'Sullivan et al., 2019).

Linear regression analyses in [Chapter 6](#) also explored whether changes in students' sense of belonging was predicted by demographic characteristics and found that first-generation students – those who had neither parent attend university – reported significantly lower belonging than non-first-generation students by the end of the first academic year. Whilst this aligns with previous research that has suggested the sense of belonging of first-generation students is often lower than their non-

first-generation counterparts (O'Shea, 2020; Kreniske et al., 2022); the longitudinal nature of this analysis adds some nuance to understanding of this phenomenon. Crucially first-generation students did not report significantly different sense of belonging levels than their counterparts at the beginning of the academic year; it was only by the May of their first year of study that these statistical differences were found across this demographic variable.

Research question 4: To what extent is sense of belonging a predictor of student retention, measured by continuation of first-year undergraduate students into their second year of study?

This study has built on previous research by reaffirming the close relationship between students' sense of belonging and both their intention to persist (Hausmann et al., 2007; Booker, 2016; Russell and Jarvis, 2019; Boyd et al., 2022; Kahu et al., 2022; Pedler et al., 2022; Kelly et al., 2024) and actual continuation into future years of study (Soria and Stubblefield, 2015; García et al., 2019; Davis and Hanzsek-Brill, 2019; Fink et al., 2020; Murphy et al., 2020; Gopalan and Brady, 2019; Russell et al., 2022). However, another advantage of the longitudinal nature of this study is that it has been able to explore not just how sense of belonging changes over time, but also how its relationship to other variables changes over time. Analyses in [Chapter 7](#) showed that there was no correlation between students' first measurement of their sense of belonging – in October of the first year of study – and retention. The consequences of this finding are explored further in the cross-cutting theme discussed later in this chapter around when to deliver belonging interventions.

[Chapter 7](#) also explored continuation rates by workshop status group, finding that there was a significant difference in the continuation rates of students who attended the belonging workshop and both other workshop groups of students. This builds on previous research showing the effectiveness of belonging interventions to improve student retention rates (Murphy et al., 2020). This significant difference in continuation rates persisted even when demographic variables amongst participants were accounted for within the logistic regression analyses. Analyses to explore whether the belonging interventions helped to reduce equity gaps in retention rates across demographic groups found no significant differences, most likely due to the number of participants in each analysis being too low.

Reflecting on the Theory of Change developed for this study

The concept of Theory of Change (ToC) and rationale for utilising this theory was developed within the [methodology chapter](#) of this thesis. Utilising a ToC approach has allowed this study to link together the four individual research questions, addressed above, into a connected sequence. Figure 8.1

displays the original ToC for this thesis, with Figure 8.2 showing how this has been updated, expanding on the extent to which connections between each stage in the process were able to be established. For example, linear regression analyses within [Chapter 4](#) explored the connection between students' workshop attendance and their learning outcomes. These analyses found that belonging workshop students reported significantly higher scores than non-attendees for three out of the four learning outcomes. This has been visualised within Figure 8.2, showing a full arrow for the three learning outcomes where significant differences were found, and a dotted-line to denote the learning outcome where there was no difference based on whether students attended the belonging workshop. This diagram also captures a finding identified within [Chapter 5](#) through reflexive thematic analysis of students' online diaries. Within this Chapter, the reciprocal connection between students' sense of belonging and their engagement was discussed. Given the qualitative nature of the online diaries methodology, this has been denoted with two dotted lines connecting 'sense of belonging' and 'engagement levels'. In summary, Figure 8.2 visually condenses how the findings have been able to answer the study's research questions.

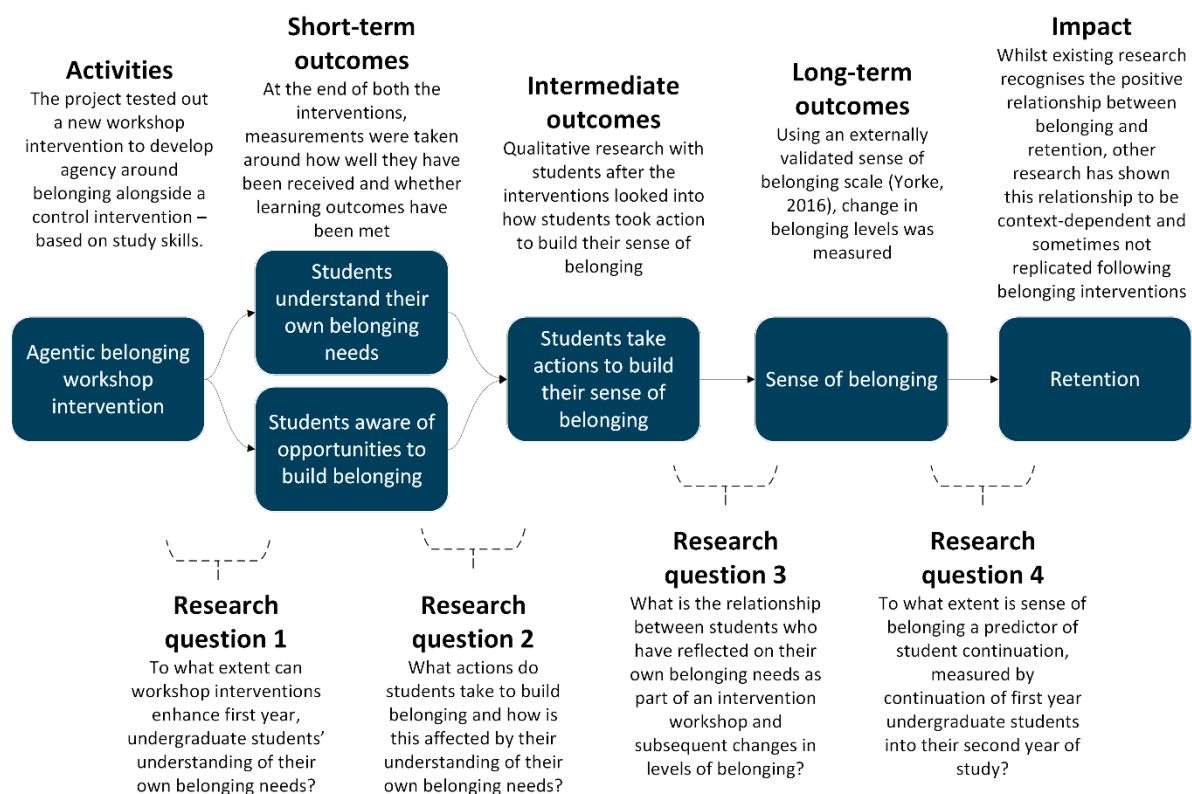


Figure 8.1 - Original theory of change diagram, showing the core components and connections tested within this study, including how each stage of the ToC relates to the project's research questions

As discussed within [Chapter 7](#), one of the main adjustments required to the ToC is around how there was a significant difference in retention rates across different workshop groups, even though there was not a significant difference in sense of belonging across these same groups. This may be due to methodological differences in how sense of belonging and retention were measured, however it may also be explained by a substantive difference in how the agentic belonging workshop intervention affected students compared to what was expected in the original ToC. [Chapter 7](#) discussed how the agentic belonging intervention may have helped to better prepare students for periods of non-belonging. This did not necessarily mean that they then reported a higher sense of belonging, as the workshop itself was not able to give them the tools to overcome all barriers related to belonging, but it may have supported their resilience in persisting through these challenges. Within the context of the ToC, this has been represented through the direct connection between how students' took action and reflected on their sense of belonging to retention, bypassing the measures of sense of belonging (Figure 8.2).

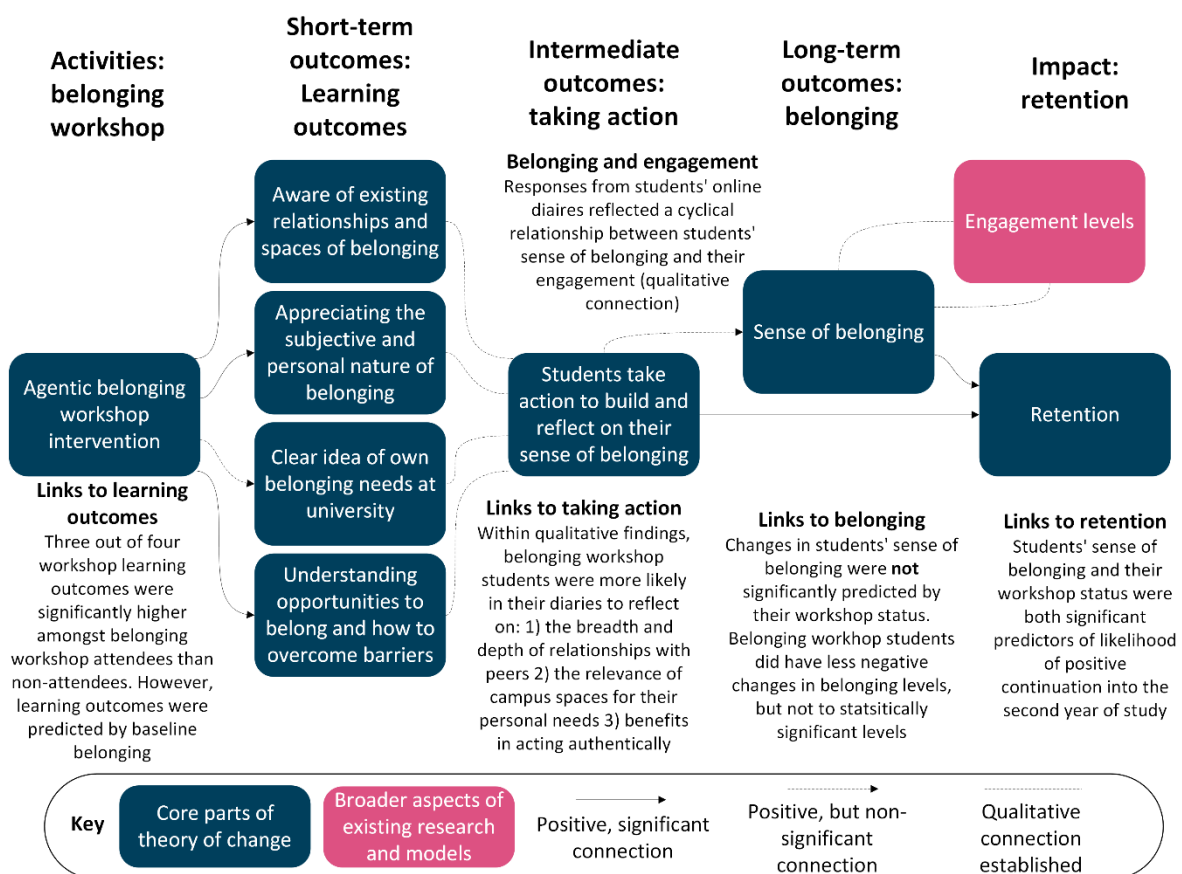


Figure 8.2 - Updated theory of change, including connections established within results chapters

Exploration of cross-cutting results and their implications

Through the creation of the above visual and synthesis of results to each of this thesis's research questions, the chapter so far has provided a summary of *what* has been found through this study. The next section of this chapter focuses on the question of: "*so what?*" – through an exploration of cross-cutting themes that relate the study's findings to wider research and practical implications.

Critiquing and updating the agentic belonging intervention

This section addresses how findings from students' online diaries could be utilised to further develop the content of the agentic belonging intervention (Figure 8.3). The [methodology chapter](#) of this thesis includes more details about how the underlying theory and literature, addressed within the [literature review chapter](#), were brought together to develop the new agentic belonging workshop intervention. Furthermore, the above sections of this chapter have summarised the extent to which this intervention affected short-term learning outcomes, students' actions to build belonging, longer-term measurements of their sense of belonging and ultimately their continuation into the second year of study. Building on this, through the reflexive thematic analysis of students' online diaries within [Chapter 5](#), there are insights that can be immediately applied to propose developments to the agentic belonging workshop. This approach aligns with the cyclical nature of action research discussed within [Chapter 4](#) (Lewin, 1946; Ip, 2017; Levitt, 2019).

Multiple students talked in their diaries about feelings of anxiety and lacking confidence to take actions that they associated with helping them to build a sense of belonging. This was mostly in relation to connecting with other students, but students also talked about wanting to feel more confident to engage in course activities and interact with staff. However, alongside these comments, students often reflected on the benefits of pushing themselves to "step out of [their] comfort zone" (S17 – more details about how participant IDs have been presented alongside quotes is included at the beginning of the results in [Chapter 5](#)). Students recognised that pushing out of their comfort zone took effort, but often made themselves feel proud: "I do like the change that I can see in myself and it is 100% a very positive change" (N3). When reflecting on earlier times in the year, some students suggested that they wished they had done more to make connections with other students, even when they felt uncomfortable initially doing so. However, students also talked about how mental health conditions influenced their ability to push comfort zone boundaries, suggesting that caution is needed around encouraging all students to go further in this way.

Overall, these findings from students' online diaries suggest that interventions could more directly address the connection between anxiety and agentic belonging. Anxiety levels and challenges connecting socially with other students have been reported as an increasing challenge for students since the COVID-19 pandemic (Blewett and Ebben, 2021; Tsantopoulos et al., 2022; UPP Foundation, 2024). Furthermore, existing research has already established a close relationship between students' sense of belonging and mental health and wellbeing outcomes (Blake et al., 2022; Gopalan et al., 2022; Kahu et al., 2022; Veldman et al., 2023). There is evidence to suggest that educational programmes with students that focus on learning how to identify wellbeing-related symptoms in themselves and others can have subsequent beneficial effects on their subsequent reporting of mental health levels (Rith-Najarian et al., 2019). Therefore, content within the workshops that actively addresses students' feelings of anxiety, as well as stories from past students about how they often wish they'd done more to push through these feelings, could help encourage students to feel more confident in taking actions to build belonging.

However, any inclusion of this topic would need to be carefully presented to not diminish the challenges of students facing poor mental health. Communicating information about university mental health services, so that students know where they can go when they feel greater levels of anxiety, could help alongside these messages (Rith-Najarian et al., 2019). The workshop already includes content about potential barriers that students may face to building a strong sense of belonging. Within this part of the workshop, it could also be important to address that students may be feeling anxiety because they are trying to make connections – with either peers or staff – in a space where they are not feeling welcomed. When students feel a lack of social support, this may trigger feelings of anxiety (Eldeleklioglu, 2006). It is important to balance messages encouraging agentic belonging with a recognition that not everything is within students' control (Nunn, 2021). As recognised within students' online diaries in [Chapter 5](#), students only feel comfortable to take actions building belonging once certain enablers and conditions are presented to them.

The second finding from the online diaries that could enhance the content of the agentic belonging intervention is around the reciprocal relationship between belonging and engagement. Multiple comments from students, captured within [Chapter 5](#), recognises that feelings of belonging made it easier for students to subsequently engage and that engagement often led to increased feelings of belonging.

“I feel like the staff respect me because they can see I attend class, work hard, and I have a liking for maths. I feel like they value me because I contribute to classes.” (S3)

Belonging and engagement: these two terms are closely connected, yet importantly distinct (Strayhorn, 2022). Whilst some students talked about the cyclical relationship between belonging and engagement in positive ways, others told stories that represented a downward spiral between these two concepts. For instance, students noted that a lack of engagement affected their sense of belonging, as it made it “harder to keep up with friends and find that sense of comfort in each class.” (S6)

This close connection also links to content already included within the workshop design about belonging being dynamic – changing over time (Hausmann et al., 2007; Strayhorn, 2019; Gillen-O’Neel, 2021; Allen et al., 2024). The purpose of this content within the workshop is to normalise feelings of non-belonging at times in the year, preparing students to know how to deal with such hardship. Building on this, content within the workshop that addresses this cyclical relationship between belonging and engagement could help students recognise when they might find themselves in a downward spiral, and give them the confidence to break this spiral. Beyond addressing this directly with students within the agentic belonging intervention, universities could address this cyclical relationship between belonging and engagement within student engagement intervention strategies. This is discussed further within the recommendations for practice section of this chapter.

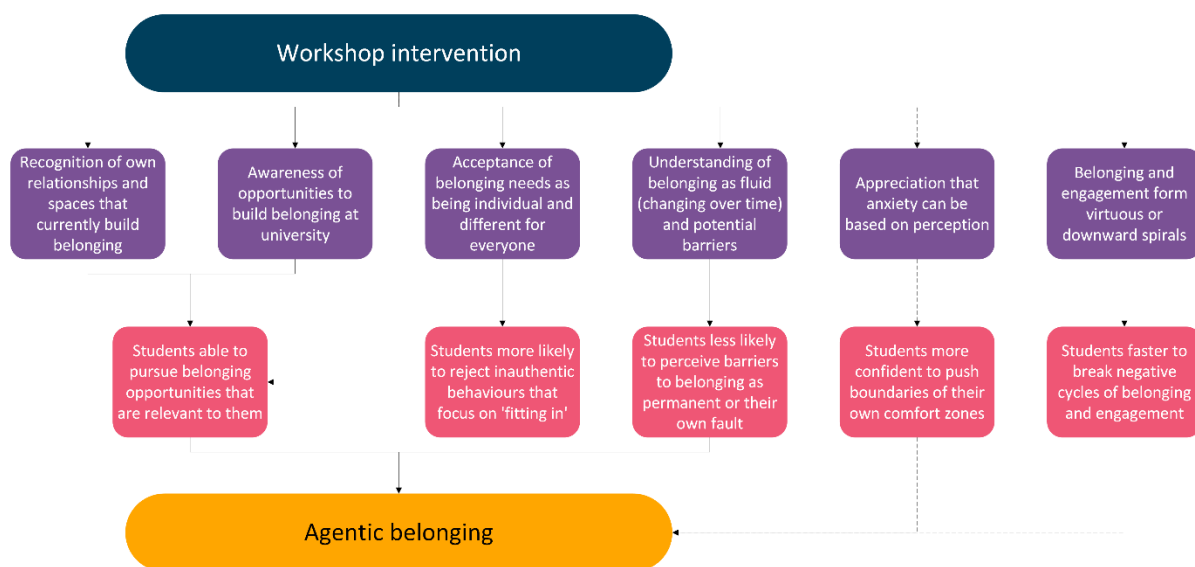


Figure 8.3 - Updated diagram showing how additional learning outcomes could be implemented into the workshop design to support students in building agentic and authentic belonging. Solid lines denote the intended outcomes of the agentic belonging intervention as delivered, whilst dotted lines have been added to show recommended additions to the intervention based on the above discussion.

In summary, findings from students' online diaries can be utilised to enhance the design of future iterations of the agentic belonging workshop. This section has explored how students' reflections around authenticity and pushing the boundaries of their comfort zone could be incorporated into workshop content through the inclusion of messages or quotes from current students. Furthermore, addressing the cyclical relationship between belonging and engagement, also noted within students' online diaries, may allow the agentic belonging intervention to equip students with the confidence to break negative spirals – between engagement and belonging – earlier.

When in the student journey should belonging interventions be delivered?

The belonging intervention sitting at the heart of this study was delivered to students shortly after they began their journey at university, and there were quite a few different reasons why this was the case. Firstly, research suggests that times of transition present particular barriers to students' sense of belonging (Russell and Jarvis, 2019; Tang et al., 2022). This is when students have the biggest risk of a gap between their expectations of university and the realities of what their experience will be like (Read et al., 2003; Graham, 2022; Zhang et al., 2022; UPP Foundation, 2024). There are also many studies that show how a welcoming and inclusive atmosphere for students at the start of their journey can enable a strong sense of belonging (Maramba and Museus, 2013; Slaten et al., 2016; Vaccaro and Newman, 2016; Matheson and Sutcliffe, 2016; Meehan and Howells, 2018; van Gijn-Grosvenor and Huisman, 2020). In essence, existing research suggests that the start of the university experience is when students face particular barriers to their sense of belonging and when interventions can be most impactful in enhancing it.

The second reason why the intervention was delivered so early in students' journeys was because it was designed to help students navigate the potential overwhelming array of opportunities on offer for students at this point in time. As discussed more in [Chapter 1 - Introduction and Context](#), through the positionality of the author as a student communications and engagement professional in higher education, it was recognised that students are often sent a large amount of information when starting at university. Whilst universities are improving coordination of student communications practices by taking more strategic and integrated approaches (Gilani, 2024), there is still a lot of information that needs to be sent to new students which could potentially be spread out more evenly over the first term (UPP Foundation, 2024). One purpose behind the introduction of the agentic belonging intervention was to help these new students navigate the many opportunities presented to them through a stronger awareness of their own needs and priorities to build an authentic sense of belonging.

Finally, the agentic belonging intervention was designed with the intended impact of improving retention – as measured through students’ continuation in their studies beyond the first year. It is well-recognised that, at least in the UK higher education context, students are most likely to withdraw from their studies in the first year (Hillman, 2021; Office for Students, 2024) and often students’ make key decisions about whether they will stay at university by the end of the first term (Christie et al., 2004; Webb and Cotton, 2018). Given this increased ‘risk’ of withdrawal earlier in the student journey, universities are often advised to provide supportive interventions early in the student journey (Austen et al., 2021).

Given the above, it is therefore unsurprising that universities front-load a lot of activities related to student belonging. This can be very helpful towards enhancing student belonging and preparing students; however, findings from this study present three challenges as to whether belonging interventions are best placed at this early stage in the student journey. Firstly, as discussed within the process evaluation of promoting the workshop to students within [Chapter 4](#), there was a high attrition rate – meaning that a high percentage of students who signed up for the workshops did not attend. This is perhaps to be expected, given the challenges that students face during times of transition such as starting at university (Russell and Jarvis, 2019; Tang et al., 2022). Whilst it is possible that moving the belonging intervention to later in the academic year would reduce attrition rates, it may also be the case that overall sign-ups would be lower as students could be focused on other priorities, such as assignments. Another option, discussed within [Chapter 4](#), is whether the intervention should be delivered as part of scheduled induction or teaching sessions, rather than as an additional extra-curricular activity. This approach has been taken at Middlesex University in the next steps of delivering the agentic belonging intervention. More details about this are included within the ‘Recommendations for practice’ section of this chapter.

Secondly, students’ sense of belonging, as measured and reported in [Chapter 6](#) – decreases throughout the academic year on average. There are two ways to interpret these findings in the context of a discussion around when to time and deliver belonging interventions. It could be the case that activities are incorrectly scheduled at the start of the academic year, where students’ sense of belonging is higher; so, these activities should be moved to later in the year. However, given the front-loading of supportive activities discussed above, it is perhaps more likely that students’ report a higher sense of belonging at the beginning of the academic year, due to how much supportive and welcoming activity takes place during this period. The decreasing levels of students’ sense of belonging could imply that some of these early supportive activities should be repeated later in the academic year.

However, another problematic aspect of early belonging interventions is the question around how reliably students' sense of belonging can be measured at this stage in their journey (Ruedas-Gracia et al., 2023). Analyses from [Chapter 7](#) found no correlation between students' sense of belonging measurements in October and subsequent continuation. This finding challenges whether belonging can reliably be measured at this point in the student journey, which is then problematic for any attempts to quantifiably measure the impact of early belonging interventions. Existing research around student belonging interventions recognises the importance of pre-and-post-test evaluation of students' belonging levels (Keating et al., 2020) and comparison against non-participatory groups (Caligiuri et al., 2020; Murphy et al., 2020; Liu et al., 2022), given that belonging is known to fluctuate over time (Gravett and Ajjawi, 2021). However, these evaluation approaches rely on an assumption that belonging can reliably be measured at this early point in the academic year, which is at least partially challenged by findings from this study.

In summary, there is a wealth of evidence in existing student belonging research to suggest that there are benefits in delivering belonging interventions at the start of students' time at university. However, this study has problematised how such thinking can lead to institutions front-loading all supportive activities in a way that overwhelms students and means that there is an absence of supportive interventions later in the academic year, when students may begin reporting a decreasing sense of belonging. Furthermore, a reliance on solely delivering belonging interventions at the beginning of the academic year may be problematic for efforts to effectively evaluate these activities, given findings from this study which question the reliability of students' self-reported baseline measurements of sense of belonging.

Learnings from the use of a quasi-experimental approach

Beyond the cross-cutting implications from this study around how students can support the building of agentic student belonging, there are also many methodological implications through this study's use of a quasi-experimental approach. As discussed within the [methodology chapter](#), it was the original intention for this study to be designed as a randomised control trial (RCT). This was mainly due to the methodological advantages and rigour of RCTs (Torgerson, 2009; Spiegelhalter, 2019; McPherson et al., 2020), but also partly due to a perceived push from the Office for Students and other sector organisations on the importance of universities utilising this experimental methodology to assess causality (Office for Students, 2021). There was a recognition of the benefits RCTs had brought to evaluation efforts in earlier stages of education (Gold, 2018), and ambiguous messaging around whether there was a hierarchy in evaluation methods (TASO, 2020). However, almost all guidance has

emphasised that RCTs could be swapped out for quasi-experimental methods to assess impact and still achieve similar robustness (Office for Students, 2021). In this guidance both RCTs and quasi-experimental methodological approaches are grouped together under ‘type 3’ evaluations, which suggests an ability to assess causality. This study therefore provides a case study for higher education practitioners, with implications on the benefits and challenges of utilising quasi-experimental methods.

To begin a discussion on the implications of the use of a quasi-experimental method, this section asks the question of what would have been lost if this study was designed as an RCT? The main benefit of utilising a quasi-experimental approach, rather than an RCT, is in how the study can be compared to similar instances of universities delivering optional or extra-curricular supportive interventions for students. If students had been randomly assigned either the agentic belonging workshop or the study skills workshop, then the study would have been less comparable to the real-world example of a university promoting an optional support activity to students and students making the decision to sign-up and attend that intervention. This relates to the concept of ecological validity, which is explored further within the limitations section of this chapter.

There is also a question of whether the online diaries aspects of this study would have been feasible to run within the context of a randomised control trial setting. As reported within [Chapter 5](#), a majority of students (83%) stated that reflecting on their sense of belonging through the diaries had in itself been beneficial to their sense of belonging. This is perhaps not surprising given existing research which has already linked self-reflective activities to enhancing students’ sense of belonging (Knox et al., 2020; Cook-Sather and Seay, 2021; Rudman, 2022), as well as broader arguments for the benefits of reflective practice (Dewey, 1933; Schön, 1983; Moon, 2004). However, this suggests that the online diaries method could be considered as an intervention in itself, and not just a research method to better understanding how students took action to build their sense of belonging. Whilst students were invited to complete the diaries online, meaning that they did not have regular, in-person contact with the researcher, it is arguable that having someone regularly check in with them to ask about their sense of belonging would have contributed to feelings of mattering (Hausmann et al., 2007; Maestas et al., 2007; Glass et al., 2015). Knowing that they were contributing to research that could go on to help other students may have also given them a sense of purposefulness, which has been linked to enhancing feelings of belonging (Cicognani et al., 2007). Indeed, this link between contributing to something greater than oneself and sense of belonging was talked about by students within their diaries.

Furthermore, RCTs are recognised as being very resource-intensive approaches to evaluation and if not implemented properly can provide less utility than other high-quality evaluation approaches (TASO, 2020). In this case, the running of this study with a quasi-experimental design has provided an opportunity to learn important lessons that could be taken forward in a future RCT. It is beyond the scope of this thesis to fully plan out what this subsequent study could look like, but brief reflections are presented below. Firstly, lessons around the design and initial evaluation of learning outcomes, discussed earlier in this chapter and [Chapter 4](#), could be implemented to enhance the intervention itself. Secondly, the discussions above about the potential benefits for students when reflecting on their sense of belonging through the online diaries method could be tested through the development of a 2 x 2 experimental design. This approach would be able to explore whether the students exposed to the belonging intervention engaged with – or benefitted from – the online diaries differently as a result of the intervention. In this approach, there would be four participant groupings, displayed below in Table 8.1. These different groupings would allow the RCT to test the separate causal impact of the agentic belonging workshop vs. the study skills control workshop, as well as the impact of the online diaries prompts as an intervention.

	Allocated to the agentic belonging workshop intervention	Allocated to the study skills workshop (control)
Allocated to the online diaries prompts	Group 1 – receives both interventions	Group 2 – receives the online diaries intervention, but no belonging workshop intervention
No online diaries prompts sent to the student	Group 3 – receives the belonging workshop intervention, but no online diaries intervention	Group 4 – receives no intervention, only attending the study skills workshop (control)

Table 8.1 – Denoting the different groups of participants for a 2x2 RCT study to assess the impact of both an agentic belonging workshop intervention and online diaries prompts (as an intervention) on sense of belonging

In summary, this section has expanded on how this study’s use of a quasi-experimental approach can provide lessons for practitioners hoping to utilise this method in the future. Quasi-experimental studies may provide stronger ecological validity when they are evaluating interventions that are purposefully optional for students. Furthermore, this study included a significant qualitative aspect through its analysis of students’ online diaries, which may have been more problematic within the context of a randomised control trial. Furthermore, the resource-intensive nature of RCTs means that quasi-experimental studies may be especially useful in exploring a topic prior to usage of RCTs. In closing, this section ends with reflections on how a future RCT could be designed to assess the

combined impact of an agentic belonging workshop and the supposed benefits of regular prompting of students to complete online diaries on their sense of belonging.

Recommendations for practice

Whilst each results chapter had its own discussion section, recommendations for practice were not included within individual chapters, so that they could be compiled here for ease of access. This section splits the recommendations for practice into the following categories:

- Recommendations for designing and delivering belonging workshop interventions
- Recommendations around how agentic belonging interventions can tie into broader institutional approaches to building students' sense of belonging
- Recommendations on wider institutional provision of the right conditions and enablers to help students feel more agency in building belonging

The majority of these recommendations stem from the findings and discussions of [Chapter 4](#): Intervention Effectiveness and [Chapter 5](#): Actions taken by students, however some aspects of the findings from the latter two results chapters have influenced these lists. Recommendations have only been included here when they stem directly from the findings or discussions within this thesis. Recommendations have not been included based on critical reviews of the existing literature contained within [Chapter 2](#); however, where relevant, references to previous research has been included where it aligns with the recommendations. Recommendations are written primarily for an audience of university staff – including a combination of those directly teaching students, as well as those responsible for strategy and delivery of wider student experience related work. This could include those in learning design roles, student engagement teams, student success units or other such functions. Many aspects of these recommendations have already been communicated to such audiences, which has been captured through the list of impact activities related to this thesis in [Appendix 8.1](#).

Recommendations for designing and delivering belonging workshop interventions

The following section identifies the main points of learning which are recommended for practitioners designing and implementing belonging interventions. They address a combination of successfully implemented aspects of the agentic belonging intervention evaluated within [Chapter 4](#), along with relevant reflections based on students' online diaries – analysed in [Chapter 5](#) – and considerations on

timing of interventions based on findings from Chapters [6](#) and [7](#). Recommendations on evaluation of such interventions have been included within the 'Limitations and opportunities for future research' section of this chapter. Recommendations include:

1. **Utilise student partnership approaches in the design and delivery of belonging workshop interventions.** The belonging workshop was piloted with Middlesex University ambassadors ahead of delivering as part of this study. Their feedback was an invaluable part of enhancing the design and structure of the intervention ([Appendix 4.1](#)). From this feedback, more students' voices were included within the delivery of the belonging workshop as part of this study – through the recording of videos of current students talking about their experiences on topics related to the workshop content. Piloting of the new intervention also helped to build facilitator confidence, so is a recommended practice. Following the delivery of the agentic belonging intervention within this study, it was updated in partnership with current students for delivery at Middlesex University. The workshop is now known as the “What We Wish We’d Known” session and was delivered to new students as part of induction sessions in September 2023 and January 2024 by trained Middlesex student ambassadors. The workshop was updated by a paid Graduate Intern who took the original content of the intervention and reframed it as a series of ‘hacks’ for settling in at university, bringing in real examples from current students. Such student partnership approaches are becoming increasingly recognised as beneficial for students and staff involved in collaborative project work, as well as for the students who benefit from a more authentic and relatable set of interventions (Cook-Sather and Felten, 2017).



Figure 8.4 – Photo from the delivery of a “What We Wish We’d Known” session at Middlesex University to new undergraduate students in September 2023. Two student ambassadors are delivering the workshop.

2. Given the increasing prevalence amongst students (Blewett and Ebben, 2021; Tsantopoulos et al., 2022; UPP Foundation, 2024), **include content within belonging workshop interventions about how anxiety is a common barrier to agentic belonging.** Within online diary submissions, students talked about how anxiety was often a barrier that stopped them taking actions to build belonging at university – through not feeling confident enough to connect with other students, staff members or even participate in class discussions. Students spoke positively about pushing through feelings of anxiety and reported regret for times that they had not done this. Open dialogue with students about the prevalence of these feelings of anxiety and information about relevant university support services could help students feel more confident in managing feelings of anxiety (Rith-Najarian et al., 2019).
3. **Talk openly with students about the reciprocal relationship between engagement and belonging.** This was another finding from students’ online diaries, which could be included within the belonging workshop interventions, alongside content about the dynamic nature of belonging (Gravett and Ajjawi, 2021; Allen et al., 2024). If students remember later on that a lack of engagement could negatively impact their sense of belonging, which can then lead to

downward spirals, this may help students realise the importance of breaking these negative spirals sooner.

4. When scheduling belonging workshops, **offering a range of workshop dates and times may help ensure that students can pick a session that best fits with their other priorities.** When students were asked about why they did not attend a workshop that they had signed-up for, the most frequent response was that it clashed with something else that the student needed to attend. Especially if workshop interventions are delivered near the start of term, it is likely that there may still be changes in students' timetables and a number of other events that they have been invited to attend. Offering more workshop options – and allowing students to change their selection after booking – could help to reduce attrition.
5. Alternatively, **schedule belonging interventions directly into students' induction or timetabled teaching sessions** so that students do not need to find additional time in their schedules to benefit from the interventions. Scheduling belonging interventions as part of already planned induction or timetabled sessions means that the sessions are more accessible to those who have other commitments and responsibilities outside their studies that may limit their ability to attend extra-curricular or optional activities (Holley et al., 2014).
6. Whilst there are many benefits of running agentic belonging interventions near the start of students' time at university (Read et al., 2003; Russell and Jarvis, 2019; Graham, 2022; Tang et al., 2022; Zhang et al., 2022; UPP Foundation, 2024), consideration should be given to how such **interventions could be adapted and delivered again at later points in students' journeys.** Within this study, students reported an average decrease in their sense of belonging throughout the first academic year of study, which aligns with other longitudinal belonging research (Hausmann et al., 2007; O'Sullivan et al., 2019). Within online diaries, students reported how particularly challenging points in the academic year were when module changes disrupted their regular contact with peers that they had developed friendships with, and also when attendance from other students began to dip resulting in an overall decline in feelings of cohort community. Belonging interventions could be repeated for students when staff notice such challenges emerging amongst their student cohorts.

Recommendations for linking agentic belonging interventions into broader institutional activities

This section of recommendations focuses on how institutions should connect agentic belonging interventions into other institutional approaches to enhancing student outcomes. In particular, three

areas of recommendations are provided around academic advising models, learner analytics approaches and student voice work:

7. Students' contributions within agentic belonging workshop interventions and data around their learning outcomes can provide valuable insight for academic advising conversations.

An increasing body of literature suggests that academic advising – also often referred to as personal tutoring – should be an integral part of how institutions provide support for students (Thomas, 2012; Curtin et al., 2013; Calcagno et al., 2017; Museus et al., 2017; McIntosh et al., 2020). However, undirected personal tutoring approaches can be perceived by students as irrelevant to their needs and awkward experiences, leading to disengagement with future tutoring sessions (van Hooff and Westall, 2016). Within the agentic belonging workshop, students are reflecting meaningfully around aspects of their lives where they currently feel a sense of belonging, as well as prioritising how they want to belong at university. Such reflections could be brought into academic advising conversations, allowing advisors to more immediately relate their time with students to their identified belonging needs (Klemenčič, 2017; Yuan et al., 2024). Staff caring about students' goals can be an important enabler of students' sense of belonging (Maestas et al., 2007; Glass et al., 2015; Boswell, 2024). Furthermore, linking to academic advising models could address the problematic findings within [Chapter 4](#) that students' baseline levels of belonging were predictive of their workshop learning outcome scores – in essence, that those with the lowest reported sense of belonging before the workshops were less likely to feel that the workshop had helped them. If students were happy to share and discuss their learning outcome scores with academic advisors, this could again provide a valuable starting point for discussions, helping advisors to better address early challenges and provide personalised support (Curtin et al., 2013; Brunsting et al., 2019; Schmahl and Nguyen, 2022; Burk and Pearson, 2022). For institutions considering this approach, delivering the agentic belonging intervention to academic advisors may help prepare them to hold these follow-up conversations with students. Indeed, introducing such reflexive activities around belonging with staff may positively contribute to their own sense of belonging (Gravett et al., 2023), as well as help better prepare them to support students with their agentic belonging.

8. Design of systems utilising learner analytics should recognise the reciprocal relationship between students' behavioural engagement and sense of belonging.

As discussed within [Chapter 5](#) and earlier in this chapter, students' online diary responses recognised how belonging and engagement can form either virtuous or downward spirals. Learner analytics systems – also described as student engagement approaches – are increasingly utilised by

universities to monitor students' patterns of engagement and then provide earlier, supportive interventions. The motivations for such approaches include their promising links to improved student outcomes (Ferguson and Clow, 2017) and ability to provide support for students at scale (Macfadyen et al., 2014). Whilst there are critiques of learning analytics approaches for confusing the learning process with engagement proxies (Gašević et al., 2016) and ethical challenges around use of student data (Slade and Prinsloo, 2013), they are being increasingly used by higher education institutions as part of supportive student engagement approaches. The findings from this study suggest that early identification of students with low or decreasing levels of engagement could be considered a proxy for students who may also be facing challenges to their sense of belonging. Approaches to learner analytics could therefore be designed through a student belonging lens – including how the tone of any messages to 'low engagers' are written and the support or interventions that are promoted to these students. The last set of recommendations for practice – around conditions for affective belonging building – could be targeted towards lower engaging students, recognising that they may also be facing additional barriers to their sense of belonging.

- 9. Student voice approaches should be designed recognising the benefits of self-reflective activities to students' sense of belonging.** With online diary results, students reflected on both the benefits of reflecting on their own sense of belonging (Knox et al., 2020; Cook-Sather and Seay, 2021; Rudman, 2022), as well as the importance of feeling that their voices mattered to staff (Hausmann et al., 2007). It is unclear whether it was the specific online diary approach that led to such a high proportion of participants feeling that their self-reflection was beneficial towards their own sense of belonging, or if this would also be replicated through other belonging research methods. However, this suggests that institutions should think carefully when building strategies around student voice. Many institutions prioritise sending surveys and questionnaires to maximise the number of students who they can gather responses from, whilst minimising time to analyse the results (Grebennikov and Shah, 2013). However, inviting students to take part in richer, qualitative self-reflection may have more immediate benefits for students. Although, it must be recognised that analysing these submissions from students would likely be more resource intensive. Taking this approach could be reflected in changes to institutional student voice approaches or through greater involvement of students in institutional research practices (Austen, 2020).

Recommendations for universities around conditions required for students to be able to confidently take action to build their sense of belonging

Beyond recommendations around the implementation of belonging workshop interventions and connecting them to broader institutional practices, a number of findings from students' online diary results should be considered by universities to ensure that they are providing the right conditions for students to then feel able to confidently take actions to build their sense of belonging.

10. Consider the development of buddying or mentoring programmes for students from less-represented demographics, especially in instances where students may not feel there are any other students 'like them' on their course of study (Read et al., 2003; Pascale, 2018; Russell and Jarvis, 2019; Kahu et al., 2022).
11. Display positivity towards diversity within the university community and encourage students to recognise the benefits of connecting with peers from completely different backgrounds (Maestas et al., 2007; Carter et al., 2017; Hussain and Jones, 2021; Keyser et al., 2022; Nieminen et al., 2024).
12. Provide opportunities for students to reflect on and actively share their study goals and priorities, so that they are better able to connect with peers who share their motivations (Knox et al., 2020; Cook-Sather and Seay, 2021; Rudman, 2022).
13. Ensure that a wide variety of spaces are provided for students to study, socialise and relax that cater to different personal preferences – especially recognising the importance of providing a mixture of quiet and secluded spaces, as well as those for socialising, which may be busier (Guyotte et al., 2019).
14. Recognise that digital spaces as well as physical spaces can affect students' sense of belonging – especially if students only have access to digital spaces with lots of other students, as this can be daunting for some.
15. Provide opportunities for students to tour university spaces (Birkenhauer, 2023) and encourage exploration of these spaces, especially early during the academic year. Recognise that not all students have time for this exploration, so where possible build exploration of facilities and provision of tours into the curriculum (Cruz and Grodziak, 2021; Guyotte et al., 2019).

16. Promote approachability of academic staff by being non-judgemental in responding to student queries, offering multiple ways for students to make contact, and providing prompt responses (Glass et al., 2015; Carter et al., 2017; Blignaut et al., 2022; Zhang et al., 2022).

Limitations and opportunities for future research

Limitations can often be framed in generic and repetitive ways, which hinder readers from fully understanding the utility of the current study and recognising opportunities for future research (Ross and Bibler Zaidi, 2019). To overcome this issue, the limitations in this chapter have been structured using a threat to validity approach; an approach recommended for experimental or quasi-experimental research design (Cook and Campbell, 1979).

Four aspects of validity are assessed within this section. As is most common in validity assessments, both internal and external validity is critiqued. Internal validity focuses on the correct identification of relationships between variables being studied, whilst external validity focuses on the generalisability of the results (Ross and Bibler Zaidi, 2019). Given that this thesis has been developed with contributions to practical efforts in mind, ecological validity is discussed separately to external validity. Ecological validity deals with the extent to which the environment of the study can be generalised to real life settings (Andrade, 2018). Whilst discussions around external validity can sometimes address questions of ecological validity, it is more common for external validity to focus on how the population of a study can be generalised to wider populations – population validity (Price and Murnan, 2004). Furthermore, given the recognised challenges in accurately measuring and conceptualising sense of belonging (Mahar et al., 2013; Lähdesmäki et al., 2014), attention has also been given to discussing the extent to which the study has achieved construct validity; how measurements in the study are accurately – or not – reflecting the underlying concepts that they are supposedly measuring (Clark and Watson, 2016). Study design and implementation inherently includes choices that amount to trade-offs between these different types of validity (Roe and Just, 2009). Such trade-offs and rationale behind prioritisation of different aspects of validity are discussed below.

Internal validity

Assessing internal validity for this study is especially important given the use of a Theory of Change model; the purpose of which is to lay out the causal mechanisms that lead from an intervention to its intended outcomes (TASO, 2022). Aspects of internal validity were compromised in the decision to move from a randomised control trial (RCT) to a quasi-experimental research design. As students were

choosing whether to take part in the research study, and whether they belonged to the belonging intervention or study skills workshop groups, there is a risk of selection bias. Some elements of selection bias have been minimised through the collection and inclusion of students' demographic variables within regression analyses. However, only demographic variables captured have been able to be accounted for within these analyses. Special category data such as race, sexuality and students' disability was not collected, despite existing research suggesting that students with minoritised characteristics across these variables have different experiences of belonging at university (Tachine et al., 2016; Thomas et al., 2017; Lewis et al., 2019; Fernández et al., 2023). The main reason for not collecting special category data within this study was around practical challenges of going through additional ethical approval processes to collect this data. In a sense, this was a trade-off consistent with preserving ecological validity, as it would not always be the case that university practitioners would have access to or ethical approval for use of this data. Beyond these special category data limitations, the lack of randomisation in participant selection for each workshop group means that other unobservable differences between groups could not be accounted for, such as personality traits. Future use of RCTs or inclusion of special category data in evaluation of agentic belonging interventions could address these limitations.

Another threat to internal validity is the challenge in ensuring that all students received the same intervention. There are many critiques as to whether educational interventions can be condensed into a replicable procedure (Burnett and Coldwell, 2021). Within each workshop, the facilitator responds to how participants are engaging. Each participant enters a workshop with a different frame of mind, or other priorities that occupy some of their attention whilst they are attending. A facilitator may gain – or even sometimes lose – levels of confidence and capability after one delivery of a workshop. Workshops may run in different ways depending on the number of participants and whether participants have any questions for the facilitator. To minimise the risk of this threat to validity, no fundamental changes were made to the design of workshops between each delivery session.

As discussed earlier in this chapter, another threat to internal validity is the potential confounding effect of students' participation in the online diaries aspect of the study. Students self-reported benefits to their sense of belonging due to taking part in the online diaries. Whilst all participants were invited to contribute to the online diaries, students who previously attended the belonging intervention could have been primed to experience further self-reflection on sense of belonging – through the online diaries – in a different way to participants who had not attended the belonging intervention. This is a threat to internal validity as it introduces an additional confounding variable into the study, which could explain differences in the outcome variables of changes in student belonging and retention.

Similarly, another limitation exists in the ways in which attendance of the study skills workshop may have also positively impacted students' sense of belonging. Whilst the study workshop was designed to limit any possible impact on belonging, attendees may be more likely to feel confidence in their abilities as a learner, which has been linked to positive changes in student belonging (Thomas, 2012; Slaten et al., 2016; Knekta and McCartney, 2018; Rainey et al., 2018; Kepple and Coble, 2020; O'Shea, 2020; Thacker et al., 2022). Furthermore, whilst the study skills workshop was not designed to encourage participant interaction, the process of meeting other new students at a workshop could have helped improved students' social connections, thus positively impacting their sense of belonging (Slaten et al., 2016; Picton et al., 2017; Meehan and Howells, 2018; Rainey et al., 2018; Russell and Jarvis, 2019; Jones et al., 2018; van Gijn-Grosvenor and Huisman, 2020; Kahu et al., 2020; Cohen and Viola, 2022; Rudman, 2022). These spurious effects of the study skills workshop may have meant that this study underestimated the impact of the belonging workshop. Overall, this reflects the challenge in being able to design quasi-experimental research containing control interventions that have no impact on students' sense of belonging.

External validity

Discussions of threats to external validity within this section are split into delimitations – those that derive from the scoping and designing of the study – and broader limitations that result from practical implementation of the study. Given that a separate section addresses the extent to which the study was ecologically valid, this section focuses on the aspects of external validity that relate to generalisability of the study's participants to broader populations.

In the original design of the study, two very different higher education institutions were chosen, so that analyses would be able to investigate whether relationships between variables existed in both contexts. As is discussed further within the [methodology chapter](#), Middlesex University and the University of Southampton were chosen as having very different student intakes in terms of widening participation demographics, entry requirements and institutional cultures – with Southampton being considered a research-intensive university, whilst Middlesex is a more teaching focused university. However, both institutions are medium-to-large in size with a campus environment, mainly on-campus teaching and a wide array of courses being offered. This means that results tested at both these two institutions may not be generalisable to other types of institutions, such as small or specialist providers, city universities with no identifiable campus, or online higher education institutions. Existing literature has already begun to recognise the different experiences of sense of belonging felt by students who receive solely online provision (Liu et al., 2022).

Furthermore, a key part of the agentic belonging intervention is about making students aware of the vast array of opportunities on offer to support them building belonging. In types of institutions where these opportunities are not provided, for example those with limited on-campus provision or extra-curricular offering, the intervention would need to adapt, as it could not rely on such opportunities already existing. This is already partly addressed within the workshop through an example of a barrier to belonging that is presented to students. An example is given of a student who wants to connect with other students to go to music events, but his coursemates are not interested. This activity prompts students to recognise how they could work with their students' union to set up a society to help find other interested students. This type of proactivity could be even more important in a university setting where there are very few existing societies, but it would still need the infrastructure of a students' union who can help proactive students to establish new societies.

Both participating institutions were also based in England, which questions whether the results could be generalised to other countries' higher education systems where students' experiences of and approaches to belonging may be different (Lee et al., 2023). Another core part of the belonging intervention is its aim to build more agency amongst participations, so that they can take actions to build their sense of belonging. It is therefore arguable that this intervention would have a different impact on students in higher education systems where there is already a high degree of student agency. For instance, recent sector discussions have focused around how students in Finnish universities are trusted to organise and deliver a wide array of activities outside of core teaching (Dickinson and Scott, 2024). This suggests that there are already very high levels of student agency in this context, which could mean an agentic belonging intervention would be less impactful.

Beyond these delimitations driven by the choice of only running this study at two English universities, there are also further threats to external validity due to challenges in participant recruitment at the University of Southampton. These challenges meant that over 75% of all participants were based at Middlesex University, limiting the ability to run separate analyses for each institution, as well as across all participants. Most of the analyses were not able to be split by institutional status, which limits the generalisability of the results beyond institutions similar to Middlesex University. Middlesex University has a very high proportion of its student population from historically underrepresented – or minoritised – student groups. Previous research has suggested that students from such backgrounds place a higher priority on being able to live as their authentic selves, compared to institutions with more privileged student populations (Vaccaro and Newman, 2022). Given the close connection between encouraging authenticity and the agentic belonging intervention, this furthermore questions the generalisability of results beyond widening participation institutions. However, this could also be

seen as an advantage of the current study, as it shows that this agentic belonging intervention can be effective when implemented in the institutional context where it is likely to be most needed.

Ecological validity

Given the desire of this thesis to contribute meaningfully to practical efforts to enhance students' sense of belonging, trade-offs were made in some aspects of study design and implementation so that high ecological validity could be maintained. This included designing the intervention as a workshop that could be delivered by a student engagement practitioner – the author's own position, as discussed within the [Introduction and Context chapter](#). The workshop was designed to be low cost and not overly long, with the recognition of pressures on both university finances and students' time for optional activities. One challenge around timescales in the design of the study overall was that the inclusion of continuation data meant that the overall timespan of the study stretched to 15 months. This timescale for evaluation could be challenging in other contexts, as changes in staffing or priorities across this period could result in the analyses with retention data being deprioritised.

All of these decisions to design the workshop and study in a way that could be replicable in other university contexts sometimes resulted in trade-offs with other types of validity. As discussed, the decision to run the workshops in this study as optional was important for ecological validity, where practitioners often have to deliver supportive interventions as additional, optional sessions for students due to a lack of space within timetabled activities. However, this resulted in a lack of participant randomisation and thus sampling biases which challenge the internal validity of the study. Furthermore, the optional nature of the workshops led to recruitment challenges, which have been discussed in the context of threats to external validity.

One remaining potential limitation around ecological validity is around whether the workshop could be scaled up and delivered by other facilitators. As already discussed, there are inherent challenges in proceduralising any educational intervention (Burnett and Coldwell, 2021). Within the context of this research project, the design, facilitation and evaluation of the workshops was all led by the author. It is unclear whether designing the workshop led to a more confident or enthusiastic or motivated form of workshop delivery that would be challenging to replicate with other practitioners. However, being able to deliver workshops with confidence and enthusiasm is a skill that is developed over time and therefore could be expected to be held by either academic staff or student engagement professionals with ample experience in workshop delivery. Future research could help minimise this threat to

ecological delivery by having the roles of designing and facilitating belonging workshop interventions be carried out by different people.

Construct validity

This final validity section addresses the extent to which measures used within the study were accurately reflecting the intended underlying constructs. Whilst these are presented as limitations of the current study, they are also collected here to help guide future research in better understanding and conceptualising belonging (Mahar et al., 2013; Lähdesmäki et al., 2014).

Initial threats to construct validity exist in the use of an unvalidated scale to gather participants' self-reported assessment of meeting the workshops' learning outcomes. Whilst self-reported measurements may be the "only feasible method" for evaluating the success of short workshops (Lam, 2009, p. 103), it is still concerning that a low Cronbach's alpha score was found for the belonging workshop learning outcomes scale. Future studies could include further stages of testing learning outcomes scales with participants and the inclusion of open-text questions to gather qualitative reflections from participants on their experiences of the workshop (Lingat et al., 2022). Whilst the online diaries reflections from participants provided rich reflections on how they developed their sense of belonging at university, they did not reflect directly on their experiences of the workshop interventions.

Earlier discussions within this chapter build on findings from Chapters [5](#) and [7](#) to question whether early measures of belonging hold high construct validity. Most analyses within [Chapter 6](#) are based on examining changes in students' reported sense of belonging against these early baseline measurements. Therefore, given these questions about validity of early belonging measurements, which has already been discussed in existing research (Ruedas-Gracia et al., 2023), there are limitations on the validity of these findings. Other challenges around construct validity have been minimised through the use of a pre-validated, multi-question belonging scale (Yorke, 2016; Lingat et al., 2022).

Finally, as discussed within [Chapter 7](#) and earlier in this chapter through reflections on changes needed to the Theory of Change, a risk to construct validity exists in the ways in which the agentic belonging intervention may have provided students with benefits to their resilience and persistence. By helping to normalise feelings of non-belonging, the workshop may not have been as directly focused on increasing students' sense of belonging as originally intended. Future research that repeats the agentic

belonging intervention and includes measures of other psychological constructs, such as resilience (Tudor and Spray, 2017), may be able to explore this further.

Final conclusions – a call-to-action for readers

Let's talk about student belonging... with students

To conclude this thesis, it seems appropriate to return to the student voice. Below are a few short quotes from one student's online diary contributions that were presented in [Chapter 5](#).

“During my time at university this year I have grown to understand how many different ways there are to belong here and various levels of belonging too.

“Importantly I have learned that it's okay to not feel as large a sense of belonging to societies as other people.

“In seminars it is easier to interact with others as many people are split up from their ‘normal click’ of friends. I try to help other people talk and interact with each other when in seminars so that everyone feels welcome to join the conversation.

“My sense of belonging as a student had its ups and downs, with me feeling worried about not being intelligent enough for university, though this has improved. I do still feel worse than others in academic aspects, but have found a mindset change that I have a different skill set to others and that it is also good enough for the uni.” (B4)

These quotes represent a small proportion of the contributions from just one participant in this study, and yet they capture so much about how students' sense of belonging – or lack of it – affects their time at university. This student attended the agentic belonging workshop intervention at the beginning of their academic journey and their story perfectly encapsulates what the intervention was designed to achieve: equip students with the self-awareness, confidence and resilience to embark on their own journey of building an authentic and resilient sense of belonging at university.

As discussed in [Chapter 2](#), most existing research into university students' sense of belonging focuses on what universities do either *to* or *for* the student. What universities provide or withhold. What institutions enable or try to prevent. As has been aptly expressed within existing research, and reiterated through the rich online diaries that students completed for [Chapter 5](#), building belonging does require universities to provide appropriate enablers and conditions. Students cannot belong within a university where they do not feel welcome; where they cannot build positive relationships

with staff and other students; where they do not feel safe. However, whilst these are necessary criteria for students to belong, they are not sufficient.

Belonging is subjective and personal. Universities cannot *do* belonging to their students. To belong requires motivation on the part of the individual. Students will not feel a motivation to belong if they perceive belonging to be defined narrowly in a way that is irrelevant to their own goals. This is why conversations with students about belonging must begin by emphasising its subjective nature. Only then will students have the confidence to pursue authentic expressions of belonging, instead of either following the path of others in an attempt to 'fit in' or rejecting the idea of belonging altogether.

Furthermore, to belong requires action. It requires students to feel confident enough that they can take those actions to develop a sense of belonging at university. To introduce themselves to the peers in the classroom, to ask the question to their lecturer when they require support, to spend time in university spaces to find the areas where they feel most comfortable. In other words, belonging takes work. If conversations and interventions with students do not talk about the work required, then they will be setting poor expectations for what is required from students to feel a sense of belonging. Instead, addressing the challenges and barriers that students may face in their attempts to build belonging can normalise how common they are and reduce the chance that students perceive these challenges as personal failures.

Contributions of this thesis

The agentic belonging intervention set out the ambitious aim of trying to address all of these above points within an interactive and engaging format for new undergraduate students. The quasi-experimental methodology that underpins this research has then allowed evaluation of this intervention (attended by 36 students) against both a group of students attending a control study skills workshop (27 students) and a group of non-attending students (38) at two English universities. Initial evaluation of the delivery of the belonging workshop ([Chapter 4](#)) presents promising yet mixed results about whether its content was understood by students. Learning outcome scores from attendees were high, comparable to the well-established study skills intervention. Furthermore, for the majority of learning outcomes scores were significantly higher for the belonging attendees than the non-attending group even when controlling for participants' demographic background. However, the scale used to assess learning outcomes had a low Cronbach's alpha score (0.510), suggesting low internal consistency and therefore a need for more work to effectively measure the efficacy of the workshop.

Building on the vast existing literature that has explored the factors that affect students' sense of belonging, [Chapter 5](#)'s reflexive thematic analysis of online diaries provides an exploration of these factors from the lens of how they impacted students' actions to build belonging. This chapter contributes a more detailed understanding of the conditions that students need before they can feel agency in building belonging. Furthermore, the analysis found that belonging workshop attendees were more likely to discuss how they took actions to belong aligned to their own personal preferences and recognise the benefits of acting authentically.

The two remaining results chapters then analysed whether these workshop interventions, and students' subsequent actions to build belonging, affected their outcomes. Whilst sense of belonging for those in the study skills group and non-attending group decreased across the first academic year (decreasing 11.5% and 4.5% respectively), belonging workshop attendees saw much more stable sense of belonging (decreasing 0.7%); although these differences were not statistically significant ([Chapter 6](#)). Students who attended the belonging intervention were significantly more likely to continue in their studies than both control groups – 25% more likely than non-attending students, and 16.5% more likely than those who received the study skills workshop ([Chapter 7](#)).

To ensure that these findings can contribute meaningfully to future practice, cross-cutting themes and recommendations have been compiled and discussed. These include reflections on how results from students' online diaries can contribute to future enhancements of agentic belonging interventions, as well as discussions around when to deliver such interventions. Recommendations for practice have also been compiled around lessons for updating and delivering agentic belonging interventions, how to embed and connect these interventions to wider institutional support, and learnings from students' online diaries about required conditions for them to feel agency in building a sense of belonging. This study has also contributed methodologically through providing a case study of quasi-experimental evaluation approaches, including aspects of process evaluation captured within [Chapter 4](#).

What next?

This thesis began by noting the promising connections between students' sense of belonging and reducing the likelihood of students withdrawing from university, which has been subsequently reinforced through the study's findings. However, more than just whether students stay at university, students' sense of belonging affects how they perceive their entire experience of higher education. This thesis has argued for a re-balancing in approaches to belonging that recognise the important role of student agency. By beginning honest conversations with our students about belonging, higher

education institutions can better prepare students to navigate the opportunities and challenges to their sense of belonging that they may encounter at university.

Appendices for Chapter 8

[Appendix 8.1](#) – List of impact activities carried out to disseminate findings from thesis

[Appendix 4.1](#) – Feedback from belonging workshop pilot

Appendix 2.1 – Search approach, terms and timing for all literature review searches

This appendix is cited within Chapter 2 – Literature review in the sections on the [wider belonging review](#), [critical review of student belonging literature](#), and [student agency literature review](#). It also appears at the [end of that chapter](#).

Review approach	Semi-structured review, with initial systematised search and review approach, followed by inclusion of other papers referenced within included studies
Database(s) used:	Google Scholar
Search date:	7 th February 2023
Search type:	Article title search (not full text)
Terms searched:	
Include	"Belonging"
Include some of	"Define", "Definition", "Defined", "Concept", "Conceptualise", "Conceptualisation", "Conceptualising"
Exclude any of	"Student", "University", "Higher Education", "Students", "Pupil", "School", "Learning", "Teaching", "Universities"
Total search results	159
Without duplicates	145
Title review phase	79 (Notes: Removed titles where belonging was used in the concept of ownership (e.g. "a word belonging to a sentence"), titles related to education, titles not in English)
Abstract review phase	10 (Notes: Removed titles where full text was not available or where abstract showed it wasn't relevant to the RQ, or full text not in English, or not peer-reviewed articles / journal entries)

Table 2.1.1 – Search criteria and stages for wider belonging review

Review approach	Systematised, critical literature review
Database(s) used:	Google Scholar and all sources within British Educational Index (EBSCO)
Search date:	7 th February 2023
Search type:	Full text search
Terms searched:	"Student belonging" AND "Higher education" "Students' sense of belonging" AND "Higher education" "Student belonging" AND "University" "Students' sense of belonging" AND "University"
Total search results	3120

Without duplicates	2736
Title review phase	597 (Notes: Articles were removed if not specifically related to higher education, student belonging, or non-English, or non-published works)
Abstract review phase	200 (Notes: articles were removed if not related to any of the research questions, if full text could not be accessed, if did not include any primary research (e.g. thought pieces or literature reviews))

Table 2.1.2 – Search criteria and stages for systematised student belonging review

Review approach	Citation chaining literature review approach
Database(s) used:	Mixed
Search date:	Across early 2024
Search type:	Full text search
Citation chaining:	Studies used for initial citation chaining were those included in the prior systematised, critical review on student belonging that also mentioned agency: Turner and Fozdar, 2010; Bamford and Pollard, 2018; Coetzee et al., 2022
Terms searched:	“Agency” AND “Students” “Agency” AND “Structure” “Agency” AND “Hope” “Agency” AND “Student engagement” “Agency” AND “Student Belonging”
Total search results	Numbers not maintained due to the cyclical nature of the citation chaining approach

Table 2.1.3 – Search criteria and stages for citation chaining agency literature review

Appendix 2.2 – Studies included within systematised, critical review of student belonging literature

This appendix is cited within Chapter 2 – Literature review in the section on the [critical review of student belonging literature](#), and also at the [end of that chapter](#).

Authors	Title	Year	Description of sample	Location	RQs
AA Buskirk-Cohen, A Plants	Caring about Success: Students' Perceptions of Professors' Caring Matters More than Grit.	2019	44 students	small, teaching-focused university, Delaware Valley University, US	1, 2, 3
C Chin	The concept of belonging: Critical, normative and multicultural	2019	N/A		1, 2, 3, 5
García, Hugo A.; Garza, Tiberio; Yeaton-Hromada, Katie	Do We Belong? A Conceptual Model for International Students' Sense of Belonging in Community Colleges	2019	6043 international students in community colleges	Community colleges in the US	2, 3, 4
Gopalan, Maithreyi; Linden-Carmichael, Ashley; Lanza, Stephanie	College students' sense of belonging and mental health amidst the COVID-19 pandemic.	2022	N = 1004 students	multicampus North-eastern public university in the US	1, 2, 3, 4
Hausmann, Leslie R. M.; Schofield, Janet Ward; Woods, Rochelle L.	Sense of Belonging as a Predictor of Intentions to Persist among African American and White First-Year College Students	2007	365 students (mixture of African American and White)	a large, public, mid-Atlantic, predominately white university, US	1, 2, 3, 5
Holloway-Friesen, Holly	The Role of Mentoring on Hispanic Graduate Students' Sense of Belonging and Academic Self-Efficacy	2019	332 Hispanic graduate students	US university	1, 2, 3, 5
Hurtado, Sylvia; Carter, Deborah Faye	Effects of College Transition and Perceptions of the Campus Racial Climate on Latino Students' Sense of Belonging.	1997	The final sample consisted of 272 students	127 colleges in the US	1, 2, 3
ER Kahu, C Picton, K Nelson	Pathways to engagement: A longitudinal study of the first-year student experience in the educational interface	2020	19 first-year students	Australian University	1, 2, 3
ER Kahu, N Ashley, C Picton	Exploring the complexity of first-year student belonging in higher education: Familiarity, interpersonal, and academic belonging	2022	18 students (first-year)	Australian University	2, 3

N Luo, H Li, L Zhao, Z Wu, J Zhang	Promoting student engagement in online learning through harmonious classroom environment	2022	305 students	Tencent classroom (ke.qq.com). It is a professional online education platform in China	1, 2, 3
HM Mulrooney, AF Kelly	Covid-19 and the move to online teaching: impact on perceptions of belonging in staff and students in a UK widening participation university	2020	208 students and 71 academic staff	UK university	1, 2, 3
Murphy MC; Gopalan M; Carter ER; Emerson KTU; Bottoms BL; Walton GM	A customized belonging intervention improves retention of socially disadvantaged students at a broad-access university	2020	N = 1,063 first year students	US university - broad access	1, 2, 3, 5
ML Pedler, R Willis, JE Nieuwoudt	A sense of belonging at university: student retention, motivation and enjoyment	2022	n = 578	Southern Cross University, Gold Coast, Australia	1, 2, 3, 4
L Russell, C Jarvis	Student withdrawal, retention and their sense of belonging; their experience in their words	2019	80 students (UG and PG) - who had experiences thinking about withdrawal or issues with retention / had left / issues with attendance	An English University, UK	2, 3
VYK Tao, CWI Long, A Wu	Part-Time Employment and Sense of School Belonging among University Students in Macao.	2008	164 undergraduate Chinese students	A university in Macao, China	1, 2, 3
L Thomas	Building student engagement and belonging in Higher Education at a time of change	2012	10,296 participants across all aspects of the 7 studies within the report - however, there may have been some overlap in participants across all aspects of the studies, so it was not necessarily 10,296 unique participants	7 UK universities	1, 2, 3, 5
Veldman, Jenny; Meeussen, Loes; van Laar, Colette	Social background concealment among first-generation students: The role of social belonging and	2022	829 first-year university students	United Arab Emirates university	2, 3, 4

	academic achievement concerns.				
M Versteeg, RF Kappe, C Knuiman	Predicting student engagement: the role of academic belonging, social integration, and resilience during COVID-19 emergency remote teaching	2022	1332 HE students	Inholland University of Applied Sciences in the Netherlands	1, 2, 3
S Zumbrunn, C McKim, E Buhs, LR Hawley	Support, belonging, motivation, and engagement in the college classroom: A mixed method study	2014	212 undergraduates in quantitative aspect, lack of clarity around exactly how many in the qualitative phase	a large, Midwestern university in the US	1, 2, 3
Abbasi, Najam ul Hasan; Hadi, Abdul	GENDER DIFFERENCES AMONG COLLEGE STUDENTS' SENSE OF BELONGING AND LEARNING MOTIVATION.	2021	303 students	Multiple universities in Sichuan, China	1, 2, 4
MY Ahn, HH Davis	Four domains of students' sense of belonging to university	2020	N = 426 students	Bangor University, Wales	1, 2
MY Ahn, HH Davis	Are local students disadvantaged? Understanding institutional, local and national sense of belonging in higher education	2022	192 participants in three distinctly different HE institutions	3 Welsh universities	1, 2, 4
NA Akyıldız, TN Olğun	Investigation of the relationship between the concept of belonging and sustainable urban conservation process: The case of İzmir-Sığacık inter castle settlement	2020	A case study around on urban conservation area - Sığacık Castle Area		1, 2, 4, 5
JA Taylor, C Macke, R Ozaki, M Lindsey...	The Intersection of Sense of Belonging and Financial Hardship Among University Students: Social Work Educators' Response	2022	958 students	Northern Kentucky University, US	1, 2
G Baleria	Counteracting othering in the community college setting: Increasing belonging and curiosity to improve student success	2021	16 students	Northern California community college in the US	2, 5
G Baleria	Story sharing in a digital space to counter othering and foster belonging and curiosity among college students	2019	16 students	Northern California community college, US	2, 5
J Bamford, L Pollard	Developing relationality and student belonging: The need for building	2018	92 student participants on business and	2 post-1992 London universities, UK	2

	cosmopolitan engagement in undergraduate communities			science programmes		
S Blignaut, A Visser, S Maistry, S Simmonds...	Belonging, wellbeing and stress with online learning during covid-19	2022	537 students	Residential South African University	1, 2	
JA Booker, E Hernandez, KE Talley...	Connecting with others: Dispositional and situational relatedness during the college transition	2022	244 first-year students	large, public university in the central US	1, 2	
J Brodie, R Osowska	Supporting entrepreneurship students' sense of belonging in online virtual spaces	2021	8 students studying a 1-year top-up degree	UK higher education institution	2	
Brunsting, Nelson C.; Zachry, Corinne; Liu, Jintong; Bryant, Rhonda; Fang, Xuanyu; Wu, Siyu; Luo, Zhengda	Sources of perceived social support, social-emotional experiences, and psychological well-being of international students.	2019	N = 126 - international students	two universities in the United States	1, 2	
Buckley, Jessica Belue	From "Cliques" to "Common Ground": Social Class, Layered Belonging, and Characteristics of Symbolic Boundaries in the Transition From Public High Schools to a Public University.	2022	8 first-year students	Urban, public institution in the South of the US	1, 2	
NR Burk, A Pearson	Encouraging Student Sense of Belonging Through Instructor Face Support	2022	172 undergraduates	a medium-sized university in the North-western United States.	1, 2	
E Byl, KJ Topping, K Struyven, N Engels	Social Integration in First-Year Undergraduates: The Role of Peer Learning	2022	Sixteen focus group sessions with 93 students and 37 individual face-to-face follow-up interviews were conducted	A Dutch speaking University in Belgium	2	
Caligiuri, Paula; DuBois, Cathy L. Z.; Lundby, Kyle; Sinclair, Elizabeth A.	Fostering International Students' Sense of Belonging and Perceived Social Support through a Semester-Long Experiential Activity	2020	N = 279	Midwest university, US	1, 2, 5	
K Camerato, A Clift, MN Golden...	What does "high-impact" mean in extracurricular experiences	2019	N=221 undergraduate students participated in activities... and then 27 took part in the research aspect (survey)	a large, public, land grant institution in the northeast region of the United States	2	

Carales, Vincent D.; Nora, Amaury	Finding Place: Cognitive and Psychosocial Factors Impacting Latina/o Students' Sense of Belonging	2020	4,217 Hispanic and White students	an institution located in the southwestern region of the United States	1, 2
J Carter, D Hollinsworth, M Raciti...	Academic 'place-making': fostering attachment, belonging and identity for Indigenous students in Australian universities	2018	Three focus groups with indigenous undergraduate students - missing data on numbers	two Australian universities	2
Cicognani, E., Pirini, C., Keyes, C. et al	Social Participation, Sense of Community and Social Well Being: A Study on American, Italian and Iranian University Students	2007	The sample includes 200 Italian, 125 American and 214 Iranian University students	American, Italian and Iranian universities	1, 2, 4
Cicognani, Elvira; Menezes, Isabel; Nata, Gil	University Students' Sense of Belonging to the Home Town: The Role of Residential Mobility	2011	203 university students	A large university in the North of Portugal	1, 2
TP Clements, KL Friedman, HJ Johnson...	"It made me feel like a bigger part of the STEM community": Incorporation of Learning Assistants Enhances Students' Sense of Belonging in a Large Introductory ...	2022	575 students across the two cohorts and control and treatment groups	Vanderbilt University, US	1, 2
E Cohen, J Viola	The role of pedagogy and the curriculum in university students' sense of belonging	2022	497 students	a highly selective, research-intensive university in central London, UK	1, 2
A Cook-Sather, K Seay	I was involved as an equal member of the community': how pedagogical partnership can foster a sense of belonging in Black, female students	2021	12 Black, female students	three US colleges	1, 2, 4, 5
L Cruz, E Grodziak	We Belong: A Collaborative Reflection on First-Year Student Engagement under COVID-19	2021	14 first-year undergraduate students	small campus of a large public university in the northeastern United States	2
N Curtin, AJ Stewart...	Fostering academic self-concept: Advisor support and sense of belonging among international and domestic graduate students	2013	841 students	a research university in the Midwestern United States	1, 2, 4
D Dias	The Higher Education Commitment Challenge: Impacts of Physical and Cultural Dimensions in the	2022	30 first-year electrical engineering students	a prestigious Portuguese university.	2, 5

	First-Year Students' Sense of Belonging				
Duran, Antonio; Dahl, Laura S.; Stipeck, Christopher; Mayhew, Matthew J.	A Critical Quantitative Analysis of Students' Sense of Belonging: Perspectives on Race, Generation Status, and Collegiate Environments	2020	7888 students	Multiple universities - who take part in the Assessment of Collegiate Residential Environments and Outcomes survey in the US	1, 2, 4
DP Fernández, MK Ryan, CT Begeny	Recognizing the diversity in how students define belonging: evidence of differing conceptualizations, including as a function of students' gender and ...	2023	36 UK university students	A mixture of UK universities - distinguished only by whether they are Russell Group or not	2, 4
RL Fisher, TL Machirori	Belonging, achievement and student satisfaction with learning: The role of case-based Socratic Circles	2021	n = 99 students	Swinburne University of Technology, Melbourne, Australia	2, 5
Friess, Erin; Lam, Chris	Cultivating a Sense of Belonging: Using Twitter to Establish a Community in an Introductory Technical Communication Classroom.	2018	undergraduate technical communication course students - 97 students completed both surveys	a large public institution, US	1, 2, 5
S Gieg	The impact of student organizations on sense of belonging for international students	2016	176 student responses (undergraduate international students)	Indiana University Bloomington, US	1, 2
EL van Gijn-Grosvenor, P Huisman	A sense of belonging among Australian university students	2020	N = 209 students (mostly new students) - all students invited to participate	Macquarie University in Sydney, Australia	2
Glass, Chris R.; Kociolek, Elizabeth; Wongtrirat, Rachawan; Lynch, R. Jason; Cong, Summer	Uneven Experiences: The Impact of Student-Faculty Interactions on International Students' Sense of Belonging	2015	40 international students (mixture of gender + level of study)	two major research universities: Tortuga State University and Central City Metropolitan University in the U.S	2, 4
C Graham	From belonging to being: Engaging with 'contexts of difference'	2022	18 master's students (postgraduate)	three Scottish universities, UK	2, 4
KW Guyotte, MA Flint, KS Latopolski	Cartographies of belonging: Mapping nomadic narratives of first-year students	2021	13 first-year students	University of Alabama, US	1, 2

BMK Hagerty, J Lynch-Sauer, KL Patusky...	Sense of belonging: A vital mental health concept	1992	2,500 articles in literature review - no details on focus group participants		1, 2, 5
A Harben, L Bix	Student Sense of Belonging in a Large, Introductory STEM Course	2019	164 chose to enrol in the study, 85 students completed enough to be involved in the final analysis	Michigan State University, US	1, 2, 4, 5
LJ Harrel-Hallmark, J Castles...	Sense of Belonging of New Members who are First-Generation College Students: A Single-Institution Qualitative Case Study	2022	9 students completed the survey and 7 students took part in focus groups	"Midwestern College", US	2, 4
T Heyd	Narratives of belonging in the digital diaspora: Corpus approaches to a cultural concept	2016	17 million tokens (messages) over a period of three years (2005 - 2008)		2, 5
D Holley, S Kane, G Volpe	My Ideal First Day': Implications for induction from a three (London) university project	2014	1346 first-year, first-semester students	Three London Universities, UK	1, 2
Hotchkins, Bryan K.; McNaughtan, Jon; García, Hugo A.	Black Community Collegians Sense of Belonging as Connected to Enrolment Satisfaction	2021	13464 black students	Data from multiple US community colleges	1, 2, 4
Hussain, M; Jones, J	Discrimination, diversity, and sense of belonging: Experiences of students of color	2021	N = 626	4-year PWI in the US	1, 2
Johnson, Dawn R.; Soldner, Mathew; Leonard, Jeannie Brown; Alvarez, Patty; Inkelas, Karen Kurotsuchi; Rowan-Kenyon, Heather; Longerbeam, Susan	Examining Sense of Belonging among First-Year Undergraduates from Different Racial/Ethnic Groups	2007	2,967 first-year students	A variety of universities in the US	1, 2, 4
J Jones, S Fleischer, A McNair...	The International Foundation Year and first year transition: building capital, evolving habitus, developing belonging, preparing for success	2020	25 first year, international students for interviews, 108 first year international students for the survey	A mixture of pre and post 1992 UK universities	2, 4

M Joubert, B Sibanda	Whose language is it anyway? Students' sense of belonging and role of English for Higher Education in the multilingual, South African context	2022	nine undergraduate and postgraduate Humanities	a South African university in the Free State, South Africa	2, 4
ER Kahu, HG Thomas...	A sense of community and camaraderie': Increasing student engagement by supplementing an LMS with a Learning Commons Communication Tool	2022	19 students	a New Zealand university	2
S Kane, D Chalcraft, G Volpe	Notions of belonging: First year, first semester higher education students enrolled on business or economics degree programmes	2014	1346 students new students across the 3 universities	3 UK universities	1, 2, 4
M Keating, A Rixon, A Perenyi	Deepening a sense of belonging	2020	380 students	Australian university	1, 2, 5
C Kepple, K Coble	Investigating potential influences of graduate teaching assistants on students' sense of belonging in introductory physics labs	2020	287 physics students	San Francisco State University (SFSU), US	1, 2
W Keyser, W Unus, J Harvey, SC Goodlett...	Empathy in action: Developing a sense of belonging with the pedagogy of 'real talk'	2022	462 student respondents	a regional comprehensive university in the United States	1, 2, 5
Knekta, Eva; McCartney, Melissa	What Can Departments Do to Increase Students' Retention? A Case Study of Students' Sense of Belonging and Involvement in a Biology Department	2018	10 biology students	Florida International University, US	1, 2
MW Knox, J Crawford, JA Kelder...	Evaluating leadership, wellbeing, engagement, and belonging across units in higher education: A quantitative pilot study	2020	46 students who completed all four questionnaires within the study	the University of Tasmania's Cradle Coast, Newnham, and Sandy Bay Campuses, Australia	1, 2
K Kuurne, A Vieno	Developing the Concept of Belonging Work for Social Research	2022	N/A		1, 2, 5
T Lähdesmäki, K Ahvenjärvi, K Hiltunen, S Jäntti...	Mapping the concept (s) of belonging	2014	147 studies published between 2012 and 2013 with 'belonging' supplied as a keyword by the author(s)		1, 2, 5
T Lähdesmäki, T Saresma, K Hiltunen...	Fluidity and flexibility of "belonging" Uses of the concept in contemporary research	2016	67 articles published in 2014 with 'belonging' supplied as a		2, 5

			keyword by the author(s)		
Strayhorn, Terrell	"Sentido de Pertenencia": A Hierarchical Analysis Predicting Sense of Belonging among Latino College Students	2008	589 Latino and White college students	A variety of 4-year institutions in the US	1, 2, 4
Levett-Jones T; Lathlean J; Higgins I; McMillan M	Staff-student relationships and their impact on nursing students' belongingness and learning.	2009	18 third year students	two Australian universities and one in the UK	2
Elizabeth Levin, Andrew Rixon and Maree Keating	How can a 'Sense of Belonging' inform your teaching strategy? Reflections from a core Business unit	2019	350 - 550 students enrolled each in of the two semesters when the intervention was rolled out	Melbourne University, Australia	1, 2, 5
Lewis, J. A., Mendenhall, R., Ojiemwen, A., Thomas, M., Riopelle, C., Harwood, S. A., & Browne Hunt, M.	Racial Microaggressions and Sense of Belonging at a Historically White University	2021	1710 students	University of Tennessee, US	1, 2, 4
X Liu, Y Yang, JW Ho	Students Sense of Belonging and academic Performance via online PBL: a case Study of a University in Hong Kong during quarantine	2022	44 students - pursuing electrical and electronic engineering majors	University of Hong Kong	2, 5
AKF Lui, MHM Poon, SC Ng	A Digital Storytelling Group Assignment for Fostering Sense of Belonging of First-Year Students	2018	36, 18 and 22 students in the three respective cohorts	China-based university	1, 2, 4, 5
Maestas, Ricardo; Vaquera, Gloria S.; Zehr, Linda Munoz	Factors Impacting Sense of Belonging at a Hispanic-Serving Institution	2007	421 students at a Hispanic-Serving institution (33% Hispanic, 58% White)	University of New Mexico, US	1, 2, 4
Malm, Rie H.; Madsen, Lene M.; Lundmark, Anders M.	Students' Negotiations of Belonging in Geoscience: Experiences of Faculty-Student Interactions When Entering University	2020	Missing data	Department of Geosciences, University of Oslo in Norway	2
Manaze, Mesfin; Ford, Angela	Campus Climate for Diversity and Students' Sense of Belonging in Ethiopian Public Universities	2021	458 students	eight Ethiopian public universities	1, 2
Maramba, Dina C.; Museus, Samuel D.	Examining the Effects of Campus Climate, Ethnic Group Cohesion, and Cross-Cultural Interaction on Filipino American Students'	2013	143 participants	US university	1, 2, 4

	Sense of Belonging in College				
Marksteiner T, Janke S, Dickhäuser O	Effects of a brief psychological intervention on students' sense of belonging and educational outcomes: the role of students' migration and educational background	2019	86 freshmen (first-year students)	German university	1, 2, 4, 5
R Masika, J Jones	Building student belonging and engagement: Insights into higher education students' experiences of participating and learning together	2016	11 unique students in total: 9 Business Management students in first focus group, 4 in the second (2 of which had also been in the first)	a university in the South of England, UK	2, 5
R Matheson, M Sutcliffe	Belonging and transition: An exploration of International Business Students' postgraduate experience	2018	52 international postgraduate business students	Cardiff University, UK	2, 4
H McCarthy, R Abelb, CC Tisdellc	Community in classrooms: Practical strategies to foster engineering students' sense of belonging	2021	~200 students completed one survey and ~240 students completed another - missing data on exact amounts	University of NSW, Australia	2
Means, Darris R.; Pyne, Kimberly B.	Finding My Way: Perceptions of Institutional Support and Belonging in Low-Income, First-Generation, First-Year College Students	2017	10 low-income first-generation students	a medium-sized private university in the Southeast, US	2, 4
Meehan, Catherine; Howells, Kristy	In Search of the Feeling of 'Belonging' in Higher Education: Undergraduate Students Transition into Higher Education	2018	530 students from five cohorts over a five-year period	Canterbury Christ Church University is based in the County of Kent, UK	2
Meeuwisse, M., Severiens, S.E. & Born, M.P	Learning Environment, Interaction, Sense of Belonging and Study Success in Ethnically Diverse Student Groups	2010	523 first year students from 4 universities	Netherlands	1, 2, 4
Middleton, Rebekkah; Fernandez, Ritin; Cutler, Natalie; Jans, Carley; Antoniou, Carolyn; Trostian, Baylie; Riley, Katherine	Students' perceptions of belonging in the School of Nursing at a regional university in Australia.	2021	201 students - nursing pre-registration programme	A large regional university in Australia	1, 2, 4, 5

G Morán-Soto, A Marsh, OI González Peña...	Effect of the COVID-19 Pandemic on the Sense of Belonging in Higher Education for STEM Students in the United States and Mexico	2022	88 Mexican and 139 U.S. engineering students	Mexican and US universities	2
HM Mulrooney, AF Kelly	The university campus and a sense of belonging: what do students think?	2020	37 students across 8 focus groups	A UK university (post-92)	2
LE Napper, M Munley Stone...	Capturing connections during COVID-19: Using photography to assess US college students' sense of belonging	2022	50 students	A private, US east-coast university	2
Newman, Christopher B.; Wood, J. Luke; Harris, Frank, III.	Black Men's Perceptions of Sense of Belonging with Faculty Members in Community Colleges	2015	364 Black/African American respondents	Multiple Community Colleges in the US	1, 2
S O'Shea	"Kids from here don't go to uni": Considering first in family students' belonging and entitlement within the field of higher education in Australia	2021	548 participants across both studies	2 Australian university studies	2, 4
O'Meara, KerryAnn; Griffin, Kimberly A.; Kuvaeva, Alexandra; Nyunt, Gudrun; Robinson, Tykeia	SENSE OF BELONGING AND ITS CONTRIBUTING FACTORS IN GRADUATE EDUCATION.	2017	1,533 graduate students	four public doctoral and comprehensive universities in Maryland, USA	1, 2, 4
O'Sullivan, Katriona; Bird, Niamh; Robson, James; Winters, Niall	Academic identity, confidence and belonging: The role of contextualised admissions and foundation years in higher education.	2019	62 students across the two institutions - 30 foundation year students and 32 contextual admissions students	two selective higher education institutions (HEIs) in England and Ire-land	1, 2, 4
Y Owusu-Agyeman	Intercultural relationships and students' sense of social connectedness in a South African university	2022	2026 students	South African University	1, 2
A Panicacci	Do the languages migrants use in private and emotional domains define their cultural belonging more than the passport they have?	2019	468 Italian migrants (321 females and 147 males) living in English speaking countries (UK, Ireland, US and English-speaking areas of Canada)		1, 2, 5
AB Pascale	"Co-existing lives": Understanding and	2018	15 graduate student participants	mid-sized public university in the US	2, 4

	facilitating graduate student sense of belonging				
S Peacock, J Cowan, L Irvine, J Williams	An exploration into the importance of a sense of belonging for online learners	2020	12 students	Scotland	2
C Picton, ER Kahu, K Nelson	Friendship supported learning—the role of friendships in first-year students' university experiences	2017	19 students	University of the Sunshine Coast, US	1, 2
Potts, Charlie	Seen and Unseen: First-Year College Students' Sense of Belonging during the COVID-19 Pandemic	2021	18 students (six in each of three focus groups)	A predominantly White, small, residential liberal arts institution in the US	2
Rainey, Katherine; Dancy, Melissa; Mickelson, Roslyn; Stearns, Elizabeth; Moller, Stephanie	Race and Gender Differences in How Sense of Belonging Influences Decisions to Major in STEM	2018	201 college seniors, primarily women and people of color	North Carolina, US	2, 4
B Read, L Archer, C Leathwood	Challenging cultures? Student conceptions of 'belonging' and 'isolation' at a post-1992 university	2003	175 students from 33 focus groups from a post-1992 university - mostly from 'working-class' backgrounds and many from minority ethnic backgrounds (UK context)		2
R Askarizad, S Rezaei Liapee...	The Role of Sense of Belonging to the Architectural Symbolic Elements on Promoting Social Participation in Students within Educational Settings	2021	Missing data	Tabriz Art University, Iran	2
S Rudman	The need to linger: Can we change everyday discourse to enhance belonging in higher education?	2022	600 first year English Language Studies	South African university	2
CAM Schmahl, J Nguyen	Exploring relationships between grit, belonging, institutional compassion, pandemic stress, and goal progress among emerging adult post-secondary students	2022	258 full-time undergraduate students	United States institution	1, 2
CD Slaten, ZM Elison, JY Lee...	Belonging on campus: A qualitative inquiry of Asian international students	2016	11 Asian international students	a large university in the Midwestern United States	2, 4

S Smith, S Watson	Experiences of belonging: A comparative case study between China-domiciled and UK-domiciled students	2022	17 Chinese and 16 UK finalist undergraduates	UK university	2, 4
JB Stephens, RS Morse	Enhancing sense of belonging and satisfaction among online students in multi-track public affairs programs: A case analysis of immersion courses	2022	Missing data on number that took part in the feedback questionnaire that was used for analysis	University of North Carolina, US	2, 5
Strayhorn, Terrell L.	Exploring the Impact of Facebook and Myspace Use on First-Year Students' Sense of Belonging and Persistence Decisions	2012	755 first-year students	large, predominantly White, public research university located in the south-eastern region of the United States	1, 2
Strayhorn, Terrell L.	Analyzing the Short-Term Impact of a Brief Web-Based Intervention on First-Year Students' Sense of Belonging at an HBCU: A Quasi-Experimental Study.	2021	115 students - the majority of which were Black / African American	Historically Black College or University (HBCU) in a southeastern state, US	1, 2, 5
C Tang, L Thyer, R Bye, B Kenny, N Tulliani, N Peel...	Impact of Online Learning on Sense of Belonging Among First Year Clinical Health Students during COVID-19: Student and Academic Perspectives	2022	179 first year students completed survey. 4 further students and 5 staff took part in focus groups	Australian University, Clinical Health Course	2, 4
I Thacker, V Seyranian, A Madva, NT Duong...	Social connectedness in physical isolation: Online teaching practices that support under-represented undergraduate students' feelings of belonging and ...	2022	43 undergraduate students	Hispanic Serving Institution (HSI) in the US	1, 2, 4
L Thomas	What works? Facilitating an effective transition into higher education	2013	Some sample details are missing from the example projects. Example 1: Mature students within a summer school. Example 2: up to 100 new students within a Chemical Engineering Department. Example 3:	Variety of UK universities - University of Hull, Newcastle University and University of Sunderland are given within examples	2

			Department of Psychology students		
LSCA Thompson	Moving beyond the limits of disability inclusion: using the concept of belonging through friendship to improve the outcome of the social model of disability	2016	N/A		2, 5
Y Tibbetts, SJ Priniski, CA Hecht, GD Borman...	Different institutions and different values: Exploring first-generation student fit at 2-year colleges	2018	18 faculty staff and 438 students	US (2-year colleges in a Midwestern state)	1, 2, 5
A Vaccaro, BM Newman	Development of a sense of belonging for privileged and minoritized students: An emergent model	2016	51 first-year college students	mid-sized public university in the Northeast, US	1, 2, 4
JK Viola	Belonging and global citizenship in a STEM university	2021	32 students took part in these interviews	Imperial College London, UK	2
CL Williams, Q Hirschi, CS Hulleman...	Belonging in STEM: Growth mindset as a filter of contextual cues	2022	957 STEM students	selective public university in the mid-Atlantic region of the United States	1, 2
M Wilton, E Gonzalez-Niño, P McPartlan...	Improving academic performance, belonging, and retention through increasing structure of an introductory biology course	2019	1029 students in the traditional course and 583 in the intervention course	US university	1, 2, 5
York, Travis T.; Fernandez, Frank	The Positive Effects of Service-Learning on Transfer Students' Sense of Belonging: A Multi-Institutional Analysis	2018	494 transfer students	US	1, 2
A Zengilowski, J Lee, RE Gaines, H Park, E Choi...	The collective classroom "we": The role of students' sense of belonging on their affective, cognitive, and discourse experiences of online and face-to-face ...	2023	10 - Students on an educational psychology course (9 female and 1 male)	a U.S. public university	1, 2, 4
Zhang, Shaoan; Li, Chengcheng; Unger, Daniel L.	International Doctoral Students' Sense of Belonging, Mental Toughness, and Psychological Well-Being	2022	3 international doctoral students who are non-native English speakers, studying in the field of Education	US university	2
MY Ahn, HH Davis	Students' sense of belonging and their socio-economic status in higher	2023	380 students	Bangor University, Wales	1, 3, 4

	education: a quantitative approach				
MY Ahn, HH Davis	Sense of belonging as an indicator of social capital	2020	806 students	Bangor University, Wales	1, 3
S Ali, S Amat, MI Mahmud, MHZ Abidin...	Resilience and sense of belonging among medical students in a Malaysian public university	2018	137 year-three medical students	Universiti Kebangsaan Malaysia	1, 3, 4
K Booker	Connection and commitment: How sense of belonging and classroom community influence degree persistence for African American undergraduate women.	2016	six African American female college students	a public institution in a Southern coastal city, US	3, 4
NM Boyd, X Liu, K Horissian	Impact of community experiences on student retention perceptions and satisfaction in higher education	2022	408 students	not-for-profit mid-sized university in Eastern US	1, 3
Chen, Susie; Binning, Kevin R.; Manke, Kody J.; Brady, Shannon T.; McGreevy, Erica M.; Betancur, Laura; Limeri, Lisa B.; Kaufmann, Nancy	Am I a Science Person? A Strong Science Identity Bolsters Minority Students' Sense of Belonging and Performance in College.	2020	Ns = 368, 639	large university, US	1, 3, 4, 5
Coetzee, Tanya; Pryce-Jones, Katie; Grant, Leigh; Tindle, Richard	Hope Moderates the Relationship between Students' Sense of Belonging and Academic Misconduct	2022	234 university students	"Participants were studying across 65 higher educational institutions within 12 countries, including Australia"	1, 3
S Cwik, C Singh	Students' sense of belonging in introductory physics course for bioscience majors predicts their grade	2022	814 students	A large public university in the U.S.	1, 3, 4
GM Davis, MB Hanzsek-Brill...	Students' sense of belonging: The development of a predictive retention model	2019	837 domestic students in pilot study	US university	1, 3
J De Beer, U Smith, C Jansen	Situated' in a separated campus—Students' sense of belonging and academic performance: A case study of the experiences of students during a higher education ...	2009	267 students were invited to complete questionnaires - lack of clarity if all were included in the sample	South African University	3
JM Dopmeijer, CAE Schutgens, FR	The role of performance pressure, loneliness and	2022	3,134 university students	Netherlands	1, 3

Kappe, N Gubbels...	sense of belonging in predicting burnout symptoms in students in higher education				
A Fink, RF Frey, ED Solomon	Belonging in general chemistry predicts first-year undergraduates' performance and attrition	2020	N = 739 first year students in chemistry and biology courses	US universities	1, 3, 4
Tierra M. Freeman, Lynley H. Anderman & Jane M. Jensen	Sense of Belonging in College Freshmen at the Classroom and Campus Levels	2010	238 first year students	Southeastern US universty	1, 3
Froehlich, Laura; Brokjøb, Lise Gulli; Nikitin, Jana; Martiny, Sarah E.	Integration or isolation: Social identity threat relates to immigrant students' sense of belonging and social approach motivation in the academic context.	2022	total sample N = 252	University students in Norway	1, 3, 4
Cari Gillen-O'Neel	Sense of Belonging and Student Engagement: A Daily Study of First- and Continuing-Generation College Students	2021	First- and continuing-generation college students (N = 280)	five colleges in Minnesota, US	1, 3, 4
M Gopalan, ST Brady	College students' sense of belonging: A national perspective	2020	(N = 23,750)	US university	3, 4
M Grüttner	Belonging as a resource of resilience: Psychological wellbeing of international and refugee students in study preparation at German higher education institutions	2019	N = 904	German university	1, 3, 4
V Korhonen, M Mattsson, M Inkinen, A Toom	Understanding the multidimensional nature of student engagement during the first year of higher education	2019	sample (n = 2422) of first-year students	Universities in Finland	1, 3
J Maluenda-Albornoz, J Berríos-Riquelme...	Perceived Social Support and Engagement in First-Year Students: The Mediating Role of Belonging during COVID-19	2022	798 students	Chilean university	1, 3
R Matheson, M Sutcliffe	Creating belonging and transformation through the adoption of flexible pedagogies in masters level international business management students	2017	52 international postgraduate students in course - 18 took part in evaluative focus groups + 4 in additional interviews	UK university	3
Mendoza, Pilar; Suarez, Juan Diego;	Sense of Community in Student Retention at a Tertiary Technical Institution in Bogotá.	2016	Missing data	Bogota university	3, 4

Bustamante, Eileen					
I Pownall	Student identity and group teaching as factors shaping intention to attend a class	2012	117 business students	UK university	1, 3
MB Russell, LSW Head...	The COVID-19 Effect: How Student Financial Well-Being, Needs Satisfaction, and College Persistence has Changed	2022	159 students	University of Maryland Eastern Shore, US	1, 3
Soria, Krista M.; Stubblefield, Robin	Knowing Me, Knowing You: Building Strengths Awareness, Belonging, and Persistence in Higher Education	2015	n = 1,421 in the class	a large, public research-intensive university located in the Midwest, US	1, 3, 5
VA Sotardi	On institutional belongingness and academic performance: mediating effects of social self-efficacy and metacognitive strategies	2022	1480 students	one higher education institution in New Zealand	1, 3
Stebleton, Michael J.; Soria, Krista M.; Huesman, Ronald L.	First-Generation Students' Sense of Belonging, Mental Health, and Use of Counseling Services at Public Research Universities.	2014	n = 58,017	A variety of US universities	1, 3, 4
D Wilson, D Jones, F Bocell, J Crawford, MJ Kim...	Belonging and academic engagement among undergraduate STEM students: A multi-institutional study	2015	n = 1498	five geographically and culturally distinct institutions in the United States	1, 3
Won, Sungjun; Hensley, Lauren C.; Wolters, Christopher A.	Brief Research Report: Sense of Belonging and Academic Help-Seeking as Self-Regulated Learning	2019	N = 307	US university	1, 3
Aelenei, Cristina; Martinot, Delphine; Sicard, Alyson; Darnon, Céline	When an academic culture based on self-enhancement values undermines female students' sense of belonging, self-efficacy, and academic choices.	2019	Various across the studies: 1: 115 engineering students; 2: 234 students French engineering students; 3: 97 female students	Various	4
Allen, Taryn Ozuna; Thompson, Melissa Laird; Collins, Shalun	How Do Latinx Dual Credit Earners Describe Their Sense of Belonging in Engineering Programs?	2022	10 Latinx students	Texas, US university	4
N Araújo, D Carlin, B Clarke, L Morieson...	Belonging in the first year: A creative discipline cohort case study.	2014	Missing data	School of Media and Communication at RMIT	5

					University, Australia	
Barnes, Rebecca; Kelly, Alison F.; Mulrooney, Hilda M.	Student Belonging: The Impact of Disability Status within and between Academic Institutions	2021	445 students		Two UK universities	1, 4
A Barringer, LM Papp, P Gu	College students' sense of belonging in times of disruption: prospective changes from before to during the COVID-19 pandemic	2022	252 (66.7% female) first- and second-year college students		large public university in the United States	4
Bettencourt, Genia M.	"I Belong Because It Wasn't Made for Me": Understanding Working-Class Students' Sense of Belonging on Campus	2021	24 working-class students		Two public research universities, US	1, 4
M Bruce, G Gangoli, L Mates, AS Mullican...	Peer-mentoring in a pandemic: an evaluation of a series of new departmental peer-mentor schemes created to support student belonging and transition during COVID ...	2022	100 students (mentees) completed the questionnaire - one focus group (missing data on numbers) with mentors		Durham University, UK	5
TE Burnette	Narrative of Difference: The Effects of Social Class on Belonging at Liberal Arts Colleges	2018	Missing data		Grinnell College, Iowa, US	4
E Cena, S Burns, P Wilson	Sense of belonging and the intercultural and academic experiences among international students at a university in Northern Ireland	2021	16 international students		A university in Northern Ireland, UK	4
Cole, Darnell	Understanding Muslim College Students' Sense of Belonging and Mattering at HBCUs	2021	160 Muslim college students		A variety of HBCUs in the US	1, 4
A Cook-Sather, C Des-Ogugua...	Articulating identities and analyzing belonging: A multistep intervention that affirms and informs a diversity of students	2018	Missing data		US	5
M De Sisto, A Huq, G Dickinson	Sense of belonging in second-year undergraduate students: the value of extracurricular activities	2022	50 second-year students, 8 of which took part in the follow-up focus group		School of Management at RMIT University, Australia	5
B Dereli	Belonging through higher education: The case of Syrian youth in Turkey	2022	49 Syrian university students		Gaziantep University, Turkey	4
DK DiGiacomo, EL Usher, J Han, JM Abney...	The benefits of belonging: Students' perceptions of their online learning experiences	2023	undergraduate students in the United States of		USA	1, 4

			America (N = 4,544)		
S Erb, MTB Drysdale	Learning attributes, academic self-efficacy and sense of belonging amongst mature students at a Canadian university	2017	99 Undergraduate students	large Canadian research-intensive university	1, 4
K Foxx	Cultivating a Sense of Belonging: Black Students at a Predominantly White Institution.	2021	Five Black students	US University	1, 4
Mwangi, Chrystal A. George	Exploring Sense of Belonging among Black International Students at an HBCU	2016	10 Black international students	HBCU in the US	4
K Quintin Graves	The Relationship Between Maslow's Hierarchy of Needs and Persistence in College	2019	174 undergraduate students across two universities	Huntington University and Utah Valley University in the US	1
E Heron	Friendship as method: reflections on a new approach to understanding student experiences in higher education	2020	10 pairs of students (20 in total)	a large university in the North of England, UK	5
Hoffman, M., Richmond, J., Morrow, J., & Salomone, K.	Investigating "sense of belonging" in first-year college students	2016	12 non-learning community focus groups. 205 students involved in the pre-test	University of Rhode Island (URI), US	1
DG Holland Zahner, RP Harper	Validation of Belonging among Underrepresented Undergraduates in STEM Majors: Comparison of Former Transfer and non-Transfer Students	2022	48 students in total (former transfer students (n = 23) and half FTIC students (n = 25))	Three US universities	4
Holloway-Friesen, Holly	Culture and Religiosity: Contributors to Asian American Graduate Students' Belonging	2018	203 Asian American graduate university students	US university	4
Clive Hunt, Bethan Collins, Alex Wardrop, Maggie Hutchings, Vanessa Heaslip & Colin Pritchard	First- and second-generation design and engineering students: experience, attainment and factors influencing them to attend university	2017	N = 132; final year students in engineering programmes	UK university (post-92)	1, 4
Hunter, Carla D.; Case, Andrew D.; Harvey, I. Shevon	Black College Students' Sense of Belonging and Racial Identity	2019	13 Black students	US university	4
N Islam, L Cingranelli	Sense of Belonging of LGBTQ+, Racial Minority, and Religiously Affiliated	2022	94 participants	Binghamton University, US	1, 4

	College Students at Binghamton University				
J Kang, K Hwang	Belonging otherwise: Chinese undergraduate students at South Korean universities	2022	2 Chinese international undergraduate students living in Korea	Korea	4
E Knehta, K Chatzikyriakidou...	Evaluation of a questionnaire measuring university students' sense of belonging to and involvement in a biology department	2020	Spring 2018 (n = 201) and Fall 2018 (n = 737) semesters	University in the south-eastern United States	1
P Kreniske, CA Mellins, E Shea, K Walsh...	Associations Between Low-Household Income and First-Generation Status With College Student Belonging, Mental Health, and Well-Being	2022	N=1671 undergraduates	Two highly-selective US institutions	1, 4
Lau, Jared; Garza, Tiberio; Garcia, Hugo	International Students in Community Colleges: On-Campus Services Used and Its Affect on Sense of Belonging	2018	6,043 international students	A variety of US community colleges	1, 4
Leibowitz, Justin B.; Lovitt, Charity Flener; Seager, Craig S.	Development and Validation of a Survey to Assess Belonging, Academic Engagement, and Self-Efficacy in STEM RLCs	2020	304 students	Three US universities	1
Y Li, C Singh	Inclusive learning environments can improve student learning and motivational beliefs	2022	1045 students	a large public university in the U.S.	1
LA Lim, A Atif, I Farmer	Made good connections': Amplifying teacher presence and belonging at scale through learning design and personalised feedback	2022	101 students in an online postgraduate subject in the IT discipline. 5 took part in focus groups, not clear how many completed the questionnaire	Australian University	5
Heather Stuart, Alyson Mahar	Conceptualizing belonging	2013	40 articles - published between 1990 and 2011 (English language papers only)		5
McClure, Kevin; Ryder, Andrew J.	The Costs of Belonging: How Spending Money Influences Social Relationships in College	2017	426 students (UG)	US university	4

PJ Moore-Jones	... segregation, sense of belonging, and social support: An inquiry into the practices and perceptions of Chinese graduate students at an American Mid-Atlantic University	2022	17 Chinese mainland graduate students	Mid-Atlantic University in the United States	4
EA Moschella, VL Banyard	Short measures of interpersonal and university mattering: Evaluation of psychometric properties	2021	N = 180 for first study, then 447 students for second	US University (not absolutely confirmed)	1
B O'Farrell, R Wu	Rethinking Educational Space (s): Exploring the Impact of Co-Curricular Programming on Undergraduate Belonging, Career Exploration, and Interprofessional ...	2020	259 healthcare living learning program (LLP) students	Kentucky university, US	1, 5
Oxendine, Symphony; Taub, Deborah J.	Examining the Impact of Institutional Integration and Cultural Integrity on Sense of Belonging for Native Students at Non-Native Colleges and Universities	2021	154 Native students	Multiple universities, US	1, 4
S Parkes	Fostering a sense of belonging: Supporting the early formation of student identity as successful learners in higher education	2014	15 students	Newman University, Birmingham, UK	5
HV Pesonen, JH Nieminen, J Vincent...	A socio-political approach on autistic students' sense of belonging in higher education	2020	12 autistic students and graduates	University in the Netherlands	4
H Pokorny, D Holley, S Kane	Commuting, transitions and belonging: the experiences of students living at home in their first year at university	2017	three first-year Business and Economics students	A variety of London universities, UK	4
KA Renn	Patterns of situational identity among biracial and multiracial college students	2000	24 students	three New England institutions, US	4
J Shaheed, L Kiang	A need to belong: the impact of institutional diversity ideologies on university students' belonging and interracial interactions	2021	345 students: "White students (n = 234) and students of colour (n = 111) from a predominantly white institution (PWI)"	A predominately white university, South-eastern, US	1, 4, 5
Christopher D. Slaten, Zachary M. Elison, Eric D. Deemer, Hayley A. Hughes & Daniel A. Shemwell	The Development and Validation of the University Belonging Questionnaire	2017	N = 421 in stage one and N = 290 for further testing of the scale	a large Midwestern university in the United States	1

Stalmirska, Anna Maria; Mellon, Vicky	"It feels like a job ..." Understanding commuter students: Motivations, engagement, and learning experiences.	2022	14 students	University in the UK	4
Tachine, Amanda R.; Cabrera, Nolan L.; Yellow Bird, Eliza	Home Away From Home: Native American Students' Sense of Belonging During Their First Year in College.	2016	(n = 24)	Southwest University, US	4
Professor Liz Thomas Michael Hill Dr Joan O' Mahony Professor Mantz Yorke	Supporting student success: strategies for institutional change What Works? Student Retention & Success programme	2017	The belonging scale was administered 7 times and received 17,242 responses	13 UK universities	5
L Thomas	# Ibelong: Towards a sense of belonging in an inclusive learning environment	2021	N/A	Erasmus University Rotterdam (Netherlands), with Edge Hill University (UK), Osnabrueck University (Germany) and The University of Porto (Portugal)	5
MD Toland, JEM Lingat...	The Brief Course Belonging Scale: Developing a Measure of Postsecondary Students' Course-Level Sense of Belonging Across Online and Face-To-Face Modalities	2022	305 students	large, US south-eastern university	1
Tovar, E., & Simon, M. A.	Factorial Structure and Invariance Analysis of the Sense of Belonging Scales	2010	916 students	master's-level university in the West Coast, US	1
Turner, Marianne; Fozdar, Farida Tilbury	Negotiating 'Community' in Educational Settings: Adult South Sudanese Students in Australia.	2010	40 south Sudanese students were observed... 21 completed interviews	Australian learning environments	4
A Vaccaro, BM Newman	A sense of belonging through the eyes of first-year LGBPQ students	2017	eight self-identified LGBPQ students	a mid-sized public research university in the Northeast, US	4
HH Yildirim, J Zimmermann...	The importance of a sense of university belonging for the psychological and academic adaptation of international students in Germany	2021	3837 international students in German higher education institutions	Germany - multiple institutions	1, 4
Yorke, Mantz	The development and initial use of a survey of student 'belongingness', engagement and self-	2016	232 first-year students in first pilot. 709 first-year students in	Post-92 universities in the UK	1

confidence in UK higher
education.

four varied
universities for
second stage
analysis

Table 2.2.1 – Studies included within systematised, critical review of student belonging literature

Appendix 2.3 – Belonging scales found in student belonging literature review

This appendix is cited within Chapter 2 – Literature review in the section on the [critical review of student belonging literature](#), and also at the [end of that chapter](#).

Scale name	# Items	Developed by	Used by
Psychological Sense of School Membership Scale	18	Goodenow, 1993 and adapted by Zumbunn et al., 2014	Freeman et al., 2007; Tao et al., 2008; Holley et al., 2014; Kane et al., 2014; Zumbunn et al., 2014; Buskirk-Cohen and Plants, 2019; Harben and Bix, 2019; O'Sullivan et al., 2019; Abbasi and Hadi, 2022; Gillen-O'Neel, 2021; Booker et al., 2022; Clements et al., 2022; Coetzee et al., 2022; Thacker et al., 2022; Zengilowski, 2023
Sense of Belonging Instrument-Psychological (SOBI-P)	18	Hagerty and Patusky, 1995 and adapted by Johnson et al., 2007	Johnson et al., 2007; Gieg, 2016; Ali et al., 2018; Friess and Lam, 2018; Leibowitz et al., 2020; Shaheed and Kiang, 2021; Froehlich et al., 2022
Perceived Cohesion Scale	6	Bolden and Hoyle, 1990 and adapted by Hurtado et al., 1997	Hurtado et al., 1997; Hausmann et al., 2007; Maramba and Museus, 2013; Erb and Drysdale, 2017; Lewis et al., 2021; Oxendine and Taub, 2021; Yildirim and Zimmermann, 2021
Sense of Belonging Scale	26	Hoffman et al., 2002 and adapted by Tovar and Simon, 2010	Tovar and Simon, 2010; Hoffman et al., 2016; Holloway-Friesen, 2019; Wilton et al., 2019; Schmahl and Nguyen, 2022
Classroom Community Scale	20	Rovai, 2002	Friess and Lam, 2018; Levin et al., 2019; Keating et al., 2020; DiGiacomo et al., 2023
Survey of Student Belongingness	6	Yorke, 2016 adapted by Imperial College London	Yorke, 2016; Barnes et al., 2021; Cohen and Viola, 2022; Tang et al., 2022
College Mattering Scale	34	Tovar et al., 2009	Tovar and Simon, 2010; Lui et al., 2018; Cole, 2021
Need to Belong scale	10	Baumeister and Leary, 1995 and adapted by Leary et al., 2013	Strayhorn, 2012; Veldman et al., 2023

Items of teacher and peer interaction scales	28	Meeuwisse et al., 2010	Meeuwisse et al., 2010; Dopmeijer et al., 2022
Sense of Community Index	12	Chipuer and Pretty, 1999	Cicognani et al., 2007; Cicognani et al., 2021
Sub-set of Campus Climate and Diversity scale	3	Locks et al., 2008	Maestas et al., 2007; Owusu-Agyeman, 2022
University Belonging Questionnaire (UBQ)	24	Slaten et al., 2018	Slaten et al., 2018; Middleton et al., 2021
Needs Satisfaction Inventory	50	Lester, 1990	Quintin Graves, 2019; Russell and Head, 2022
Sense of academic fit	17	Walton and Cohen, 2007	Chen et al., 2020; Williams et al., 2022
Unified Measure of University Mattering	15	France, 2011	Moschella and Banyard, 2021
College Students' Sense of Belonging Scale	34	Ingram, 2012	Islam and Cingranelli, 2022
Measure of Belonging in Youth Development Programs	5	Anderson-Butcher and Conroy, 2002	Knox, 2020
Collegiate Psychological Sense of Community (PSC) scale	14	Lounsbury and De Neui, 1996	Wilson et al., 2015
Student Belonging Scale	6	Dahill-Brown & Jayawickreme, 2016	Brunsting et al., 2019
Sense of Belonging to Math Scale	24	Good et al., 2012	Froehlich et al., 2022
The Brief Sense of Community Scale (BSCS)	8	Peterson et al., 2007	Boyd et al., 2022
Inclusion of the in-group in the self-measure	8	Aron et al., 1992	Grüttner, 2019
Social Connectedness Scale	8	Lee and Robbins, 1995	Won et al., 2019
DeSBI (Departmental Sense of Belonging and Involvement)	20	Knekta et al., 2020	Knekta et al., 2020

Organizational Identification Questionnaire	25	Cheney, 1982	Burk and Pearson, 2022
Brief Course Belonging Scale (BCBS)	11	Toland and Lingat, 2022	Toland and Lingat, 2022
Connected classroom climate inventory	18	Dwyer et al., 2004	DiGiacomo et al., 2023
Simple University Belonging Scale	9	Novosel-Lingat, 2020	DiGiacomo et al., 2023
Sub-set of wider student experience / engagement scale			Strayhorn, 2008; Stebleton et al., 2014; Newman et al., 2015; O’Meara et al., 2017; Lau et al., 2018; York and Fernandez, 2018; Korhonen et al., 2019; Marksteiner et al., 2019; Kepple and Coble, 2020; Cole, 2021; Shaheed and Kiang, 2021; Cohen and Viola, 2022; Pedler et al., 2022
Combinations of existing scales			Wilson et al., 2015; Friess and Lam, 2018; Fink et al., 2020; Leibowitz et al., 2020; Barnes et al., 2021; Cole, 2021; Gillen-O’Neel, 2021; Froehlich et al., 2022; Kreniske et al., 2022; Luo et al., 2022; Owusu-Agyeman, 2022; DiGiacomo et al., 2023
Bespoke scales			Pownall, 2012; Curtin et al., 2013; Hunt et al., 2017; Tibbetts et al., 2018; Davis et al., 2019; Ahn and Davis, 2020; Caligiuri et al., 2020; Carales and Nora, 2020; Duran et al., 2020; Murphy et al., 2020; Hotchkins et al., 2021; Hussain and Jones, 2021; Manaze and Ford, 2021; McCarthy et al., 2021; Strayhorn, 2021; Ahn and Davis, 2022; Blignaut et al., 2022; Cwik and Singh, 2022; Keyser et al., 2022; Kreniske et al., 2022; Li and Singh, 2022; Maluenda-Albornoz and Berríos-Riquelme, 2022; Gopalan et al., 2022; Sotardi, 2022; Taylor et al., 2022; Versteeg et al., 2022; Ahn and Davis, 2022

Table 2.3.1 – Belonging scales used within studies that were included in the systematised critical review of student belonging literature

Appendix 2.4 – Factors that affect students’ sense of belonging

This appendix is cited within Chapter 2 – Literature review in the section on the [critical review of student belonging literature](#), and also at the [end of that chapter](#).

Factors	Studies	Significance of relationship	Degree of replication	Positive or Negative	Theme
Informal interactions with peers on the course	Hurtado et al., 1997; Hausmann et al., 2007; Meeuwisse et al., 2010; Thomas, 2012; Masika and Jones, 2016; Vaccaro and Newman, 2016a; Knekta and McCartney, 2018; Kepple and Coble, 2020; Cruz and Grodziak, 2021; Thacker et al., 2022; Kahu and Thomas, 2022; Luo et al., 2022; Stephens and Morse, 2022	Significant connection	Many replications		Building relationships with peers
Involvement in extra-curricular groups	Hurtado et al., 1997; Maestas et al., 2007; Strayhorn, 2012; Kane et al., 2014; Greg, 2016; Vaccaro and Newman, 2016; Camerato et al., 2019; Duran et al., 2020; Cruz and Grodziak, 2021; Viola, 2021; Cohen and Viola, 2022; Ahn and Davis, 2022; Byl et al., 2022; Harrel-Hallmark and Castles, 2022	Significant connection (although not always)	Many replications		Building relationships with peers
Friends outside of the course	Slaten et al., 2016; Picton et al., 2017; Meehan and Howells, 2018; Rainey et al.,	No significance established	Many replications		Building relationships with peers

	2018; Russell and Jarvis, 2019; Jones et al., 2018; van Gijn-Grosvenor and Huisman, 2020; Kahu et al., 2020; Cohen and Viola, 2022; Rudman, 2022				
Welcome and orientation activities that facilitate interaction	Slaten et al., 2016; Johnson et al., 2007; Cruz and Grodziak, 2021	Significant predictive connection	Little replication		Building relationships with peers
Living in halls of residence	Maestas et al., 2007; Strayhorn, 2008; Strayhorn, 2012; Means and Pyne, 2017; Duran et al., 2020	Significant connection (although not always)	Many replications		Building relationships with peers
Working together with peers through a crisis (pandemic)	Tang et al., 2022	No significance established	No replication		Building relationships with peers
Part-time job	Tao et al., 2008	Significant connection	No replication	Negative	Competing commitments
Use of social media networking sites	Strayhorn, 2012	Significant connection	No replication	Negative	Competing commitments
Choice of uni within admissions process	Kane et al., 2014	Significant connection	No replication		Competing commitments
Financial worry	Carales and Nora, 2020	Significant connection	No replication	Negative	Competing commitments
Experience of financial hardship	Carales and Nora, 2020; Taylor et al., 2022	Significant connection	Some replication	Negative	Competing commitments
Lack of physical presence on campus	Mulrooney and Kelly, 2020	Significant connection	No replication	Negative	Competing commitments
Group work and experiential learning	Masika and Jones, 2016; Lui et al., 2018; Matheson and Sutcliffe, 2018; Harben and Bix, 2019; Wilton et al., 2019; Caligiuri et al., 2020; Carales and Nora, 2020; Gijn-Grosvenor and Huisman, 2020;	Significant predictive connection (mostly)	Many replications		Course delivery that connects

	Fisher and Machirori, 2021; Rudman, 2022; Thacker et al., 2022				
Organisation of classes that encourages students to mix	Glass et al., 2015; Knekta and McCartney, 2018	No significance established	Some replication		Course delivery that connects
Transition periods	Russell and Jarvis, 2019; Tang et al., 2022	No significance established	Some replication	Negative	Feeling unsupported through change
Unclear expectations	Read et al., 2003; Graham, 2022; Zhang et al., 2022	No significance established	Multiple replications	Negative	Feeling unsupported through change
Jumps in academic workload	Meehan and Howells, 2018; Jones et al., 2018	No significance established	Some replication	Negative	Feeling unsupported through change
Feeling overwhelmed and stressed	Carales and Nora, 2020	Significant connection	No replication	Negative	Feeling unsupported through change
Time spent within a community	Cicognani et al., 2011	Significant connection	No replication		Fostering of a growth mindset
A sense of agency / ability to contribute	Cicognani et al., 2011	Significant connection	No replication		Fostering of a growth mindset
Activities addressing potential barriers to belonging	Marksteiner et al., 2019; Murphy et al., 2020; Strayhorn, 2021	Significant predictive connection	Multiple replications		Fostering of a growth mindset
Self-reflective activities	Knox et al., 2020; Cook-Sather and Seay, 2021; Rudman, 2022	Significant connection	Little replication		Fostering of a growth mindset
Grit / resilience	Buskirk-Cohen and Plants, 2019; Versteeg et al., 2022	Significant connection	Some replication		Fostering of a growth mindset
Online course devliery being seen as engaging	Bignaut et al., 2022	Significant connection	No replication		High value placed on studies
Motivation for learning	Strayhorn, 2012; Rainey et al., 2018; Abbasi et al., 2021; Pedler et al., 2022	Significant connection	Multiple replications		High value placed on studies and self

Confidence and competence as a learner	Thomas, 2012; Slaten et al., 2016; Knekta and McCartney, 2018; Rainey et al., 2018; Kepple and Coble, 2020; O'Shea, 2020; Thacker et al., 2022	Significant connection	Multiple replications		High value placed on studies and self
Course experience relevant to identity and future goals	Thomas, 2012; Slaten et al., 2016; Rainey et al., 2018	No significance established	Some replication		High value placed on studies and self
Needing to self-edit how you behave	Joubert and Sibanda, 2022	No significance established	No replication	Negative	Inclusive institutional culture that competently addresses diversity
Institutional culture that links with own values	Read et al., 2003; van Gijn-Grosvenor and Huisman, 2020; Viola, 2021	No significance established	Multiple replications		Inclusive institutional culture that competently addresses diversity
Having pride for the university and its reputation	Cohen and Viola, 2022	No significance established	No replication		Inclusive institutional culture that competently addresses diversity
Welcoming and inclusive atmosphere of the university	Maramba and Museus, 2013; Slaten et al., 2016; Vaccaro and Newman, 2016a; Matheson and Sutcliffe, 2018; Meehan and Howells, 2018; van Gijn-Grosvenor and Huisman, 2020	Significant connection	Many replications		Inclusive institutional culture that competently addresses diversity
Trust in their university	Williams et al., 2022	Significant connection	No replication		Inclusive institutional culture that competently addresses diversity
Spaces where students feel comfort and safety	Guyotte et al., 2019	No significance established	No replication		Inclusive institutional culture that competently

					addresses diversity
Microaggressions and experiencing discriminatory behaviour	O'Meara et al., 2017; Carales and Nora, 2020; Hussain and Jones, 2021; Lewis et al., 2021	Significant connection	Multiple replications	Negative	Inclusive institutional culture that competently addresses diversity
Stereotyping / poor inclusivity from academic staff	Newman et al., 2015; Kahu et al., 2020; Keating et al., 2020	Significant predictive connection	Multiple replications	Negative	Inclusive institutional culture that competently addresses diversity
Feeling positively about diversity	Manaze and Ford, 2021; Owusu-Agyeman, 2022	Significant connection	Some replication		Inclusive institutional culture that competently addresses diversity
Involvement in campus cultural and diversity activities	Manaze and Ford, 2021; Owusu-Agyeman, 2022	Significant connection (although not always)	Some replication		Inclusive institutional culture that competently addresses diversity
Displays of positivity towards diversity issues	Maestas et al., 2007; Carter et al., 2017; Hussain and Jones, 2021; Keyser et al., 2022	Significant predictive connection	Some replication		Inclusive institutional culture that competently addresses diversity
Seeing students "like myself"	Read et al., 2003; Pascale, 2018; Russell and Jarvis, 2019; Kahu et al., 2022	No significance established	Multiple replications		Inclusive institutional culture that competently addresses diversity
Connecting with people from different backgrounds	Strayhorn, 2008; Baleria, 2019; Brunsting et al., 2019; Hussain and Jones, 2021; Viola, 2021	Significant predictive connection	Some replication, but mainly Qual		Inclusive institutional culture that competently addresses diversity
University branded gifts	Hausmann et al., 2007	Significant predictive connection	No replication		Inclusive institutional culture that competently addresses diversity

Communications that emphasises mattering	Hausmann et al., 2007	Significant predictive connection	No replication	Inclusive institutional culture that competently addresses diversity
Interactions and relationships with academic staff	Hurtado et al., 1997; Hausmann et al., 2007; Meeuwisse et al., 2010; Thomas, 2012; Kane et al., 2014; Newman et al., 2015; Glass et al., 2015; O'Meara et al., 2017; Knekta and McCartney, 2018; Meehan and Howells, 2018; Russell and Jarvis, 2019; Jones et al., 2018; Kahu et al., 2020; Brodie and Osowska, 2021; Thacker et al., 2022; Zhang et al., 2022; Luo et al., 2022; Smith and Watson, 2022	Significant connection (although not always)	Many replications	Mattering to academic staff
Friendly, interested and inclusive staff	Holley et al., 2014; Newman et al., 2015; Glass et al., 2015; Buskirk-Cohen and Plants, 2019; Cook-Sather and Seay, 2021; McCarthy et al., 2021	Significant connection	Many replications	Mattering to academic staff
Staff caring about students' goals	Maestas et al., 2007; Glass et al., 2015	Significant connection	Some replication	Mattering to academic staff
Staff being accessible	Glass et al., 2015; Carter et al., 2017; Blignaut et al., 2022; Zhang et al., 2022	Significant connection (although not always)	Multiple replications	Mattering to academic staff
Staff being competent in teaching delivery	Blignaut et al., 2022	No significance established	No replication	Mattering to academic staff
Academic support - e.g. mentoring	Maestas et al., 2007; Holloway-Friesen, 2019; Carales and Nora, 2020	Significant connection	Multiple replications	Support from multiple sources

Personalised support from academic staff	Curtin et al., 2013; Brunsting et al., 2019; Schmahl and Nguyen, 2022; Burk and Pearson, 2022	Significant predictive connection	Multiple replications		Support from multiple sources
Support from peers in Learning Assistant roles	Clements et al., 2022	Significant predictive connection	No replication		Support from multiple sources
Supportive residential environment	Duran et al., 2020	Significant connection	No replication		Support from multiple sources
Inaccessible support services	Holley et al., 2014	No significance established	No replication	Negative	Support from multiple sources
Parental support	Hausmann et al., 2007	Significant connection	No replication		Support from multiple sources
Alumni giving talks	Stephens and Morse, 2022	No significance established	No replication		Support from multiple sources
Time spent studying	Strayhorn, 2008	Significant connection	No replication		Taking actions to engage
Attendance in induction activities	Kane et al., 2014; Byl et al., 2022	Significant connection	Some replication		Taking actions to engage
Attendance in early timetabled classes	Kane et al., 2014	Significant connection	No replication		Taking actions to engage
Visiting the campus before the start of studies	Cruz and Grodziak, 2021	No significance established	No replication		Taking actions to engage
Attending university events	Cruz and Grodziak, 2021	No significance established	No replication		Taking actions to engage

Table 2.4.1 – Factors that affect students’ sense of belonging, identified from studies included within the systematised, critical review of student belonging literature

Appendix 2.5 – Belonging as a prerequisite of student success outcomes

This appendix is cited within Chapter 2 – Literature review in the section on the [critical review of student belonging literature](#), and also at the [end of that chapter](#).

Student outcome	Studies	Type of connection	Replication levels
Retention	García et al., 2019; Soria and Stubblefield, 2015; Davis and Hanzsek-Brill, 2019; Fink et al., 2020; Murphy et al., 2020; Gopalan and Brady, 2019; Russell et al., 2022	Significant predictive connection	Multiple replication
Intention to persist	Hausmann et al., 2007; Booker, 2016; Russell and Jarvis, 2019; Boyd et al., 2022; Kahu et al., 2022; Pedler et al., 2022	Significant predictive connection	Multiple replication
Self-efficacy and confidence	Freeman et al., 2007; Zumbrunn et al., 2014; Holloway-Friesen, 2019; Kahu et al., 2022	Significant connection	Multiple replication
Academic motivation / task Value	Freeman et al., 2007; Zumbrunn et al., 2014; Mulrooney and Kelly, 2020	Significant connection	Some replication
Academic performance	Hurtado and Carter, 1997; Tao et al., 2008; Zumbrunn et al., 2014; De Beer et al., 2019; Buskirk-Cohen and Plants, 2019; Chen et al., 2020; Fink et al., 2020; Cwik and Singh, 2022; Sotardi, 2022; Veldman et al., 2023	Significant predictive connection	Many replications
Engagement	Zumbrunn et al., 2014; Korhonen et al., 2019; Kahu et al., 2020; Mulrooney and Kelly, 2020; Versteeg et al., 2022; Veldman et al., 2023	Significant connection	Multiple replication
Cognitive engagement	Luo et al., 2022; Maluenda-Albornoz and Berríos-Riquelme, 2022	Significant connection	Some replication
Behavioural engagement	Wilson et al., 2015; Gillen-O’Neel, 2021; Luo et al., 2022; Maluenda-Albornoz and Berríos-Riquelme, 2022	Significant predictive connection	Multiple replication
Affective / Emotional engagement	Wilson et al., 2015; Gillen-O’Neel, 2021; Luo et al., 2022; Maluenda-Albornoz and Berríos-Riquelme, 2022	Significant predictive connection	Multiple replication
Mental health and wellbeing	Stebleton et al., 2014; Boyd et al., 2022; Dopmeijer et al., 2022; Gopalan and Brady, 2019; Gopalan et al., 2022; Kahu et al., 2022; Veldman et al., 2023	Significant predictive connection	Some replication
Resilience	Ali et al., 2018; Grüttner, 2019	Significant connection	Some replication
Thriving	Mendoza et al., 2016; Boyd et al., 2022	Significant connection	No replication

Student satisfaction	Boyd et al., 2022	Significant connection	No replication
Adapted help-seeking strategies	Won et al., 2019; Gopalan and Brady, 2019	Sometimes significant connection	Some replication
Academic misconduct intentions (negative)	Coetzee et al., 2022	Significant connection	No replication
Social background concealment (negative)	Veldman et al., 2023	Significant predictive connection	No replication

Table 2.5.1 – Different student success outcomes that were linked to belonging within studies included in the systematised, critical review of student belonging literature

Appendix 3.1 - Implementing the ‘Agentic Belonging’ workshop – a toolkit for practitioners

This appendix is cited within the [main body](#) and [the end](#) of the methodology chapter, as well as the [main body](#) and [the end](#) of the intervention effectiveness chapter.

Introduction

The ‘Agentic Belonging’ workshop – henceforth called the belonging workshop – was developed as part of my PhD at the University of York. The workshop was designed to address an aspect of supporting student belonging that was perceived as currently underutilised in universities, especially within the English Higher Education context.

The workshop focuses on helping students to better understand the dynamic and subjective nature of belonging and thus preparing them for acting more authentically and with a greater degree of resilience to future barriers to belonging. The workshop encourages students to see their sense of belonging at university as connected to their existing relationships and spaces of belonging before they started as a student. Through open and supportive discussion of priorities and goals, the workshop encourages students to recognise that there is no single or ‘right’ way to belong at university. This helps to challenge the prevailing narrative of alienation and isolation that students often face when they perceive their own experiences as being both unique to them and through an assumption that others’ experiences are homogenous. The activities within the workshop allow students to begin planning their own approaches to build belonging in a way that works for them, visualising how this will happen and how they may need to overcome certain barriers to get there.

This toolkit outlines exactly what goes into running the belonging workshop and also details on how to deliver a ‘control’ study skills workshop. As the broader PhD study was designed with a quasi-experimental methodological approach, participants were invited to attend either the belonging workshop or a comparable study skills workshop, so that their subsequent actions, sense of belonging and continuation could be compared. Study skills workshops were utilised as a ‘control’ workshop due to their prevalence and established benefits for new students at university. The two workshops were designed together to run in a similar style, so that evaluation of the different outcomes and impact for participants would be able to focus on the different content delivered.

The rest of this document sets out the context for delivering the workshops, learning objectives and specific activities that make up the core of the workshop. Guidance is also provided around workshop evaluation – including details of the scales that were used to evaluate success as part of the wider research project. In addition to the documents included within this toolkit, editable participant booklets and PowerPoint slides will also be made accessible for download.

Action research is a constant cycle of delivery, evaluation and enhancement. This toolkit reflects lessons learned from piloting with students and initial delivery of the workshops. Practitioners are recommended to consider these (and their own experience of delivering activities for students) when utilising the content of this toolkit. It is also my hope that further delivery and evaluation of the workshop will allow us to further enhance our support for students in building an authentic sense of belonging whilst at university.

Thank you for utilising this resource.

David Gilani

Context for delivery

Both the belonging and study skills workshops were designed to be delivered face-to-face near the start of new academic years for first-year, undergraduate students. The workshops should take place near the start of students' degrees, as they are primarily focused on helping students better understand their own needs and preferences, during this time of transition into higher education. Both workshops allow students to reflect on their experiences, relationships and identity before their time as a student.

Workshops should be delivered for an audience of between 15 and 30 to allow for enough numbers for multiple groups to form at different parts of the sessions. Modifications to the activities could allow for more personalised workshop approaches or to accommodate larger numbers – including delivery for whole programme cohorts. The workshops are designed to last for two hours.

If the workshops are being delivered as an opt-in activity across an entire institution (as was the case for my PhD project), then a sign-up form should be promoted to new students where they can choose which workshop that they wish to attend. During this time of the academic year, students may still be getting used to navigating a new teaching timetable – and these timetables may still be changing – so providing multiple slots for students to book on for each workshop can help reduce attrition (the proportion of students who sign-up, but then do not turn up for their workshop). Reminder

communications to those who have booked on, including details on how to reschedule if needed, is also advised.

Evaluation and impact

A theory of change approach was introduced to evaluate the impact of the belonging workshop within the wider PhD study design (Figure 3.1.1).

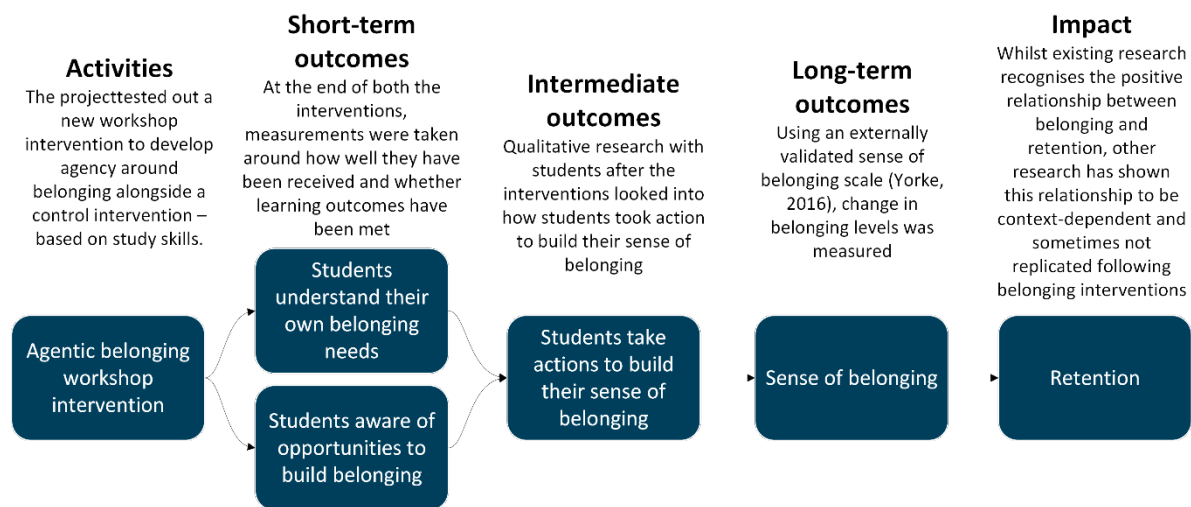


Figure 3.1.1 - Theory of change developed as part of the broader PhD study design to connect belonging workshop delivery with eventual outcomes and impact

In the short-term, it was expected that students would have a better appreciation for the subjective and personal nature of belonging and thus have more confidence in taking an approach to building belonging that was right for them. This was evaluated through self-reported learning outcome questionnaires delivered at the beginning and end of the workshops.

In the medium term, it was expected that this higher level of understanding of belonging needs would lead to positive changes in the actions that students take to build belonging and to the levels of belonging that they feel. This was evaluated through longitudinal qualitative online diaries research. Participants were asked about the actions that they took to build belonging, as well as what opportunities supported – and what barriers hindered – their ability to take action to belong. Participants were also asked to complete a validated belonging questionnaire when signing up for the research project to provide a baseline measurement of their sense of belonging. Students were

asked to complete three additional measurements of this scale throughout their first academic year to see how their sense of belonging changed over time.

In the long term, impact was measured through evaluation of participants intention to persist and eventual continuation data. This measures whether students are still at their university the following year and is a recognised student outcomes measure used by the Office for Students (OfS). Within the PhD, analyses were carried out to assess continuation rates by the workshop that participants attended and also against their self-reported learning outcome scores from the workshops.

The results of these analyses are outside of the scope of this toolkit, but full details can be found within the corresponding thesis.

Learning objectives

Learning objectives were developed for each workshop, split into two parts. Four questions were developed to assess whether the content of the workshop was successfully understood by participants. Two questions were used to assess how engaging and relevant the workshops were to students being successful at university (Table 3.1.1).

Learning objectives for student belonging workshop	Learning objectives for study skills workshop
<p>To measure whether the learning outcomes for the session were met, participants were asked to complete a questionnaire using these six learning outcomes as questions. This should ideally be administered to participants at the beginning and end of the workshop to measure changes. Within the initial PhD project, all questions were as statements on a five-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree (as this mirrors the same structure in belonging scale used elsewhere in the project).</p>	
<p>1. I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university)</p>	<p>1. I am able to describe a variety of approaches to improving studying at university</p>
<p>2. Every student has a different path to belonging at University</p>	<p>2. It is worth investing time and energy in finding the right study habits for me</p>
<p>3. I have a clear idea of what my own belonging needs may look like</p>	<p>3. I understand strategies for developing a positive approach to studying</p>
<p>4. I understand some of the potential opportunities and barriers to my own belonging needs being met at university</p>	<p>4. I have an idea of study approaches that I would like to apply to my own learning</p>
<p>5. I found the workshop fun and engaging</p>	<p>5. I found the workshop fun and engaging</p>

6. I know a lot more about being a successful student than I did before this session	6. I know a lot more about being a successful student than I did before this session
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Table 3.1.1 - Learning outcome measures for both workshops

Workshop summaries and timings

Both workshops were designed around a series of activities to ensure that they were interactive and would have the best chance of meaningfully engaging participants. Details of how the workshops were structured with rough timings are captured below. Both sets of timings are based on the idea that the workshop begins at 1pm and lasts for two hours.

Belonging workshop

12:50 – 13:05 Baseline questionnaire: As participants are entering the session, they will be asked to fill out the baseline learning outcomes questionnaire for their respective workshop (Table 3.1.1). **Activity 1**

13:05 – 13:10 Introduce the research project: Facilitator to talk about the wider research project that sits around the workshop, how exciting it is that they get to be part of this as new students and develop an early understanding and appreciation of research that takes place at university, and practical details about how it will run.

13:10 – 13:25 Introductions: Facilitator to introduce the workshop, its learning objectives and agenda. Participants will be given some time to introduce themselves to people around them on their tables and then will play a game of human bingo to get to move around the room and meet others. **Activity 2**

13:25 – 13:30 Ground rules for the workshop: Facilitator will reveal a list of 8 ground rules for the session to ensure that everyone feels safe and able to contribute. Participants will be invited to suggest any changes or ask questions. **Activity 3**

13:30 – 13:50 Stories of belonging: Participants will watch and read some of the varied hopes and fears that former students have shared when it comes to belonging at university. They will then reflect on how these stories relate to them. **Activity 4**

13:50 – 14:00 Starting to understand your own belonging needs: Participants will be introduced to the Bronfenbrenner Bioecological Model of Human Development and asked to

reflect on relationships and spaces where they already feel a sense of belonging before starting at university. **Activity 5**

14:00 – 14:10 Break: 5 minutes, but allow 10 minutes for participants to all get back and ready to begin next activity

14:10 – 14:20 Developing your own plan to meet your belonging needs: Facilitator will go through the belonging opportunities available at university and then participants will be asked to begin prioritising which are most important to them. **Activity 6**

14:20 – 14:30 How belonging changes over time: Participants will be asked to reflect on examples in their own life where their sense of belonging or connection to people and spaces has changed. The facilitator will then introduce growth mindset theory and its benefits in educational contexts. **Activity 7**

14:30 – 14:50 Overcoming barriers: Participants will discuss in their groups some examples of potential barriers to belonging. They will then reflect on their own priorities for belonging and what barriers they may face themselves. **Activity 8**

14:50 – 15:00 Summary and evaluation: Facilitator will summarise the learnings from the session. Participants will be asked to fill out a repeat questionnaire to help evaluate how much they've learned from the workshop. They will also be told more about the next stages of the research. **Activity 9**

Study skills workshop

12:50 – 13:05 Baseline questionnaire: As participants are entering the session, they will be asked to fill out the baseline learning outcomes questionnaire for their respective workshop (Table 3.1.1). **Activity 1**

13:05 – 13:10 Introduce the research project: Facilitator to talk about the wider research project that sits around the workshop, how exciting it is that they get to be part of this as new students and develop an early understanding and appreciation of research that takes place at university, and practical details about how it will run.

13:10 – 13:20 Introductions and ground rules: Facilitator to introduce the workshop, its learning objectives and agenda. Participants will be given some time to introduce themselves to people around them on their tables. Facilitator will then reveal a list of 8 ground

rules for the session to ensure that everyone feels safe and able to contribute. Participants will be invited to suggest any changes or ask questions. **Activity 2**

13:20 – 13:25 Introduction to the Pomodoro technique: Participants will be introduced to the Pomodoro technique for scheduling study time and breaks. Participants will be asked what they think the benefits of the technique may be. **Activity 3**

13:25 – 13:30 Break: 5-minute break, following the Pomodoro technique timings

13:30 – 13:45 Cornell note taking method: Students will be introduced to the Cornell note taking method. They'll then be shown a 5-minute video with various study tips and be asked to use the Cornell method to take notes. **Activity 4**

13:45 – 13:55 The benefits of peer review: Participants will be asked to use the 2 stars and 1 wish method to review the note taking done by a participant next to them. They will give feedback to the other student verbally. Facilitator will then explain some more tips for students to consider when working in groups or with friends. **Activity 5**

13:55 – 14:00 Break: 5-minute break, following the Pomodoro technique timings

14:00 – 14:05 Continue with the benefits of peer review: Finish with this activity. **Activity 5**

14:05 – 14:25 Study skill stories: Participants will read and watch some of the hopes and fears that former students have shared when it comes to successfully studying at university. Participants will be asked to discuss how these stories relate to their own fears / hopes / experiences of university so far. They will then be asked to pull out strategies that they think could be helpful to try. **Activity 6**

14:25 – 14:30 Break: 5-minute break, following the Pomodoro technique timings

14:30 – 14:35 Finding your study space: Participants will be asked to raise their hand if they've found a study space that works for them already... and then asked to share this with the group if they're comfortable to. For those who didn't put their hand up, discuss the different types of spaces that might work for them. **Activity 7**

14:35 – 14:45 How to improve your sleep: Facilitator will summarise some of the top tips around sleep hygiene and its important links to studying successfully

14:45 – 14:50 Utilising available support: Talk with the participants about how this workshop is just the beginning and how they have ongoing support from the University to help with their academic skills.

14:50 – 15:00 Summary and evaluation: Facilitator will summarise the learnings from the workshop. Participants will be asked to fill out a short questionnaire to help evaluate the extent to which the learning outcomes were met / changed since the beginning. Participants will also be told more about the next stages of the research. **Activity 8**

Belonging workshop activities

Activity 1: Baseline questionnaire

Whilst participants are entering the workshop, give them a workshop booklet and help them by suggesting a table to sit at (based on existing numbers of students). Inform participants that whilst others are arriving, they should fill out the baseline learning outcomes questionnaire. Have this accessible on screen via a QR code and within the participant booklets, where you can include a short URL in case the QR code does not work for everyone.

Also encourage participants to write their name at the top of their workshop booklet, emphasising that they will be writing in this throughout the workshop and taking it with them afterwards. It is recommended to have pens available for participants to use in case they have not brought their own.

Activity 2: Introductions

The aim is to introduce students to each other and get them talking to each other. The human bingo activity in particular helps students to find some commonality between each other, whilst also emphasising that we all have many differences and unique experiences. The activity works by asking participants to introduce themselves to others around the room (perhaps advise that they start with others on their table first) to see if other students meet any of the criteria within the Human Bingo sheets (Figure 3.1.2).

Has visited more than 4 countries	Can play a musical instrument	Plays a sport
Name:	Name:	Name:
Has a TikTok account	Can roll their tongue	Speaks 2 or more languages
Name:	Name:	Name:
First in their family at university	Has a part-time job	Commutes to uni from home
Name:	Name:	Name:

Figure 3.1.2 - Example Human Bingo sheet, which is included within participants' workshop booklets

Depending on the numbers of students attending, the number of 'characteristics' can be increased. However, beware that increasing the number of characteristics will also increase the time needed to complete the activity. It is common within human bingo that each participant can only use another student's name just once, as this encourages people to mix with a greater number of students. Also, participants cannot write down their own name. The winner is the person who has ticked off the most characteristics or the first to tick off all characteristics on their sheet. Preparing a small prize for this activity – e.g. a bag of sweets or chocolate – is advised. It is also recommended that the prize be something that students can choose to share with others if they wish.

Activity 3: Safe and confidential space: Ground rules for discussion

The aim of this activity is to create a safe and confidential space for students to discuss belonging and success. Due to time constraints, within the initial delivery of these workshops, ground rules were presented to students; with an opportunity for students to ask questions and suggest other ground rules. If previous activities have been completed early or if you plan to extend the workshop beyond two hours, then it may be more beneficial to ask students what they think the ground rules should be and capture these somewhere visible – e.g. a flip chart board – for the rest of the session.

1. Respect the confidentiality of everyone, and do not repeat things outside of this room
2. Respect the views of everyone in the room
3. Avoid bad or offensive language
4. Don't use mobile phones, laptops, etc.

5. Listen when others are talking - don't talk over people
6. Give everyone a chance to speak and develop their ideas, especially those who are quieter
7. Stay focused on the topics being discussed
8. Please be honest and share as much as you feel comfortable with.

In a large group, an online platform such as Padlet could be utilised, so that participants can suggest ideas or changes to ground rules even if they do not feel comfortable sharing with the whole room.

Activity 4: Stories of belonging: belonging means something different to everyone

Participants will get an opportunity to read about and watch some of the hopes and fears that former students have shared when it comes to belonging at university. Some of the stories will also include follow-up details about how students have met their belonging needs and how this may have been done in a different way than they originally expected when starting at university.

If possible, it is preferable for some of these stories to be replaced with videos from real students sharing their belonging stories from your own institution. This helps to humanise this activity and also reduce the amount of reading required by students. An example list of stories is included within the editable participant booklet for the belonging workshop.

Once any videos have been shown and participants have been given a chance to read through the remaining stories, encourage students to begin discussing on their tables some of the following questions:

1. What is common or similar between the stories that you have read so far?
2. You're just at the start of your university degree, do you relate to how the students described themselves at the beginning of their stories?
3. Try to find an example of a story that is not like your own journey – i.e. a different set of circumstances or goals described by the student to yourself. Talk through how it's different
4. Try to find an example of a story that is similar to your own journey in some way. Talk through how it's similar.

If time allows, ask if anyone would like to share their thoughts from the above questions with the wider room. Be specific in asking which question you would like contributions from, as asking for broad reflections is likely to not be as inviting.

Activity 5: Starting to understand your own belonging needs

Facilitator should introduce this activity by talking briefly about how we each feel a sense of belonging in many different places, as we've seen from the previous stories. In fact, theories suggest that there are so many factors that affect this... that each individual's belonging needs will be unique to them.

Participants will be introduced to the Bronfenbrenner Bioecological Model of Human Development (Figure 3.1.3) and talked through what it means:

- Human development starts with the individual and then builds outwards
- Your immediate environment has the greatest effect on you – your relationships and the spaces in which you live
- However, those 'influences' will themselves be affected by a number of things – i.e. your family and religious community will interact with each other and that will change how they then interact with you
- All those around you will be affected by wider societal systems – e.g. through laws, the media that they consume, economic systems
- These societal systems are influenced by the culture of the societies that we live in
- And finally, this will all be changing over time

So, what does this mean for us as individuals and making sure that we can build a sense of belonging at university? We will all already have many different relationships and spaces that we rely on to belong. All the potential influences in our immediate circle may be examples of relationships and spaces where we belong.

Participants will be given some time to privately reflect on their existing relationships and spaces in which they feel a sense of belonging. Participants will be asked to create two lists – relationships where they feel a sense of belonging – i.e. a group of friends from college / school / work – and spaces – i.e. in their own home, in a religious setting, a place in your neighbourhood that you like to visit – e.g. a park. Give participants 5 minutes to write down some of these examples. In groups get people to share ideas as they're writing them down, to help others come up with more.

Bronfenbrenner Model of Human Bioecological Development

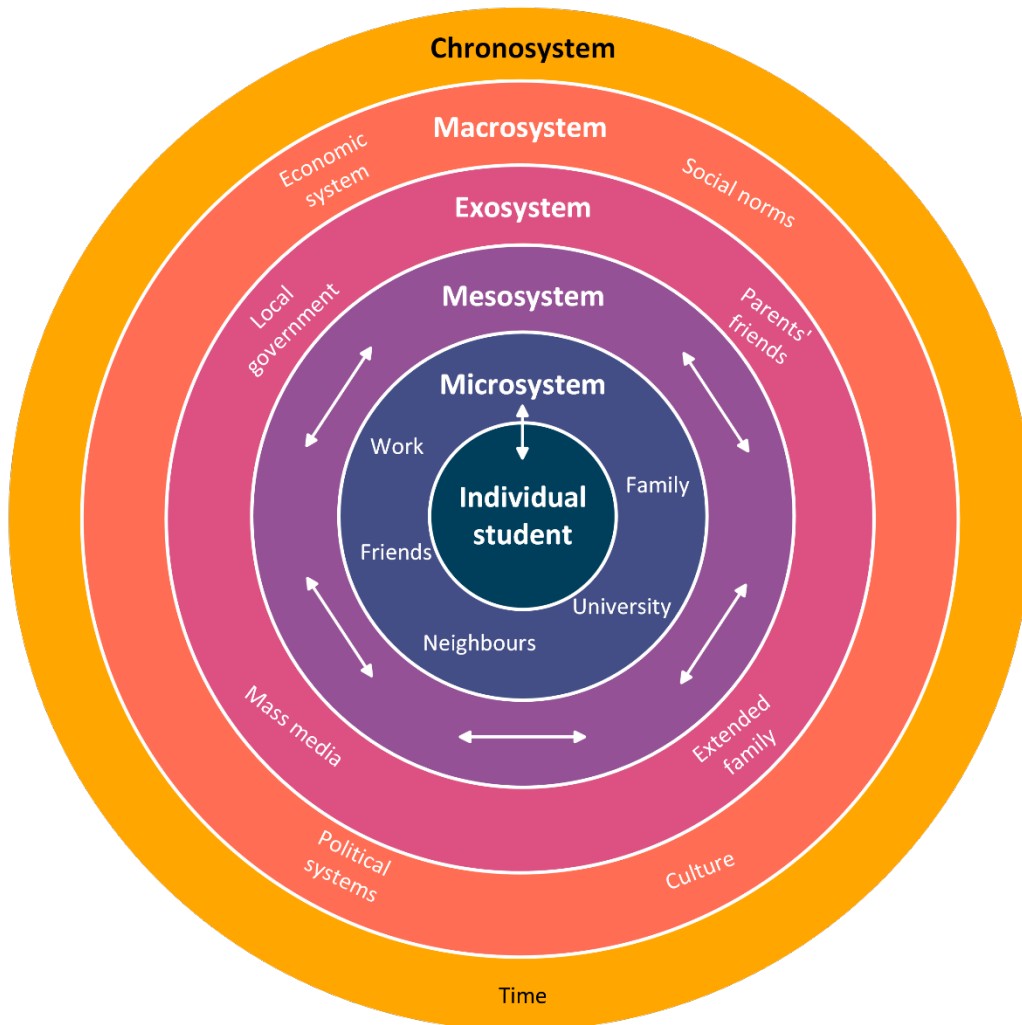


Figure 3.1.3 - adaptation of the Bronfenbrenner model of human ecological development - for university students

The participants will be briefly told about the theory behind alienation – i.e. it's when we assume that everyone else is the same / fits and we are the only one who is different. In fact, we are all different – and that's a wonderful thing! If there is time you can talk through the example of laughter in the cinema:

If you go to the cinema and you hear everyone laugh, but you don't laugh – you may feel a sense of isolation. That everyone else got something and you didn't. However, it's probably the case there were many other people in the cinema who also didn't laugh, but you just couldn't hear them not laugh. It's only when we assume that everyone else is the same that we feel alone / alienated.

Activity 6: Developing your own plan to meet your belonging needs

Following on from the above theory about how we all have different belonging needs and how these are based on where we already belong before coming to university... emphasise that one of the best things about university is that there really is something for everyone here. There are so many opportunities for you to find the relationships, communities and spaces that can fulfil your own belonging needs. Depending on time, either encourage students to take a few minutes reading through some of the opportunities listed within their participant booklets (Figure 3.1.4) or briefly summarise the variety yourself.

Opportunities to belong

Friends on your course

There is a reason that university classes aren't taught on a purely one-by-one basis. Making friends with others on your course can help make your learning more fun and open up a supportive network. Most courses at university will provide some opportunities for you to make friends with those on your course (e.g. ice-breaker sessions or group projects or trips or events). Even if you don't see any of these on your particular course, you can always make the effort to introduce yourself to those around you when in classes.



Personal tutor and lecturers

Your academics may seem a little bit scary when you hear about their accomplishments and qualifications, but they are still human. Staff try their best to be accessible, so that you can build a positive relationship with them. Most staff will run some sort of office hours – this provides a great opportunity for you to go and ask questions that you may not

Figure 3.1.4 - First two examples from participant booklet that introduces students to various opportunities to develop their sense of belonging at university

Ask participants to reflect on what has helped them to feel like they belong before starting at university and their motivation for attending university. Encourage participants to discuss on tables which of the opportunities sound most important to themselves – emphasise that this will be completely personal and so they do not need to be led by what other students say. Then ask them to take a few minutes prioritising a few 'belonging opportunities' from the list provided in the workbooks and then saying why they think these will be important for them. There is space within the workbooks for participants to add these details (Figure 3.1.5). Emphasise that for now, they should only fill in the first two columns and leave the last two for later.

	Potential belonging area	Why is this important to you?	A potential barrier to overcome	How could you overcome this?
E.g.	Personal tutor and lecturers	Because I want to make sure I will always be able to ask questions if I don't understand... and I want to keep on improving within my course.	I missed my first few sessions with my personal tutor / academic adviser because things were so busy – now I'm afraid to attend any sessions with them	Academics understand that things are hard. They much prefer you to focus on the present – so send them a short email apologising for missing previous sessions and turn up to the next one!
#1				

Figure 3.1.5 - Space in the participant workbook for students to begin prioritising which belonging opportunities may be most important to them

Activity 7: How belonging changes over time

After that, participants will be asked to reflect on how some aspects of belonging change over time.

Participants will be asked to try and think of one example of each of these:

- A group, community, relationship or space where you used to feel a sense of belonging – but maybe you don't as much anymore
- An event or specific moment where something happened to make you feel a sense of belonging – i.e. maybe in a part-time job you told a joke that made others around you laugh... or maybe you scored the winning goal in a football match... or maybe you were with a group of friends and you were having a really great DMC (deep meaningful chat) and you just felt a stronger sense of connection

It's important to realise that belonging will be different for each of your relationships in life and it will always be changing. It's really okay if there are areas of your life where you used to feel a strong sense of belonging and maybe don't any more. That's part of life. You will have new areas to build belonging.

After participants have completed that activity, show them a short clip from a YouTube video about growth mindset theory. This video will briefly introduce what growth mindsets are and how these are useful for students (Figure 3.1.6). Afterwards, then explain how this links back to how our sense of belonging changes over time.



Figure 3.1.6 - Graphic used in participant booklet to explain the difference between growth and fixed mindsets

Activity 8: Overcoming barriers

This activity will split into two parts. Firstly, participants will then be presented with some potential barriers to belonging. Examples of these student belonging barriers can be found in the belonging workshop participant booklet. For example:

“Jessica is highly academically motivated. At the end of most of her lectures, she’ll try to ask the lecturer a quick question about something that was covered during that session just to make sure that she understands it. However, some of her classes are being taught online and so she doesn’t have that chance to ask a question. Jessica starts to lose confidence, as she now doesn’t get a chance to reassure herself or clarify what is being taught to her.”

Encourage participants to read through the stories and then discuss some potential ways to overcome such barriers in groups on each table. Depending on time, it may be worth allocating just one or two example barriers to each table. After each group has had some time to discuss on tables, ask each table to report back some possible solutions to the example barriers.

For the second part of this activity, participants will then focus on what barriers they might face for their own priority belonging areas. Participants are asked to come up with a potential barrier for each of the three priority belonging areas they identified previously. Then, encourage students to think of potential solutions. Emphasise to participants that they don’t need to write nearly as much as is provided within the examples in their booklets.

Activity 9: Evaluation

The facilitator will go through a very-top level summary slide that concludes all the main points from the workshop. After this, all participants will be asked to complete a short questionnaire to see how well they received the workshops and to what extent the learning objectives of the sessions (Table 1) were met / changed from their baseline reading.

Study skills workshop activities – to be used as a ‘control’ intervention

To allow for more robust evaluation of the new belonging workshop described above, it was run alongside a control workshop on a more established topic of value to students in higher education. The content for the study skills workshop was taken from existing study skills support interventions, which are well-established within higher education. I also worked with the Middlesex University Learning Enhancement Team to understand topics that they covered within study skills development programmes.

The study skills workshop is designed to follow a similar structure and activity-focused design as the belonging workshop. Details of the study skills workshop have been included within this toolkit in case practitioners also wish to deliver the belonging workshop alongside a control workshop.

The following activities should be run the same as for the belonging workshop:

- *Activity 1: Baseline questionnaire* – although the form used to collect baseline readings from students will be different (see Table 1), as the learning outcomes for the study skills workshop are different
- *Activity 2: Introductions and ground rules* – the activity to introduce students to the ground rules should be the same. However, for time, the study skills workshop does not begin with a human bingo game. Instead, ask participants to introduce themselves to each other on their tables when entering the room. Questions, which can be given as prompts for this include:
 - where you are from
 - where you were studying / working before joining the University
 - what you did during the Welcome / Induction period
 - any good places you’ve found to eat so far
 - something interesting about yourself
- *Activity 8: Summary and evaluation* – although again, make sure to ask students to answer the learning outcome questions for the study skills workshop

Below are details for running the activities unique to the study skills session:

Activity 3: The Pomodoro technique

Introduce students to the concept of the Pomodoro technique. As it's quite a common study technique, you can make this interactive by asking any of the participants if they have heard of it before. Ask them to describe what they know about it and then fill in the gaps based on anything they leave out. Below are some details that you can include:

In the late 1980s, Francesco Cirillo developed a time management technique while studying in college. It is named for the tomato-shaped or pomodoro-shaped (in Italian) kitchen timer that he used. The Pomodoro Technique uses a timer to create intervals of time for working. One of the advantages of the Pomodoro Technique is that it can help people concentrate all of their attention on one task for an interval of time. After that interval of time is up, the person gets a short break. You then repeat these steps.

The goal of the Pomodoro technique is to increase focus, flow, and attention, and to decrease wasted time, interruptions of workflow, and fatigue.

What to do with your 5-minute break? Ask students if they have suggestions here before reading some examples out.

- Get out of your chair
- You could do some light yoga or stretching
- You could make a cup of tea for those in your household if you're studying at home
- Pop to the loo
- Do something helpful – like unloading the dishwasher / putting some washing in the machine / some light cleaning. Something that doesn't need much mental attention
- Talk with somebody! Have a little chat with someone. Human interaction may be very rejuvenating for you
- You could do some super quick meditation
- Try to avoid just spending it on your phone. It's not that this is a bad thing, but quite often I find that students who look at their phone for their 5 minutes don't feel as rested nor do they always get back to work after those 5 minutes

Tell participants that since it's such an effective technique, we'll be using it for the rest of the workshop by having 5-minute breaks every half hour. Encourage participants to take their first break now.

Activity 4: Cornell note taking method

For the next activity, begin by introducing students to the Cornell note taking method. This is a system for taking, organizing and reviewing notes and has been devised by Prof. Walter Pauk of Cornell University in the 1950s.

Explain to participants how to set up a page for the method (Figure 3.1.7) – start by giving out lined paper to everyone. The page will be divided into 4 — or sometimes only 3 — different sections: Two columns, one area at the bottom of the page, and one smaller area at the top of the page. Talk through how the structure encourages reflection, capturing of keywords and summarising points. It requires very little preparation which makes it ideal for note taking in class.



Figure 3.1.7 - image included within Study Skills workshop PowerPoint, showing students how to set up a page for the Cornell note taking method

Once you have explained the method, the activity based around this is to let students try using the note taking method. Show a video (linked to within the PowerPoint presentation for the workshop) around a range of study techniques. Ask participants to use the Cornell method to take notes on the video. Emphasise to participants that in the next activity they will be sharing their notes with the person next to them – so make sure that they write clearly.

Activity 5: The benefits of peer review

Talk with students about the benefits of utilising peers to help provide feedback on your work, whilst studying at university. Explain to students the 2 stars and 1 wish technique – a very simple feedback technique – where a reviewer provides a person with two bits of positive feedback on their work, and one suggested area for improvement.

Emphasise that when giving feedback to other students, it should be on their work and not on themselves as a person. Ask participants to then use the 2 stars and 1 wish technique to provide feedback on the notes that students had written about the study skills video. If there is time, ask participants how they found the process of providing feedback and also how they found the process of receiving feedback. This can then be followed with some extra tips for group studying:

DOs

- ▶ Choose the right apps – Google Docs over Facebook | use video call software
- ▶ Do a collective brain dump at the beginning
- ▶ Build in some time to chill out at the end
- ▶ Set shared goals after sessions to stay on track

DO NOTs

- ▶ Let your group grow too large (3 seems ideal)
- ▶ Use phones / let yourself or other members get distracted

Activity 6: Study skill stories

Similar to the belonging stories activity within the belonging workshop, this activity sees students reading and reflecting on a variety of stories from students about their journeys to finding appropriate studying strategies at university. Below is a copy of stories that can be utilised:

When I first got to university, I had trouble absorbing all of the material in some of my textbooks. I realised that one thing I could do was to do all the practice problems a week or two before the exam. That way if I still had questions about the material I could go to a student learning assistant or my professor. When I did that for a set of exams, it worked. It was hard to get my act together a week ahead of time, but it did pay off.

There can be a lot of work in university. When I got to campus, I realised I didn't know how to study properly, so I signed up for a study skills seminar. The best suggestion they had was to review your lecture notes at the end of each day. That helps you learn them, and then you can tell if there is something you missed, or something you don't understand, and you can ask about it. I'm glad I took the time to do that.

There are a lot of assignments and tests you have to keep track of in university. When there's a lot on your mind it helps to make a list. Sometimes there's just too much to keep track of in your head. I found writing down a bunch of due dates in my planner really helped. That way I wouldn't drop the ball or lose points for turning things in late.

One of the things that you learn in university is that there is just too much work to do and not enough time. You have to prioritise. I learned that it's important to pay attention to the professors, and where they concentrate their lectures. Usually the weight of each topic depends on the amount of teaching time spent on it. And of course, even if you're exhausted, it's important to show up for lectures. Even if you are still half asleep, you'll pick up a thing or two and take a few notes.

In my first placement, I found you always have to look ahead. Sometimes you have to do more work this week so that next week, you have enough time to get everything done. If you've looked ahead, you only need to worry about the task at hand. If you can focus on what comes next, everything suddenly becomes a lot easier.

I realised in my first year that if I wanted to get everything done, I needed to become a more efficient student. Learning doesn't happen simply by stuffing material into your brain; what you learn needs to be integrated with what you already know. That's why taking a 10-minute break for every 50 minutes of studying helped me to hold information. After my relaxing break, it also helped to change the subject or task that I was studying to a new one. This way, my brain didn't get tired of absorbing the same material hour after hour.

One of the things I learned in university is that it's not only important how you study, but where you study. Even little things such as if the room was too warm or too cool, or if there was a lack of circulating air made me sleepy and unable to concentrate. I also found that studying in my dorm room with my friends around was too distracting. Sometimes just putting on headphones and listening to music helped me ignore these distractions. Other times, if I really needed to concentrate, I would head over to the library.

So, after attending my first university lecture, I realised right then and there that I needed to become basically a better listener and a better note-taker. And I soon became a more positive and active listener basically just by sitting at the front of the class and sitting quietly. I found it particularly important to try to make extra effort to pay attention in the second 20 minutes of the lecture just because that's when I tended to drift away and lose it, and especially also during the last few minutes when a summary or conclusions was given by the prof. When it comes to taking good notes in lectures, you want to try and make sure that you're being accurate and focusing on the main ideas. I also liked to leave space between the main ideas just so that I could go back later and add notes in my own words. And I felt that that really helped make the lecture sink in.

In the first few weeks at university, I spent more time worrying about doing well in my courses than studying for them. I read in a booklet from the Counselling Services that I should start a worry book because writing your worries down initially helps to diminish them somewhat. Setting aside time and problem solving around what I had written helped me further to find a way to deal with them. With my worries soon under control, I was able to focus on studying instead of worrying.

Table 3.1.2 – examples of students' study stories and how they overcame challenges with studying

After students have read through the stories, encourage them to discuss on their table what aspects of the stories they can relate to in terms of their own hopes / fears / thoughts about studying at university so far. After a few minutes of discussion, ask participants to pull out three strategies that they like from what other students have written out.

Activity 7: Finding your study space

For this activity, begin by talking with students about the importance of finding spaces where you can do your best work. Emphasise that study spaces are very personal, as it depends on what helps each of us to work. Ask participants what spaces they have already found useful for studying. Depending on answers, give some other possible ideas for spaces around campus / university facilities that they may find useful.

Evaluation and further enhancements

Through collecting students' answers to the learning outcomes questions at the beginning and end of each workshop, you should be able to easily evaluate the difference made on these self-reported measures. Additional questions could be added to the end questionnaire to ask participants for more qualitative feedback. This could take the form of asking for any highlight(s) from the workshop and an area for possible improvement.

If students are also asked to provide demographic details and a baseline measurement of belonging when signing up for the workshops – as was done in the broader PhD study – then you can also evaluate differences in learning outcomes against these measures.

It is hoped that the workshop structure can be used and improved upon in a variety of contexts, so that we can help all students to feel agency in developing an authentic and resilient sense of belonging during their studies.

Appendix 3.2 - Expected challenges and limitations of the research design, with implemented mitigations

This appendix is cited within the [main body](#) and [the end](#) of the methodology chapter.

Potential challenge or methodological limitation	What issues could this cause?	Mitigation implemented or potential further research
<p>All participants will be choosing to book onto the initial workshops and therefore there is a risk of self-selection bias.</p>	<p>This could lead to intervention groups having different demographic make-ups or other hidden differences that mean the groups are not comparable within subsequent analyses. Furthermore, participants may have above-average engagement levels, which explains why they signed up to the project in the first place.</p>	<p>Demographic details were captured for students. Within regression analyses, these demographic variables were included for models, so that they can be controlled for.</p> <p>Whilst participants may overall be more likely to engage than population averages, this would be the case in practical settings too. When practitioners advertise supportive workshops for students, there is always a risk that participants are those with above-average engagement. Whilst, this is a risk to some aspects of external validity, it has strong ecological validity.</p>
<p>The researcher will be running the interventions (workshops) themselves, so there is a risk of unintended bias being brought in at this stage.</p>	<p>As the focus of the research project is on student belonging, there is a particular risk that the researcher gives more effort or attention in the delivery of the belonging workshops than the study skills workshops.</p>	<p>It is not fully possible to control positionality within research, nor is it necessarily desirable. However, to mitigate the risk that some workshops are delivered with different levels of enthusiasm, questions were included in the learning outcomes for each workshop around how ‘fun and engaging’ the workshop was. This provided an opportunity to assess the presence of unintended bias based on workshop delivery. Throughout the rest of the research, learning outcome scores were included as a variable within some of the regression analyses, so that it is accounted for.</p>
<p>The intervention will just be one workshop, rather than any longer work to support students to better understand their belonging needs. It could be that one workshop just is not enough to lead to a</p>	<p>This could mean that there is not enough change in levels of belonging or eventual continuation data to be able to draw any conclusions of significance.</p>	<p>Whilst the initial intervention was only one workshop, every student was ‘followed’ throughout their first year through the follow-up surveys and invitations to complete online diaries. In some way, this follow-up research may have acted as a nudge that helps to expand the impact of the interventions, which is explored in Chapter 8. This does not bias results as it applies to all participants – regardless of which workshop they initially</p>

measurable change in belonging.		attended. Further research could look at how similar interventions could work if delivered multiple times in the year or even through another vehicle, such as regular conversations with a personal tutor / academic advisor.
Some students may withdraw from their studies during the research – either from university overall or just by stopping taking part in the research.	This could especially bias the results and hinder ability to draw conclusions about the impact of the interventions.	Incentives for all participants, utilising the shortest possible reliable questionnaire for belonging and a close relationship with the institution contacts – allowing for multiple reminders – helped to maximise the number of students who continue to contribute to the quantitative and qualitative research. Some attrition is to be expected. Missing data is analysed within Chapters 6 and 7 to see whether it was correlated with outcome variables.
Early in the research, learning outcome scores from participants could indicate that the workshops have not positively impacted understanding of students’ belonging needs.	Given that the Theory of Change underpinning this study is built up of a series of causal connections, if this intervention does not increase belonging needs, then the very first link in this chain will be broken.	To address this, a pilot intervention was run with student ambassadors, so that feedback could be gathered and utilised to make improvements. If students are not able to understand the intended outcomes of the agentic belonging workshop, then this is still a useful finding.
The study is only focused on looking at the difference that interventions around belonging needs could have at the beginning of the students’ time at university.	This means that no conclusions can be drawn around how such interventions could potentially benefit students when they are still an applicant or if delivered later in their degree.	These are all areas where further research could be carried out but have been purposely left out of the scope of this research. Given the prominence in literature around the importance of belonging when beginning at university and that the first year is the period when students are mostly likely to withdraw from their studies, this seems like the most appropriate place to first pilot the delivery of a belonging needs intervention.
The study only looks at continuation data into the second year of study, rather than following students all the way to successful completion of their degrees.	Definitions of student success are around students completing their degree, rather than completing their first year of study. This suggests that this research design is not fully aligned with its intended outcomes.	It is not practical to look at full completion of a students’ course of study as part of this research project, due to the time it would take. However, as most student withdrawals occur within the first year of study, measuring continuation into the second-year accounts for most student completion issues.

Table 3.2.1 – potential challenges and mitigations with the thesis research design

Appendix 4.1 – Feedback from belonging workshop pilot

This appendix is cited within the process evaluation section of Chapter 4, once [within this section](#) and again in a [summary paragraph](#) at the end of this section. It is also cited at [the end of Chapter 4](#). It is also cited within [the main text](#) and at [the end](#) of Chapter 8 – Discussion and conclusions.

Introduction and context

On Monday 23rd May 2022, I delivered a pilot version of the belonging workshop utilised as part of this wider research project. The purpose of this pilot was to test out and gather student feedback on a newly crafted workshop around individual belonging needs. 14 students were recruited through an advertisement in the Middlesex University Unitemps portal – a portal that advertises part-time job opportunities for students. All students were paid the London Living Wage for their time taking part and feeding back on the pilot workshop.

As the participants were a mixture of first- and second-year students, at the beginning of the workshop they were asked to imagine what this would be like if they were attending as new Middlesex students. They were asked to ‘stay in character’ where possible during the workshop. The workshop lasted two hours and was then followed by a 30-minute discussion to gather student feedback. As the facilitator of the workshop, I took self-reflective notes during the delivery stage, and then also captured notes from students as they were feeding back at the end. Some participants also wrote additional points of feedback on paper and gave them to me when leaving the feedback session.

This document captures three different types of feedback that can be used to make improvements on the workshop:

- *Quantitative feedback* – utilising the scores that students gave at the end of the workshop around how well the learning objectives had been met
- *Qualitative feedback* – a summary of the feedback that was given verbally and written by the participants following the workshop
- *Reflections as facilitator* – based on notes I made during and after the workshop around what could be done to improve it. This also includes my reflections on the written activities

that students did during the workshop, as these were given to me by participants as they left where they felt comfortable doing so.

This document captures the main findings from each of these types of feedback, as well as a summary of ‘proposed changes’ that I implemented ahead of running the full workshops as part of wider research project.

Quantitative feedback

Participants were asked to complete the same questionnaires that would be run during the actual belonging workshops. These were:

- 1) The baseline belonging survey – 6 questions from the Yorke belonging scale
- 2) The post-questionnaire evaluation survey – 6 questions about whether the learning objectives were met and how engaging the workshop was.

All individual data from these questionnaires has since been deleted, but I looked at the top-level results and also asked for participants’ feedback on how easy / understandable the questionnaires were.

Students took an average of 73 seconds (shortest 35 seconds, longest 122 seconds) to complete the baseline belonging survey and an average of 86 seconds (shortest 50 seconds, longest 149 seconds) to complete the post-workshop evaluation questionnaire. This was shorter than expected, but indicates that the platform used and survey structure meant that students didn’t encounter any issues. I offered students the choice between accessing the survey via QR code, short URL, or a paper option. All participants opted for the QR code.

Baseline belonging survey		Post-workshop evaluation questionnaire	
Question	Average score (out of 5)	Question	Average score (out of 5)
I feel at home in this university	3.80	I am able to describe the relationships and spaces in which I already feel a sense of belonging (before starting at university)	4.50
Being at this university is an enriching experience	4.47	Every student has a different path to belonging at University	4.83

I wish I'd gone to a different university (reversed scale)	1.93 (4.07 when reversed)	I have a clear idea of what my own belonging needs may look like	3.89
I have found my department to be welcoming	4.47	I understand some of the potential opportunities and barriers to my own belonging needs being met at university	4.22
I am shown respect by members of staff in my department	4.53	I found the workshop fun and engaging	4.61
Sometimes I feel I don't belong in this university (reversed scale)	2.13 (3.87 when reversed)	I know a lot more about being a successful student than I did before this session	3.94
Average	4.20	Average	4.33

Table 4.1.1 – Scores from students' baseline belonging and post-workshop evaluation questionnaires during the Middlesex pilot

What is most positive here is that the learning objectives were successfully achieved for almost all of the participants, which suggests that the workshop content was accessible. The very high score (4.61) for participants finding the workshop fun and engaging is also very promising. Perhaps more could be done around learning objective 3: 'I have a clear idea of what my own belonging needs may look like' and the final question around: 'I know a lot more about being a successful student than I did before this session'.

From a quick analysis of the participants, there is also an interesting trend between those who had a higher baseline of belonging at the start of the session and successful meeting of the learning objectives. However, given the small number of participants, I didn't focus on this finding initially, but did ensure to then complete a similar analysis of data once the actual research project workshops had been delivered.

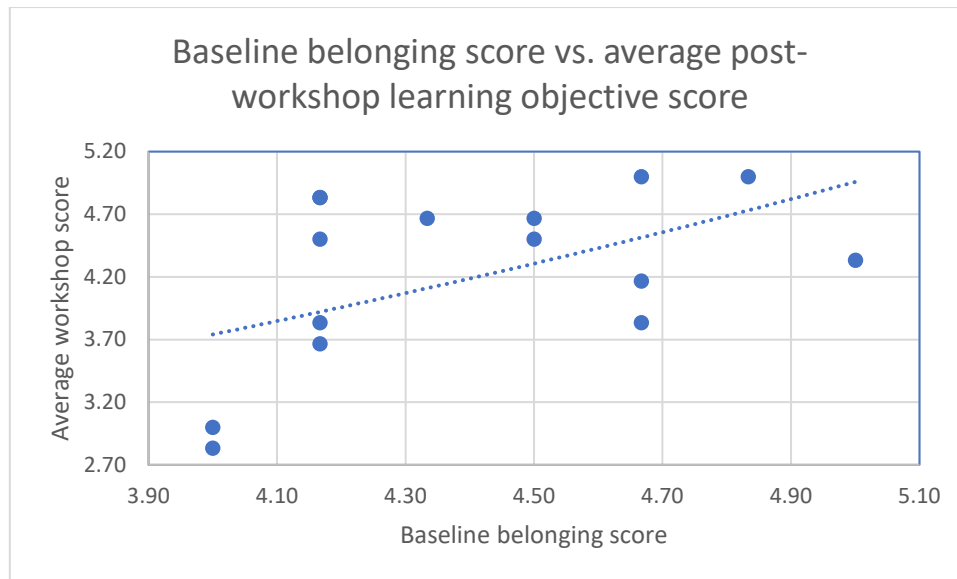


Figure 4.1.1 – Scatter plot showing the correlation between students’ baseline belonging score and their average post-workshop learning objective questionnaire scores

Qualitative feedback

The following is a summary of the main themes that students had in their post-session feedback:

- Participants questioned whether new students would know enough about university to benefit from a session like this. Would more need to be done to make them aware of support and opportunities – especially when it came to brainstorming potential barriers and solutions to those barriers? Could students be provided with details of student activities, opportunities and support during the workshop? Would the workshop be better if run later in the first term? Or part of a series of workshops – including one at the end of first year?
- Participants wanted less time on solo activities (e.g. reading and writing their own belonging needs plan) and more interactive time (e.g. discussions with their tables, the wider group and the facilitator. Students wanted more advice from the staff member (myself) in the room
- Discussion on tables was nice – good to have an opportunity to talk through things
- Writing activities could be more interactive if you used something like whiteboards so that students aren’t spent so much time writing things down just for themselves
- Very specifically: add gym / fitness spaces to the potential belonging areas sheet
- You could reduce the amount of reading time by having students presenting on their issues / belonging stories – either live and/or by video. If you do have speeches, have the written

words as a back-up as well, so students can remember / reflect on what was said afterwards.

This could work for the barriers section, as well as the belonging stories

- One student felt overwhelmed at the start, as they weren't sure where around the room they should sit... or how they should introduce themselves while they waited for the session to start. You could have an on-table introduction activity that people can do whilst everyone is joining (for those who arrive at different times)
- There was some disagreement on whether the workshops would be better for people on your same course or different courses
- Human Bingo activity at the beginning could be made more fun if the options were a bit wackier
- The worksheets could be explained better – or have instructions on them around what exactly should be done
- One student said coming up with ideas for potential barriers was hard – maybe that activity could be made more interactive / less writing based if you had pre-written barriers for each belonging area.

Reflections as facilitator

I made a few notes and reflections as I was going through the delivery of the workshop. This was possible as there were a few slots when students were working independently or discussing together on their tables. Here is a summary of those notes:

- People were arriving at the workshop at different times (some were 10 minutes early, some 10 minutes late) – this meant that some people were sitting awkwardly in silence, whereas others began introducing themselves on their tables. An activity at the beginning that encouraged people to introduce themselves as soon as they arrive would be preferable – you could also get people to fill in the baseline questionnaire in this time (with QR code on the screens and on each table)
- I put the Bingo Cards on tables too early and so people started at different times. It was a lot of fun though and great to see the buzz in the room. Maltesers were given out as the prize for the Human Bingo winner and they really liked this – they shared them out with people across the room
- Ground rules went very quickly – nobody had any issues. It's hard to know whether everyone had a chance to flag if they did have an issue.

- Once students began reading the belonging stories it went eerily quiet. This time would be shorter if I did some videos / live students telling their stories. I could also put on some quiet music in the background at this point
- After people had read the stories, conversations were slow to start as people finished at different times, however after that the chat flowed really easily and all tables were talking for the full 20 minutes for this activity
- When getting students to start fleshing out their own belonging needs plan, the existing relationships column on the grid was a little hard to explain – especially for some examples like ‘Library – resource space’. Again, it was also very quiet when students were working on this part
- When participants were asked to reflect on whether they knew anything about themselves that was unique... not everyone put their hand up, so the activity lost its punch. Either refocus it so that it’s about similarities, rather than unique things or give more examples to make it easier for people to come up with something. Or remove this activity entirely
- I overheard students joking about how they’re not used to physically writing so much
- I did a break during the session, as I felt it would be too long with the added time for gathering feedback afterwards. It sounded like this was needed from the way students responded. I gave people 5 minutes; however, some took a bit longer than this. Also, it must have helped that everyone knew where to go for things like toilets / coffee / food / cigarette spots, which might not be the case for new students. It helped that I had given people something to discuss before the break and then as people came back in, they resumed these conversations
- I noticed that one of the examples of a barrier that a student was facing (Muhammed example) wasn’t really a barrier, so this should be re-written
- We spent a bit more time on the example barriers by going to each table and asking for their thoughts on what solutions they came up with to help with those barriers. His was really good, as other tables joined in and it gathered some more interaction across the room
- Students had written quite a lot, but I didn’t get a sense from them that they saw what they had written as something useful to take away? It didn’t feel like they had written their own plan? Maybe this is because it’s existing students, rather than new students, but maybe it’s because it wasn’t designed properly.

Proposed changes to take forward

Given the above reflections on the process of completing the online forms, the qualitative feedback from participants and my own reflections having delivered the pilot workshop, I formalised a set of proposed changes to take forward in the design, preparation and delivery of the belonging workshop.

1. Pull all worksheets together into one designed booklet that participants can work through during the session and then take away with them afterwards. This would also give more space for workbooks to have explanations for each activity and also notes on the theory that is presented in the session
2. Have information on tables for students to complete baseline belonging questions as they are entering the workshop. Also, encourage people to introduce themselves to others on their table as they arrive, rather than only after the workshop has started
3. Primarily use QR codes (within students' booklets and on the screens) to encourage completion of the baseline belonging survey and post-questionnaire evaluation survey, as this was the method preferred by all students in the pilot
4. Set up a Padlet page for where participants could flag any ideas for changes to Ground Rules in an anonymous way – have details for how they can access this on the tables and also on the screens at this point in the presentation
5. Ask some current students to record short videos where they talk through their 'belonging stories'. This will break up the existing activity, so that it's not entirely based on participants reading written stories
6. Prepare music that could play in the background when students are reading through the belonging stories and barriers to belonging to break up the silence
7. Remove the 'can you think of something unique?' activity
8. Given the lower score in the question around students' understanding their own belonging needs, this activity should be reworked. Add some extra resources to the belonging needs plan activity – so that students can learn more about these university opportunities and resources if they weren't familiar with them before. Also, flip this activity so that it's not written, but about participants in groups going through each one and deciding how important each belonging opportunity area is for them and briefly discussing. Make sure they can note down which ones were more important and also give examples of 'existing related relationships', so that students don't have to think of those themselves. Also add in 'gym / fitness spaces' to the belonging opportunity areas list

9. Give more time in the session for participants to share what they came up with on their tables for overcoming the example barriers that students faced – this could also be where I give more advice as a facilitator. It'd be important to be present on tables to see if there are any that they're struggling with as new students. Also, re-write the final example (Muhammed)
10. Change the activity around overcoming barriers for participants' priority belonging areas. Have an example of a potential barrier for each belonging area and then get students to come up with their own examples of solutions for their priority ones. Introduce some discussion for any barriers that people couldn't come up with solutions for
11. Have a section of the print out / workbooks that allows students to summarise their priority belonging areas – why those areas are important to them – examples of barriers they may face – and how they'll overcome those barriers. This should not involve a lot of writing, but be visual. This can be something that they take away and look back on when they need motivating. It should involve affirmative statements – i.e. I will have a positive relationship with my lecturers.

All of the proposed changes were implemented ahead of the delivery of the first belonging workshop in September 2022.

Appendix 4.2 - Chapter 4 full regression model results

This appendix is cited within the captions for [Table 4.7](#) and [Table 4.8](#) within Chapter 4. It is also cited at [the end](#) of Chapter 4.

For clarity of presentation, some multiple linear regression model tables within [Chapter 4](#) excluded demographic variable lines data tables displayed within the main chapter text. These full regression model results are presented here within this appendix.

Term	Estimate	Std error	p-value
(Intercept)	4.276	0.283	0.000
Workshop status - Non-attend	-0.421	0.176	0.020
Gender - Male	0.055	0.187	0.770
Gender - Other / Prefer not to say	0.084	0.590	0.887
Parents attended Uni - 1	-0.128	0.210	0.543
Parents attended Uni - 2 or more	0.156	0.211	0.462
Parents attended Uni - Prefer not to say	0.503	0.447	0.265
Age - 25 - 29	-0.046	0.373	0.902
Age - 30 - 39	0.054	0.311	0.862
Age - 40 - 65	0.559	0.347	0.113
Age - Prefer not to say	-0.201	0.509	0.695
Fee status - Prefer not to say	-0.079	0.486	0.871
Fee status - UK student	-0.057	0.238	0.812
Commute length - 30 minutes +	-0.009	0.178	0.960
Commute length - Prefer not to say	-0.063	0.572	0.913
Private education - Prefer not to say	-0.258	0.380	0.500
Private education - Yes	0.020	0.249	0.937

Table 4.2.1 – Multiple linear regression - Belonging workshop attendance as a predictor of first learning outcome (n = 73)

Term	Estimate	Std error	p-value
(Intercept)	4.749	0.245	0.000

Workshop status - Non-attend	-0.608	0.152	0.000
Gender - Male	0.005	0.162	0.974
Gender - Other / Prefer not to say	-0.574	0.509	0.265
Parents attended Uni - 1	0.090	0.185	0.628
Parents attended Uni - 2 or more	-0.226	0.182	0.219
Parents attended Uni - Prefer not to say	-0.091	0.385	0.815
Age - 25 - 29	-0.051	0.322	0.875
Age - 30 - 39	-0.140	0.268	0.604
Age - 40 - 65	0.073	0.322	0.820
Age - Prefer not to say	0.427	0.440	0.336
Fee status - Prefer not to say	0.450	0.421	0.289
Fee status - UK student	0.132	0.207	0.528
Commute length - 30 minutes +	-0.027	0.155	0.860
Commute length - Prefer not to say	0.039	0.492	0.937
Private education - Prefer not to say	-0.312	0.327	0.344
Private education - Yes	0.074	0.228	0.746

Table 4.2.2 – Multiple linear regression - Belonging workshop attendance as a predictor of second learning outcome (n = 72)

Term	Estimate	Std error	p-value
(Intercept)	3.201	0.355	0.000
Workshop status - Non-attend	0.010	0.221	0.966
Gender - Male	0.427	0.235	0.075
Gender - Other / Prefer not to say	-0.562	0.740	0.451
Parents attended Uni - 1	0.008	0.263	0.975
Parents attended Uni - 2 or more	0.167	0.265	0.531
Parents attended Uni - Prefer not to say	0.936	0.561	0.101
Age - 25 - 29	0.693	0.468	0.144
Age - 30 - 39	0.348	0.390	0.377
Age - 40 - 65	0.595	0.436	0.178
Age - Prefer not to say	0.791	0.639	0.221
Fee status - Prefer not to say	0.396	0.611	0.519
Fee status - UK student	0.253	0.299	0.400
Commute length - 30 minutes +	0.181	0.224	0.421

Commute length - Prefer not to say	-0.312	0.718	0.666
Private education - Prefer not to say	-0.604	0.477	0.211
Private education - Yes	0.178	0.313	0.572

Table 4.2.3 – Multiple linear regression - Belonging workshop attendance as a predictor of third learning outcome (n = 73)

Term	Estimate	Std error	p-value
(Intercept)	3.621	0.377	0.000
Workshop status - Non-attend	-0.545	0.235	0.024
Gender - Male	0.412	0.249	0.104
Gender - Other / Prefer not to say	0.314	0.785	0.690
Parents attended Uni - 1	-0.256	0.279	0.363
Parents attended Uni - 2 or more	0.250	0.281	0.377
Parents attended Uni - Prefer not to say	0.096	0.595	0.873
Age - 25 - 29	0.607	0.496	0.226
Age - 30 - 39	-0.346	0.414	0.406
Age - 40 - 65	0.459	0.462	0.324
Age - Prefer not to say	0.121	0.677	0.859
Fee status - Prefer not to say	0.592	0.647	0.364
Fee status - UK student	0.372	0.317	0.245
Commute length - 30 minutes +	0.266	0.238	0.268
Commute length - Prefer not to say	-0.192	0.761	0.802
Private education - Prefer not to say	0.192	0.505	0.705
Private education - Yes	0.128	0.332	0.700

Table 4.2.4 – Multiple linear regression - Belonging workshop attendance as a predictor of fourth learning outcome (n = 73)

Term	Estimate	Std error	p-value
(Intercept)	71.226	10.939	0.000
Baseline belonging	0.239	0.115	0.045
Gender - Male	5.993	3.214	0.074
Parents attended Uni - yes	-1.935	3.340	0.568
Age - Under 25	-5.838	4.017	0.159
Fee status - UK student	3.453	4.029	0.400
Commute length - 30 minutes +	2.955	3.164	0.360

Private education - Yes	-2.794	4.258	0.518
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Table 4.2.5 – Baseline belonging and demographic variables as predictors of belonging workshop outcomes (n = 35)

Term	Estimate	Std error	p-value
(Intercept)	61.764	14.491	0.001
Baseline belonging	0.342	0.149	0.031
Gender - Male	-18.870	5.352	0.003
Parents attended Uni - yes	3.287	4.984	0.520
Age - Under 25	12.104	6.105	0.066
Fee status - UK student	7.699	4.977	0.143
Commute length - 30 minutes +	10.917	5.624	0.071
Private education - Yes	3.923	5.397	0.479

Table 4.2.6 – Baseline belonging and demographic variables as predictors of study skills workshop outcomes (n = 27)

Appendix 5.1 – Full demographic and participation details for online diaries

This appendix is cited multiple times within Chapter 5. It is cited within [the introductory section of the methods](#), within the [data collection section](#), within [the results](#) and at [the end of Chapter 5](#).

Code	Institution	Parents attended Uni	Gender	Age bands	Fee status	Commute time	Private education	# Diaries	# surveys
B1	Middlesex	0	Male	18 - 24	UK	30 - 59 minutes	No	1	1
B10	Middlesex	2+	Male	18 - 24	International	10 - 29 minutes	Yes	1	0
B11	Middlesex	0	Male	25 - 29	International	30 - 59 minutes	Yes	1	0
B12	Middlesex	1	Female	18 - 24	UK	30 - 59 minutes	No	6	2
B13	Middlesex	0	Male	18 - 24	UK	10 - 29 minutes	No	2	0
B14	Middlesex	1	Female	18 - 24	UK	30 - 59 minutes	No	7	2
B15	Middlesex	2+	Female	18 - 24	UK	10 - 29 minutes	No	1	1
B16	Southampton	2+	Female	18 - 24	UK	10 - 29 minutes	No	4	2
B17	Middlesex	2+	Female	18 - 24	International	10 - 29 minutes	No	2	0
B18	Middlesex	1	Male	18 - 24	UK	10 - 29 minutes	No	5	2
B19	Middlesex	2+	Male	18 - 24	International	10 - 29 minutes	Yes	0	2
B2	Middlesex	2+	Male	18 - 24	International	30 - 59 minutes	No	1	1
B20	Middlesex	0	Female	30 - 39	UK	1 hour - 2 hours	Yes	4	2
B21	Middlesex	0	Female	18 - 24	UK	Prefer not to say	No	1	1
B22	Middlesex	1	Female	18 - 24	International	30 - 59 minutes	Yes	4	1
B3	Middlesex	1	Female	25 - 29	International	Less than 10 minutes	Yes	7	2
B4	Southampton	1	Female	30 - 39	UK	30 - 59 minutes	No	7	2

B5	Middlesex	0	Female	18 - 24	UK	30 - 59 minutes	No	0	2
B6	Southampton	Prefer not to say	Male	18 - 24	UK	Less than 10 minutes	No	7	2
B7	Middlesex	0	Male	40 - 65	UK	30 - 59 minutes	No	7	2
B8	Middlesex	0	Male	18 - 24	International	10 - 29 minutes	Prefer not to say	0	1
B9	Middlesex	1	Female	40 - 65	UK	30 - 59 minutes	No	5	2
N1	Middlesex	2+	Female	18 - 24	UK	30 - 59 minutes	No	7	2
N10	Middlesex	0	Female	18 - 24	UK	30 - 59 minutes	No	0	1
N11	Middlesex	1	Female	40 - 65	UK	1 hour - 2 hours	Not sure	2	2
N12	Middlesex	No	Female	18 - 24	UK	More than 2 hours	No	2	1
N13	Middlesex	2+	Female	18 - 24	Prefer not to say	10 - 29 minutes	No	3	2
N14	Southampton	0	Female	18 - 24	UK	10 - 29 minutes	No	6	2
N15	Middlesex	1	Female	18 - 24	UK	30 - 59 minutes	No	3	2
N16	Middlesex	Prefer not to say	Female	18 - 24	International	10 - 29 minutes	Yes	0	1
N17	Middlesex	0	Female	18 - 24	UK	10 - 29 minutes	No	2	2
N18	Middlesex	2+	Male	Under 18	International	30 - 59 minutes	Yes	1	1
N19	Southampton	1	Male	18 - 24	UK	10 - 29 minutes	Yes	0	1
N2	Southampton	2+	Male	18 - 24	UK	10 - 29 minutes	No	0	1
N20	Middlesex	1	Male	18 - 24	International	10 - 29 minutes	Yes	4	2
N21	Southampton	1	Non-binary / third gender	18 - 24	UK	10 - 29 minutes	No	7	2
N22	Middlesex	0	Female	18 - 24	UK	10 - 29 minutes	No	7	2
N23	Southampton	0	Female	25 - 29	International	10 - 29 minutes	No	2	2

N24	Middlesex	0	Prefer not to say	Prefer not to say	Prefer not to say	10 - 29 minutes	Prefer not to say	6	2
N25	Southampton	1	Male	18 - 24	UK	10 - 29 minutes	No	4	2
N3	Southampton	1	Female	18 - 24	International	10 - 29 minutes	Yes	5	2
N4	Southampton	0	Female	18 - 24	UK	30 - 59 minutes	No	2	1
N5	Middlesex	0	Female	18 - 24	UK	10 - 29 minutes	No	0	2
N6	Middlesex	0	Female	18 - 24	UK	10 - 29 minutes	No	0	1
N7	Southampton	2+	Female	18 - 24	UK	10 - 29 minutes	No	1	1
N8	Middlesex	0	Female	30 - 39	International	30 - 59 minutes	No	1	0
N9	Southampton	2+	Female	18 - 24	International	10 - 29 minutes	Yes	7	2
S1	Middlesex	1	Male	18 - 24	UK	30 - 59 minutes	No	1	0
S10	Southampton	2+	Female	18 - 24	International	10 - 29 minutes	Yes	2	2
S11	Southampton	1	Female	18 - 24	UK	10 - 29 minutes	No	4	1
S12	Middlesex	2+	Female	18 - 24	UK	10 - 29 minutes	No	0	1
S13	Southampton	2+	Female	18 - 24	UK	10 - 29 minutes	Yes	5	2
S14	Middlesex	2+	Male	18 - 24	UK	Less than 10 minutes	Yes	0	1
S15	Middlesex	0	Female	40 - 65	UK	1 hour - 2 hours	Yes	0	2
S16	Middlesex	0	Female	18 - 24	Prefer not to say	30 - 59 minutes	No	3	2
S17	Southampton	1	Male	18 - 24	UK	Less than 10 minutes	Yes	6	2
S18	Southampton	0	Female	18 - 24	International	10 - 29 minutes	Yes	4	1
S2	Middlesex	1	Female	18 - 24	International	Less than 10 minutes	Not sure	0	1
S3	Middlesex	0	Female	25 - 29	UK	30 - 59 minutes	No	7	2
S4	Middlesex	2+	Male	18 - 24	International	10 - 29 minutes	Yes	2	2

S5	Middlesex	0	Female	18 - 24	International	Less than 10 minutes	No	6	2
S6	Southampton	Not sure	Female	18 - 24	Prefer not to say	10 - 29 minutes	No	7	2
S7	Middlesex	2+	Male	18 - 24	International	30 - 59 minutes	Yes	2	0
S8	Southampton	1	Female	18 - 24	UK	Less than 10 minutes	No	6	2
S9	Middlesex	0	Female	18 - 24	UK	10 - 29 minutes	No	7	2

Table 5.1.1 – Full demographic details for all participants of the longitudinal online diaries – including what code was used for each participant when presenting their quotes in the main text of [Chapter 5](#).

Appendix 5.2 – Full coding list developed through Reflexive Thematic Analysis of online diaries

This appendix is cited the [data analysis section](#) and at [the end](#) of Chapter 5.

Name	Files	References
Attachment to spaces	38	394
Access to resources	14	36
Attendance or absence from spaces	30	95
Attributes of spaces	12	32
Feeling safe or welcomed in a space	23	56
Feels like home	5	7
Flexible access	13	20
Living spaces	19	43
Online spaces	9	12
Placements	2	2
Quiet or private spaces	17	34
Spaces to socialise	22	38
Study spaces (either alone or groupwork)	10	17
Chat GPT / possible AI written submissions	2	3
Fairness	6	7
Finances	10	13
Grades and academic success	25	65
Passion for the subject	14	24
Identity and self	43	315
Confidence	35	153
Cultural capital	21	32
Freedom of expression	15	20
Identity judged or respected	28	75
Respect for my experiences and story	14	32
Interacting with peers	50	777
Alumni involvement	1	1
Cliqeyness - others already belonging	12	25
Comparisons with peers	33	127
Course size or structure	25	66
Events	26	89
Family + friends outside of uni	15	30
Friendly or mean peers	19	43
Friends leaving uni	1	3
Friends outside the course	14	23
Groupwork (formal)	14	26

Peers on course (informal)	39	195
Societies and groups	32	146
Interacting with staff	35	304
Engaging course content	21	53
Respect and mattering to staff	19	69
Staff approachability	29	86
Student Callers	1	1
Support and care from staff	20	94
Mental health and wellbeing	16	40
Part-time job	22	43
Self-reflective activities	45	783
Accepting things outside of our control	7	11
Authenticity in decision and actions	32	112
Contributing to something greater	23	44
Hopes and fears	24	54
Ownership of next steps	26	112
Reference to workshops	2	3
Reflections and expectations	17	69
Student voice and feedback	21	35
Taking action to belong	39	270
Wanting uni or others to take action	19	48
Sentiment analysis	52	776
Improvement - getting better	25	75
Mixed sentiment	38	195
Negative sentiment	33	149
Neutral sentiment	13	17
No change in perspective	2	2
Positive sentiment	48	324
Worsening	6	14
Time and capacity	30	93
Workload in studies	27	75

Table 5.2.1 – Full coding list developed through the Reflexive Thematic Analysis of online diaries including the number of references made against that code and number of participants that referred to it

Appendix 5.3 – Phases of theme development for Reflexive Thematic analysis of online diaries

This appendix is cited the [data analysis section](#) and at [the end](#) of Chapter 5.

Phase	Theme development phase 1	Theme development phase 2	Theme development phase 3	Theme development phase 4
Notes	Initial notes on potential themes that could be developed as part of the analysis	Themes were grouped together into a set of categories	Some overlapping themes were collapsed, others moved into different categories	Some overlapping themes were collapsed, categories were updated
Themes	Building a sense of belonging to space was possible for almost all students	Category 1 - how students take action to belong	Category 1 - how students take action to belong	Category 1 - Domains where students need others to take action
	When students feel a sense of agency around their sense of belonging, they speak more positively	Theme 1.1 - Engagement and belonging as virtuous or downward spirals	Theme 1.1 - Engagement and belonging as virtuous or downward spirals	Theme 1.1 - Students need to be able to find peers 'like them'
	Barriers to students feeling agency – the sub-themes where students wanted someone else to act	Theme 1.2 - Students compare themselves with peers – some seeking similarities, others seeking difference	Theme 1.2 - Belonging to surroundings takes time, exploration and flexible spaces	Theme 1.2 - Students need to feel that they matter to staff
	Comparisons with peers was incredibly important in students having the confidence to act	Theme 1.3 - Belonging to surroundings takes time, exploration and flexible spaces	Theme 1.3 - Students balance authenticity and pushing the barriers of their own comfort zones	Theme 1.3 - Belonging to surroundings takes time, flexible spaces and encouragement to explore
	Students don't need to belong everywhere or to everything	Theme 1.4 - Students balance authenticity and pushing the barriers of their own comfort zones	Category 2 - Aspects outside of students' control	Category 2 - How student agency is linked to belonging
	Attendance and belonging as a virtuous or downward spiral	Category 2 - Aspects outside of students' control	Theme 2.1 - Needing to feel respected by staff	Theme 2.1 - Engagement and belonging as virtuous or downward spirals
	Lack of confidence	Theme 2.1 - Needing to feel respected by staff	Theme 2.2 - Students need to be able to find peers 'like them'	Theme 2.2 - Students balance authenticity and pushing the

			who are also seeking social belonging	barriers of their own comfort zones
	Current vs. retrospective reflections on belonging are different	Theme 2.2 - Wanting others to take action	Theme 2.3 - Dealing with inconsistency and change	
	The difference between real and perceived barriers – e.g. language barrier for international students	Theme 2.3 - Perceived vs. real barriers	Category 3 - The nature of the connection between student agency and belonging	
	A balance between authenticity and being encouraged to leave comfort zone for students who cite confidence issues	Theme 2.4 - Dealing with inconsistency and change	Theme 3.1 - Perception of building belonging and its challenges change over time	
	Lack of consistency is potentially a barrier to belonging - e.g. modules changing / joint honours students	Category 3 - The nature of the connection between student agency and belonging	Theme 3.2 - Direct links between sense of agency and belonging	
	Respect and mattering to academic staff is so important and spoken highly about by most students	Theme 3.1 - Perception of building belonging and its challenges change over time		
		Theme 3.2 - Direct links between sense of agency and belonging		
		Theme 3.3 - Acceptance of not needing to belong 'everywhere'		
Number of themes	12	11	8	5

Table 5.3.1 – Phases of theme development for Reflexive Thematic Analysis of online diaries

Appendix 5.4 – Full results of online diaries process evaluation questionnaire for participants

This appendix is cited the [process evaluation section](#) and at [the end](#) of Chapter 5.

Question	Options	Count	Percentage
It was easy to submit via the online diary platform	Strongly agree	25	71%
	Agree	3	9%
	Neither agree nor disagree	2	6%
	Disagree	3	9%
	Strongly disagree	2	6%
Being able to choose which medium (written, audio or video) was helpful	Strongly agree	31	89%
	Agree	3	9%
	Neither agree nor disagree	1	3%
	Disagree	0	0%
	Strongly disagree	0	0%
I wish I had other options of how to submit my diary entries	Strongly agree	1	3%
	Agree	1	3%
	Neither agree nor disagree	8	25%
	Disagree	9	28%
	Strongly disagree	13	41%
There were seven diary entry requests throughout the year - about every three weeks - what did you think about this frequency?	There should have been fewer diary entry requests (less frequent)	3	9%
	The number of diary entry requests was about right	26	74%
	There should have been more diary entry requests (more frequent)	6	17%
If you missed any of the online diary requests, what were the main reasons for this?	Not seeing emails / reminders about the diaries	11	31%
	Not having enough time	13	37%
	Other (please add comments)	10	29%
	The incentive (Amazon vouchers) wasn't worth it	1	3%
	I felt that I could share everything	27	77%

Were there any topics / examples that you felt were too personal / private to share in your online diaries?	There were a few things that I chose not to share	7	20%
	There were many things that I chose not to share	1	3%
How did you approach completing the online diaries?	I only reflected on belonging when producing each diary entry	12	39%
	I reflected on belonging between diary entries, but made no notes	9	29%
	I made notes (written, audio, video or otherwise) on belonging between diary entries, which I then used for my submissions	10	32%
Did the process of reflecting on your feelings of belonging feel helpful in itself in any way?	Positive sentiment (yes)	25	83%
	Mixed sentiment (a bit)	2	7%
	Negative sentiment (no)	3	10%

Table 5.4.1 – Full results of the process evaluation questions that were asked to online diaries participants at the end of the data collection for online diaries

Appendix 6.1 – Full preliminary analyses around missing data and correlations between online diaries and survey data

This appendix is cited the [results section](#) and at [the end](#) of Chapter 6.

Correlations between survey and online diary data

This chapter attempts to best leverage the mixed-methods design of the overarching research project, by combining data from students' student belonging survey submissions and online diaries submissions. As explored more deeply within the [methodology chapter](#) of this thesis, both longitudinal methods were used simultaneously to allow students to reflect on their sense of belonging in different ways. Given the inherent differences in these data collection methods, it cannot be assumed that there is a convergent validity between these two measures. To establish whether this convergent validity exists, this section explores Pearson's correlation analyses between online diary and survey results.

Correlation was measured in two ways - at a participant-level and at a submission-point-level. Firstly, average survey scores and average diary entry scores were calculated for each participant and then compared using Pearson's correlation coefficient. There is a significant, moderate, positive correlation (Figure 6.1.2) between online diary and Yorke scale survey results ($r = 0.550$, $p < 0.001$, $n = 49$), including moderate-to-strong positive correlations when broken down by each different workshop status.

Furthermore, when broken down by different workshop status (Figure 6.1.2), there was a moderate positive correlation between all three groups of students, but this was not significant for all workshop statuses. Belonging workshop attendees had the strongest correlation between online diaries and survey results ($r = 0.705$, $p = 0.002$, $n = 17$), however further regression analysis into the correlations by workshop status found that these were not significantly different from each other (Table 6.1.1).

This suggests that, at a participant-level, both online diaries and surveys hold convergent validity, indicating that they are capturing similar aspects of students' sense of belonging. Further correlation analyses have then been performed to establish whether correlation between online diaries and surveys exists at a submission-point-level – i.e. can we expect each online diary result to be correlated with its nearest survey data point, chronologically?

Pearson's correlation coefficient was utilised again, in this instance for each set of online diary sentiment scores against the closest survey data point. For example, this examined the correlation

between each participant's diary entry sentiment scores for the 'Journey' submission point against their Yorke belonging scale scores in the May follow-up survey, as this was the survey measurement point chronologically closest to the 'Journey' diaries submission point.

As the Southampton participants had their workshop interventions later in the first term – explored in more detail within the [methodology chapter](#) – they had a different schedule of surveys and online diaries compared to the Middlesex participants. To address this, correlations were calculated separately for each institution, resulting in 14 separate correlation analyses (Table 6.1.2).

Whilst there was no overarching consistency between the results of these correlation analyses, there were some identifiable themes to explore possible substantive interpretations. Firstly, for both institutions there was a significant, moderate, positive correlation between students' first diary entry and survey (Middlesex: $r = 0.542$, $p = 0.025$, $n = 15$; Southampton: $r = 0.687$, $p = 0.028$, $n = 8$). This suggests that nearer the start of the academic year, or perhaps more importantly, when students are first beginning to reflect on their sense of belonging, surveys and online diaries were able to capture similar aspects of their sentiment towards the construct of sense of belonging. This also could be explained by the time-specific prompts used within the online diaries. The first online diary asks students to reflect on their sense of belonging to university spaces – both physical, on-campus spaces and digital communities. Therefore, this positive correlation for students from both institutions could reflect a specific convergent validity when prompting students about this co-concept of belonging.

Secondly, whilst the correlation between the online diary about university spaces provided the only significant correlation for the Southampton participants, there were three other correlations for Middlesex participants that were significant. All three of these submission-level correlations were significant, strong, positive correlations (Academics: $r = 0.819$, $p < 0.001$, $n = 16$; Challenges: $r = 0.844$, $p = 0.004$, $n = 7$; Journey: $r = 0.770$, $p < 0.001$, $n = 13$). Given that these significant correlations were not also seen for Southampton participants, this could suggest that there is an institution-specific difference. This could be due to different experiences of belonging at a selective-recruiting institution, compared to a widening participation university. Perhaps, some of these nuanced differences were able to be captured through the online diaries method – due to its flexibility for students to respond as they chose – but not through the more rigid survey method, resulting in differences between correlations across institutions.

To explore, at a top level, whether there was a correlation between online diaries and survey data at submission-level, all of these individual correlation coefficients were averaged together. This resulted in a moderate, positive correlation of 0.480 (total data points considered = 155). However, this

averaging across time should be considered with caution, as this approach is likely to reduce measurement error.

In summary, there is a significant, moderate, positive correlation between online diaries and survey data when investigated at a participant-level. This suggests that the way in which each individual student reported their sense of belonging through surveys is moderately similar to the way in which they reported their sense of belonging through online diaries. However, when looking at correlations at a submission-level, there was inconsistency in the strength and significance of correlations. Therefore, we cannot assume that how students reflected on their sense of belonging within any particular online diary is correlated with their nearest survey responses. Based on this, future analyses that include online diaries data alongside survey data focus on investigation of overall 'trajectories' in belonging, rather than examination by specific timepoints.

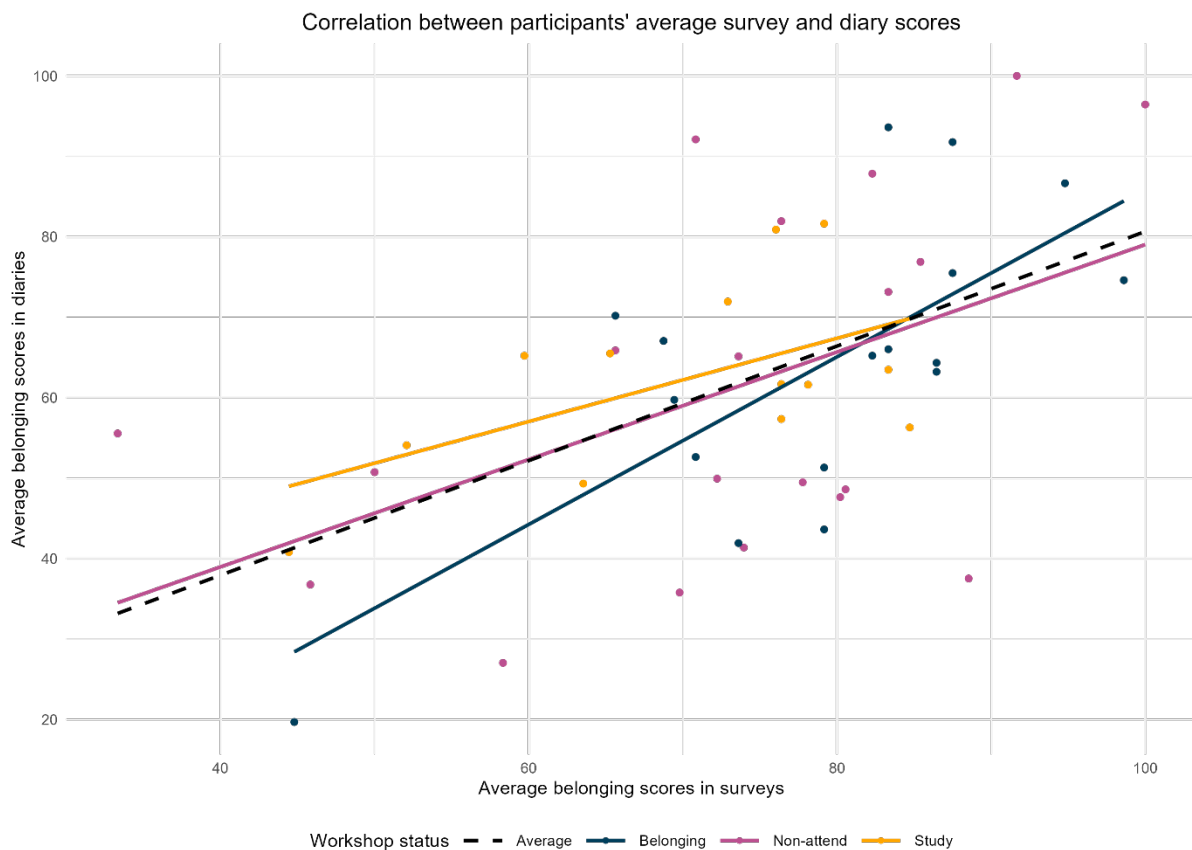


Figure 6.1.1 - correlation between averages of participants' survey scores and online diary sentiment scores, split by prior intervention status (All observations: $r = 0.550$, $p < 0.001$, $n = 49$. Belonging workshop: $r = 0.705$, $p = 0.002$, $n = 17$. Study workshop: $r = 0.553$, $p = 0.050$, $n = 13$. Non-attenders: $r = 0.484$, $p = 0.030$, $n = 19$.)

term	Estimate	Std error	p-value
(Intercept)	48.437	10.630	0.000
Average diaries	0.477	0.160	0.005
Workshop status – non-attend	3.115	13.316	0.816
Workshop status – study	-15.030	21.799	0.494
Average diaries – workshop status – non-attend	-0.125	0.202	0.539
Average diaries – workshop status – study	0.113	0.341	0.741

Table 6.1.1 – analysis of covariance (ANCOVA) regression model to analyse how the association between survey and diary entries varies based on participants’ workshop status (n = 49)

Institution	Diary entry	Closest survey	r (correlation)	p-value	n
Middlesex	Space	October	0.542	0.025	15
Middlesex	In class	December	0.318	0.314	10
Middlesex	Friends	December	0.158	0.544	15
Middlesex	Academics	February	0.819	<0.001	16
Middlesex	Changes	February	0.329	0.251	12
Middlesex	Challenges	May	0.844	0.004	7
Middlesex	Journey	May	0.770	<0.001	13
Southampton	Space	December	0.687	0.028	8
Southampton	In class	December	0.324	0.280	11
Southampton	Friends	February	0.468	0.092	12
Southampton	Academics	February	0.113	0.713	11
Southampton	Changes	February	0.550	0.125	7
Southampton	Challenges	May	0.257	0.504	7
Southampton	Journey	May	-0.090	0.771	11

Table 6.1.2 – Individual correlation analyses between belonging scores within each online diary submission and the chronologically closest survey submission point

Belonging levels as predictors of future participant engagement

One challenge with longitudinal studies is the prevalence of missing data. Whilst students were encouraged to take part in all online diaries and survey data points, the design of the overarching research recognised that other time commitments would make this unlikely. Missing data can be problematic in longitudinal studies if participants' likelihood to miss data points is correlated with the subject being investigated. In this instance, if students were less likely to take part in future surveys or diaries if they had a lower sense of belonging, then it would mean that the data points that *were* submitted are artificially higher than we should expect for the participants overall. To address this potential problem, this section explores whether students' sense of belonging is a predictor of them missing future surveys or diaries submission points.

Given that whether students took part or missed their next submission point is a binary – yes or no – binary logistic regression analyses were used to explore this (Table 6.1.3). In particular, average marginal effects were calculated to explore the effect-size of any connection between belonging and existing data. Three sets of these analyses were conducted: firstly, looking at belonging within a survey as a predictor of a student missing the next survey; secondly, looking at belonging sentiment within an online diary as a predictor of a student missing the next online diary; and finally, looking at belonging in all data points as a predictor of whether students miss the next data point – diary or survey.

These analyses found that all average marginal effect sizes for these three calculations were very small (survey-to-survey: AME = -0.001, p = 0.604, n = 192; diary-to-diary: AME = -0.002, p = 0.122, n = 142; all data points to next data point: AME = 0.003, p = 0.050, n = 380). The significant result in the final of these three calculations suggests that students' sense of belonging has a very small influence on students' likelihood of missing or taking part in future submission points.

	term	Estimate	Std error	p-value
Survey score as predictor of missing next survey (n = 192)	(Intercept)	-0.191	0.775	0.805
	Missed - Yes	-0.005	0.010	0.604
	Average marginal effect	-0.001	0.002	0.604
Diary sentiment as predictor of missing next diary entry (n = 142)	(Intercept)	-0.233	0.520	0.654
	Missed - Yes	-0.011	0.008	0.132
	Average marginal effect	-0.002	0.002	0.122
Belonging score as predictor of missing next	(Intercept)	-1.050	0.400	0.009
	Missed - Yes	0.010	0.005	0.055

data point (diary or survey) (n = 380)	Average marginal effect	0.003	0.001	0.051
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Table 6.1.3 – binary logistic regression analyses between participants' most recent belonging score and whether they missed the next opportunity to submit data. Average marginal effects were then also calculated and added to the results to explore the effect size of this relationship.

Data on students' prior belonging and likelihood to miss future submission points was also visualised using boxplots (Figure 6.1.2). The boxplot depicting belonging as measured in surveys as a predictor of missing future surveys, mirrors the results of the binary logistic regression analysis very closely. There are no notable differences in the median or spread of the belonging results amongst those who then go on to miss or complete the next survey invite. However, for the boxplot related to diaries there are some discrepancies. Whilst regression analysis also suggested very little average marginal effect here, the boxplot shows a noticeably lower median for students who then go on to miss their next diary entry. There is also slightly more variability in the results of students who go on to miss their next diary entry.

Similarly, for the boxplot exploring belonging as a predictor of missing the next diary or survey submission point, there are some noticeable differences. Median belonging amongst those who go on to miss their next submission point is surprisingly, albeit only slightly, higher than for students who complete their next available submission opportunity. There is also less variability in the results for students who go on to miss their next submission point, however with noticeably more outliers with much lower levels of belonging. This could be interpreted as showing that students who feel higher levels of belonging feel less need to reflect further on their sense of belonging in the future and thus are more likely to miss their next submission point. However, as this is not present for either the boxplot relating to survey-to-survey or diary-to-diary participation rates, it is perhaps more likely a result of the difference between the two types of data collection. Students were remunerated the same for each survey and online diary, however surveys took much less time to complete than online diaries.

Prior belonging levels as predictors for whether participants miss next available survey, diaries or both

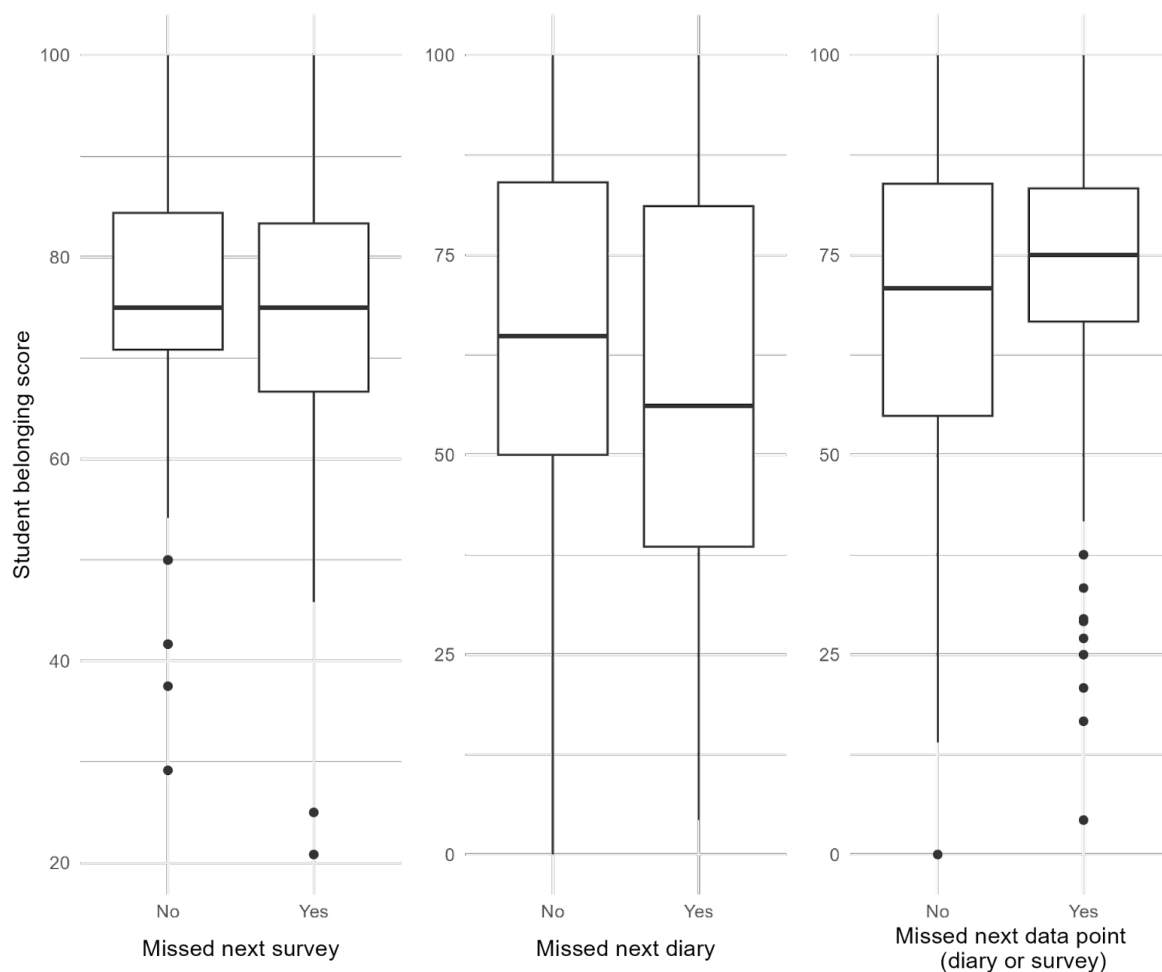


Figure 6.1.2- prior belonging levels as predictors of whether participants miss next opportunity to submit survey or online diary data

In summary, these analyses found no significant relationship between students' sense of belonging and their likelihood of participating in – or missing – their next available submission point. This analysis is important as it allows future calculations to ignore missing data without needing to consider how this could bias results.

Appendix 7.1 – Full preliminary analyses around scale internal consistency and missing data correlations with continuation

This appendix is cited within Chapter 7 at the [beginning of the results section](#), in [the preliminary analysis section](#), and at [the end of the chapter](#).

Preliminary analysis – checking internal validity of the intention to persist scale

As discussed within the methodology section of this chapter, a search of existing research exploring students' intention to persist was carried out to develop a scale that could be utilised within this research study. As no pre-validated intention to persist scales were discovered by the author, with most existing studies using single-item measures to assess intention to persist, a combination of these single-item measures was brought together. Given that these questions have not been validated together for their use as a combined scale, Cronbach's alpha analysis was conducted to assess the scale's internal validity – the extent to which each student responded consistently to questions within the scale.

Cronbach's alpha analysis of this scale resulted in a score of 0.823, which suggests a strong level of internal consistency. Whilst Cronbach's alpha scores were calculated for the Yorke belonging scale in [Chapter 4](#) when assessing intervention effectiveness, this was only based on baseline belonging responses from participants. A retesting of the Yorke belonging scale, including all follow-up responses from students on their sense of belonging, showed that this has a Cronbach's Alpha score of 0.842 – also a very strong level of internal consistency.

The strong Cronbach's alpha scores for the intention to persist scale suggest high internal consistency for these questions – in essence that they are measuring a similar underlying construct. Cronbach's alpha analysis cannot be used to assess construct validity; whether the scale is actually measuring the intended phenomenon. This caveat is slightly mitigated by the fact that all of the individual questions that comprise the scale have been used in previous research looking at students' intention to persist. Overall, with these cautions in mind, the Yorke belonging scale and intention to persist scale have been used in the substantive analyses of this chapter, unaltered.

Preliminary analysis – assessing relationship between missing data and continuation

As discussed and reported within previous results chapters, the longitudinal nature of this study allows it to potentially contribute to the gaps in knowledge around how belonging and, in this chapter specifically, intention to persist change over time. However, a risk with longitudinal studies is that missing data from participants could be correlated with the outcome variables being assessed. In the context of this chapter, if it was found that missing data was significantly correlated with variances in students' continuation rate, this would prove problematic for subsequent analyses. In the design of my binary logistic regression analyses, missing data has been excluded by default; however, if missing data was significantly correlated with continuation, this would mean that this would need to be accounted for in these analyses.

To investigate the possible relationship between missing data and continuation, two types of binary logistic regression results were utilised. Firstly, three binary logistic regression models (Table 7.1.1) were developed exploring the relationship between continuation and whether students missed each of the three optional survey data points. As the Southampton participants had their first survey opportunity in December, this was not optional for them; therefore, no Southampton data was included within the first of these regression models. Secondly, an additional variable was created for each student to represent the number of surveys that they missed through the study. Again, due to the different survey timepoints across institutions, a separate model was developed for each university (Table 7.1.2). These binary logistic regression models investigated the relationship between the number of missed surveys and students' continuation status.

term	Estimate	Std error	p-value
(Intercept)	2.890	0.726	0.000
Missed December survey (N = 78)	-0.693	0.898	0.440
Average marginal effects	-0.047	0.060	0.427
(Intercept)	1.749	0.383	0.000
Missed February survey (N = 101)	-0.309	0.533	0.562
Average marginal effects	-0.043	0.075	0.564
(Intercept)	1.531	0.390	0.000
Missed May survey (N = 101)	0.121	0.533	0.820
Average marginal effects	0.017	0.075	0.821

Table 7.1.1 - Binary logistic regression analyses to explore the extent to which whether students missed any of the survey opportunities was a predictor of students' continuation – i.e. successfully continuing in their studies beyond their first year of study. Number of observations for each model are included within the table

The results of these binary logistic regression analyses suggest that whether students missed any of the survey opportunities did not have a significant predictive relationship with whether those students then went on to successfully continue. Average marginal effects for all three models were low – between two percent and negative five percent – and none of the models showed statistical significance. These results show that there was no individual survey point where the students who missed the survey were significantly more or less likely to successfully continue in their studies. The relationship between the number of surveys missed and student continuation is then explored within Table 7.1.2.

	term	Estimate	Std error	p-value
Middlesex participants (n = 78)	(Intercept)	3.519	1.031	0.001
	Number of missed surveys	-0.517	0.408	0.206
	Average marginal effects	-0.036	0.03	0.231
Southampton participants (n = 23)	(Intercept)	0.505	0.534	0.344
	Number of missed surveys	-0.818	0.641	0.202
	Average marginal effects	-0.189	0.127	0.136

Table 7.1.2 – Binary logistic regression analyses to explore the extent to which the number of surveys missed by students was a predictor of students' continuation. Given that all the Southampton participants joined the study at the December survey point, separate models have been developed for each institution. Number of observations for each model are included within the table

Focusing on the average marginal effects from these binary logistic regression models show that whilst for each additional survey missed, the predicted probability of continuation decreased – by 3.6% for Middlesex students and 18.9% for Southampton students – in neither case was this statistically significant. Overall, therefore whilst there may be a trend suggesting that missing more surveys is linked to a lower probability of continuation, the association within these models was not statistically significant. This suggests that this chapter's analyses can continue to explore the relationship between continuation and other factors without the need to actively account for missing data.

Appendix 7.2 - Chapter 7 full regression model results

This appendix is cited multiple times within Chapter 7. It is cited within the results section addressing the [RQ4.1](#) and again in the section addressing [RQ4.2](#). It also appears in the captions for [Table 7.4](#) and [Table 7.9](#). It is also cited at [the end of Chapter 7](#).

For clarity of presentation, some multiple linear regression model tables within [Chapter 7](#) excluded demographic variable lines data tables displayed within the main chapter text. These full regression model results are presented here within this appendix.

Term	Estimate	Std error	p-value
(Intercept)	25.589	15.593	0.114
October belonging	0.919	0.169	0.000
Gender - Male	-5.579	7.826	0.483
Age - Under 25	-6.095	9.364	0.521
Commute length - short commute	6.583	7.777	0.406
Private education - Yes	-4.676	11.392	0.685
Fee status - UK student	-9.370	11.309	0.416
Parent(s) attended university - yes	4.737	7.537	0.536

Table 7.2.1 – Multiple linear regression – December Intention to Persist as predicted by October Belonging and demographic variables (n = 32)

Term	Estimate	Std error	p-value
(Intercept)	18.724	15.248	0.227
December belonging	0.920	0.154	0.000
Gender - Male	-2.980	8.185	0.718
Age - Under 25	-3.175	9.937	0.752
Commute length - short commute	-0.346	7.972	0.966
Private education - Yes	-3.453	9.385	0.716
Fee status - UK student	2.701	10.356	0.796
Parent(s) attended university - yes	-6.587	7.348	0.377

Table 7.2.2 – Multiple linear regression – February Intention to Persist as predicted by December Belonging and demographic variables (n = 44)

Term	Estimate	Std error	p-value
(Intercept)	28.799	16.068	0.083
February belonging	0.955	0.190	0.000
Gender - Male	0.602	10.276	0.954
Age - Under 25	-11.491	10.570	0.287
Commute length - short commute	-5.964	8.701	0.499
Private education - Yes	-6.221	10.264	0.550
Fee status - UK student	-2.349	10.889	0.831
Parent(s) attended university - yes	-2.858	7.927	0.721

Table 7.2.3 – Multiple linear regression – May Intention to Persist as predicted by February Belonging and demographic variables (n = 44)

term	Estimate	Std error	p-value
(Intercept)	5.596	9.196	0.545
Belonging average	0.989	0.121	0.000
Gender - Male	-0.979	4.640	0.834
Age - Under 25	-5.718	5.435	0.298
Commute length - short commute	-1.048	4.330	0.810
Private education - Yes	-4.923	5.446	0.370
Fee status - UK student	-7.103	5.372	0.192
Parent(s) attended university - yes	-0.955	4.526	0.834

Table 7.2.4 – Students' average Intention to Persist as predicted by their average sense of belonging score and demographic variables (n = 56)

Term	Estimate	Std error	p-value
(Intercept)	33.333	11.929	0.006
Belonging value	0.804	0.128	0.000
Gender - Male	-3.422	4.528	0.452
Age - Under 25	-7.144	5.458	0.194
Commute length - short commute	-0.864	4.263	0.840
Private education - Yes	-7.207	5.495	0.193
Fee status - UK student	-5.663	5.701	0.323
Parent(s) attended university - yes	-0.556	4.097	0.892

Table 7.2.5 – Multiple linear regression – Students' sense of belonging as a predictor of their next Intention to Persist score (n = 103)

term	Estimate	Std error	p-value
(Intercept)	9.891	19.878	0.625
Belonging change	0.858	0.319	0.015
Gender - Male	1.609	11.801	0.893
Age - Under 25	-2.968	13.169	0.824
Commute length - short commute	-9.838	8.804	0.278
Private education - Yes	2.344	12.793	0.857
Fee status - UK student	1.865	13.099	0.888
Parent(s) attended university - yes	-6.907	9.507	0.477

Table 7.2.6 – Multiple linear regression – Changes in belonging as a predictor of changes in students' Intention to Persist (n = 26)

Term	AME	Std error	p-value
October belonging	-0.001	0.003	0.598
Age - Under 25	0.027	0.088	0.764
Commute length - short commute	-0.014	0.073	0.848
Fee status - UK student	-0.031	0.099	0.757
Gender - Male	-0.196	0.103	0.057
Parent(s) attended university - yes	0.117	0.075	0.120
Private education - Yes	0.041	0.094	0.661

Table 7.2.7 – Binary logistic regression – Average marginal effects for October sense of belonging and demographic variables as predictors of continuation (n = 67)

Term	AME	Std error	p-value
December belonging	0.008	0.003	0.003
Age - Under 25	0.081	0.177	0.649
Commute length - short commute	-0.119	0.114	0.297
Fee status - UK student	0.134	0.137	0.328
Gender - Male	-0.079	0.117	0.497
Parent(s) attended university - yes	0.008	0.103	0.938
Private education - Yes	0.195	0.105	0.062

Table 7.2.8 – Binary logistic regression – Average marginal effects for December sense of belonging and demographic variables as predictors of continuation (n = 52)

Term	AME	Std error	p-value
February belonging	0.01	0.003	0.002
Age - Under 25	-0.15	0.047	0.001
Commute length - short commute	0.029	0.1	0.775
Fee status - UK student	0.01	0.003	0.002
Gender - Male	0.124	0.232	0.595
Parent(s) attended university - yes	-0.107	0.13	0.408
Private education - Yes	0.031	0.093	0.738

Table 7.2.9 – Binary logistic regression – Average marginal effects for February sense of belonging and demographic variables as predictors of continuation (n = 44)

Term	AME	Std error	p-value
May belonging	0.009	0.004	0.018
Age - Under 25	-0.095	0.093	0.308
Commute length - short commute	-0.056	0.11	0.611
Fee status - UK student	0.055	0.122	0.651
Gender - Male	-0.18	0.18	0.318
Parent(s) attended university - yes	0.122	0.158	0.441
Private education - Yes	0.163	0.108	0.132

Table 7.2.10 – Binary logistic regression – Average marginal effects for May sense of belonging and demographic variables as predictors of continuation (n = 38)

Term	AME	Std error	p-value
Belonging change	0.005	0.005	0.333
Age - Under 25	0.016	0.17	0.923
Commute length - short commute	-0.091	0.111	0.413
Fee status - UK student	0.126	0.166	0.448
Gender - Male	-0.188	0.185	0.309
Parent(s) attended university - yes	0.183	0.17	0.282
Private education - Yes	0.168	0.139	0.227

Table 7.2.11 – Binary logistic regression – Average marginal effects for changes in sense of belonging and demographic variables as predictors of continuation (n = 38)

Term	AME	Std error	p-value
Average belonging -	0.006	0.002	0.008

Age - Under 25	0.067	0.112	0.551
Commute length - short commute	-0.113	0.081	0.162
Fee status - UK student	0.073	0.106	0.487
Gender - Male	-0.081	0.091	0.371
Parent(s) attended university - yes	0.053	0.079	0.503
Private education - Yes	0.171	0.084	0.041

Table 7.2.12 – Binary logistic regression – Average marginal effects for average sense of belonging and demographic variables as predictors of continuation (n = 87)

Term	Estimate	Std error	p-value
(Intercept)	80.643	16.071	0.000
Workshop status - Non-attend	-2.514	10.060	0.805
Workshop status - Study	11.581	9.133	0.217
Gender - Male	-7.921	8.217	0.345
Age - Under 25	2.553	10.942	0.818
Commute length - short commute	6.517	8.148	0.432
Private education - Yes	4.390	11.469	0.705
Fee status - UK student	-2.665	11.626	0.821
Parent(s) attended university - yes	5.017	8.373	0.555

Table 7.2.13 – Multiple linear regression – Workshop status as a predictor of December Intention to Persist (n = 32)

Term	Estimate	Std error	p-value
(Intercept)	79.554	17.041	0.000
Workshop status - Non-attend	-2.076	10.662	0.847
Workshop status - Study	-5.704	10.581	0.593
Gender - Male	-5.480	9.814	0.580
Age - Under 25	-0.727	11.619	0.950
Commute length - short commute	-1.097	9.385	0.908
Private education - Yes	1.083	11.186	0.923
Fee status - UK student	4.025	12.229	0.744
Parent(s) attended university - yes	0.046	9.219	0.996

Table 7.2.14 – Multiple linear regression – Workshop status and demographic variables as a predictor of February Intention to Persist (n = 44)

Term	Estimate	Std error	p-value
(Intercept)	84.646	16.290	0.000
Workshop status - Non-attend	2.913	11.151	0.796
Workshop status - Study	0.012	12.055	0.999
Gender - Male	-6.982	10.700	0.519
Age - Under 25	-6.344	12.405	0.613
Commute length - short commute	-6.642	9.272	0.479
Private education - Yes	-4.808	11.553	0.680
Fee status - UK student	-1.938	11.397	0.866
Parent(s) attended university - yes	7.729	10.419	0.464

Table 7.2.15 – Multiple linear regression – Workshop status and demographic variables as a predictor of May Intention to Persist (n = 39)

Term	Estimate	Std error	p-value
(Intercept)	88.145	10.601	0.000
Workshop status - Non-attend	-4.356	7.880	0.583
Workshop status - Study	-0.795	7.968	0.921
Gender - Male	-4.880	6.830	0.479
Age - Under 25	-0.778	8.447	0.927
Commute length - short commute	-6.371	6.610	0.340
Private education - Yes	-2.633	8.228	0.750
Fee status - UK student	-3.479	8.069	0.668
Parent(s) attended university - yes	3.380	6.977	0.630

Table 7.2.16 – Multiple linear regression – Workshop status and demographic variables as a predictor of average Intention to Persist (n = 56)

Term	Estimate	Std error	p-value
(Intercept)	-0.799	23.177	0.973
Workshop status - Non-attend	2.741	13.039	0.836
Workshop status - Study	-11.982	13.218	0.377
Gender - Male	-16.632	10.933	0.147
Age - Under 25	9.542	14.655	0.524
Commute length - short commute	-5.022	10.463	0.637
Private education - Yes	1.136	15.371	0.942
Fee status - UK student	-4.244	15.553	0.788

Parent(s) attended university - yes	2.603	11.206	0.819
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Table 7.2.17 – Multiple linear regression – Workshop status and demographic variables as a predictor of change in Intention to Persist (n = 26)

Factor	AME	Std error	p-value
Age - Under 25	0.073	0.115	0.526
Commute length - short commute	-0.117	0.079	0.138
Fee status - UK student	0.171	0.117	0.143
Gender - Male	-0.137	0.092	0.136
Parent(s) attended university - yes	0.053	0.082	0.520
Private education - Yes	0.181	0.084	0.031
Workshop status - Non-attend	-0.252	0.083	0.002
Workshop status - Study	-0.165	0.083	0.047

Table 7.2.18 – Binary logistic regression – Average marginal effects for workshop status and demographic variables as a predictor of continuation (n = 89)

Factor	AME	Std error	p-value
Age - Under 25	0.037	0.096	0.697
Belonging workshop learning outcomes	0.006	0.005	0.159
Commute length - short commute	-0.042	0.074	0.576
Fee status - UK student	-0.135	0.089	0.131
Gender - Male	-0.154	0.079	0.052
Parent(s) attended university - yes	-0.052	0.074	0.486
Private education - Yes	0.015	0.095	0.874

Table 7.2.19 – Binary logistic regression – Average marginal effects for belonging workshop learning outcomes and demographic variables as a predictor of continuation (n = 30)

Appendix 8.1 - Student belonging – research impact

This appendix appears in the [initial Declarations section](#) of this thesis, as well as in [the main text](#) and at [the end](#) of Chapter 8.

Conferences, workshops and publications conducted during the PhD, in reverse-chronological order

1. December 2024: Manchester University Staff Belonging Network – ‘The role that we can all play in building belonging within our student and staff communities’ – invited workshop presentation (upcoming)
2. November 2024: Trends in Higher Education journal – ‘The promise and limitations of student belonging as a predictor of retention’ – journal article with Dan McArthur and Liz Thomas – accepted for publication on 13th November 2024
3. November 2024: Wonkhe blog with Sophie Connor: How to better understand students’ sense of belonging - <https://wonkhe.com/blogs/how-to-better-understand-students-sense-of-belonging/>
4. October 2024: Research report – Belonging Research Project: an analysis of innovative methodologies – <https://doi.org/10.25416/NTR.27248700.v2>. Led by Sophie Connor, with myself as secondary author. Including reflections on the use of online diaries as an innovative qualitative method to explore students’ sense of belonging
5. September 2024: EARLI Higher Education and Methods in learning research SIGs event – Utrecht – ‘Changing belonging – a longitudinal exploration of how first-year sense of belonging is shaped’ – symposium presentation
6. September 2024: Nottingham Trent University Learning and Teaching Symposium – ‘Let’s Talk about Student Belonging’ – Keynote presentation and panel discussion member
7. August 2024: Journal of College Student Retention: Research, Theory & Practice – ‘Book Review: Bentrim, E., M and Henning, G. W. (2022). The Impact of a sense of belonging in college: Implications for student persistence, retention and success’ – <https://journals.sagepub.com/doi/full/10.1177/15210251241268868>
8. July 2024: Student Engagement in Higher Education Journal (RAISE) – ‘Challenging simplistic and deficit perceptions of belonging amongst historically underrepresented students’ – opinion piece – <https://sehej.raise-network.com/raise/article/view/1223>

9. July 2024: Wonkhe webinar – ‘From Support to Success’ – webinar speaker – <https://wonkhe.com/events/from-support-to-success/>
10. July 2024: Foundation Year Network Annual Conference – Lincoln – ‘Let’s talk about student belonging: from research and theory to practice’ – conference presentation
11. July 2024: UWS London campus UPLIFT series – ‘Let’s talk about student belonging: from research and theory to practice’ – masterclass session
12. June 2024: UWS Student Success Symposium – ‘Critically unpicking the key tensions in our work around student belonging’ – masterclass session
13. May 2024: European First Year Experience (EFYE) conference – Copenhagen – ‘Are we doing belonging TO our students? - findings from an action research PhD on student belonging agency with new undergraduates’ – conference presentation
14. May 2024: Student Belonging Conference 2024 – University of East Anglia – ‘Time to belong: exploring the dynamic nature of student belonging’ – [pre-conference video recording](#)
15. May 2024: Universities UK Enhancing the student experience 2023 – ‘A sense of belonging’ – member of a panel discussion
16. April 2024: PGCert Higher Education teaching session – Middlesex University - ‘Let’s talk about student belonging’ – teaching session presentation to students on the PGCert HE programme
17. April 2024: QMUL workshop – ‘Let’s talk about student belonging’ – teaching session presentation to medical students with educational electives
18. April 2024: UKAT conference - Seeing the Invisible: How student engagement data is providing new insights to enable successful student outcomes – panel discussion
19. March 2024: Advance HE Building Belonging cohort workshop – ‘Student belonging - contributing to knowledge and practice’ workshop presentation
20. March 2024: Wonkhe podcast special live from the Secret Life of Students event – ‘Loneliness, culture wars, HE on TV’ – podcast guest - <https://wonkhe.com/blogs/podcast-secret-life-of-students-special-2/>
21. March 2024: Student Partnership Forum – University West Scotland (UWS) - ‘Let’s talk about student belonging’ – workshop presentation to students and staff involved in student partnership work
22. January 2024: PGCert Higher Education teaching session – Middlesex University - ‘Let’s talk about student belonging’ – teaching session presentation to students on the PGCert HE programme

23. January 2024: Student Enrichment Lead workshop – Sheffield Hallam University – ‘Let’s talk about student belonging’ – workshop presentation to academics with a responsibility for student enrichment
24. November 2023: Leeds Student Success conference - Exploring and Critiquing Sense of Belonging Methodologies for Measuring Student Experiences – conference session chair
25. October 2023: Wonkhe blog - Building belonging a year on – how has higher education changed? - <https://wonkhe.com/blogs/building-belonging-a-year-on-how-has-the-sector-changed/>
26. October 2023: Advance HE Building Belonging cohort workshop – ‘Introduction to evaluating belonging’ workshop presentation - https://figshare.com/articles/presentation/Introduction_to_evaluating_student_belonging_Advance_HE_Building_Belonging_programme_presentation/25562556
27. September 2023: RAISE Annual Conference 2023 – ‘Student belonging: critiquing simplistic notions of its factors and links to student success’ – conference presentation - [https://figshare.com/articles/presentation/RAISE_2023 - David Gilani presentation - Student belonging critiquing simplistic notions of its factors and links to student success/24166746](https://figshare.com/articles/presentation/RAISE_2023_-_David_Gilani_presentation_-_Student_belonging_critiquing_simplistic_notions_of_its_factors_and_links_to_student_success/24166746)
28. August 2023: Student Belonging Community of Practice – ‘How can the academic literature on student belonging help focus our practice?’ – webinar presentation
29. August 2023: EARLI conference – ‘An action research approach to challenging narrow conceptions of belonging amongst students’ – conference presentation as part of a wider student belonging symposium - [https://figshare.com/articles/presentation/An action research approach to challenging narrow conceptions of belonging amongst students EARLI 2023 presentation/24312598](https://figshare.com/articles/presentation/An_action_research_approach_to_challenging_narrow_conceptions_of_belonging_amongst_students_EARLI_2023_presentation/24312598)
30. June 2023: Directors of Programmes away day – Middlesex University – ‘Let’s talk about student belonging’ – keynote conference presentation
31. May 2023: Universities UK Enhancing the student experience 2023 – ‘Building belonging in our academic communities’ – chair of a panel discussion
32. March 2023 – Embedding belonging conference – University of East Anglia – ‘Student belonging research into practice: findings from a critical literature review’ – conference presentation
33. March 2023 – Tribal and Student Minds Panel Discussion – ‘The Rise of Student Loneliness’ – webinar discussion member

34. January 2023 – Advance HE Building Belonging cohort workshop – ‘Evaluating our work on student belonging’ – workshop
35. December 2022 – Pearson HE Innovate webinar – host: ‘Building belonging through pre-arrival and induction’ – webinar discussion chair
36. November 2022 – Action on B3 Indicators: Continuation, Completion and Progression – Conference by Inside Government – ‘Workshop: How can we Build Learning Communities that Encourage Authentic Belonging amongst our Students?’ – conference presentation
37. November 2022 – Student Success Conference – Leeds University – ‘Panel discussion: What it means to belong in HE’ with Professor Liz Thomas and Professor Bridgette Bewick – conference panel discussion - <https://www.leeds.ac.uk/student-success/doc/blog-belonging>
38. October 2022 – Research acknowledgement within Wonkhe and Pearson’s Building Belonging in Higher Education report - <https://wonkhe.com/wp-content/wonkhe-uploads/2022/10/Building-Belonging-October-2022.pdf> - “Special thanks to David Gilani for his constructive guidance on the writing of this report and for helping us bring some order to the many ideas and recommendations within it.”
39. September 2022 – Learning and Teaching Conference – Middlesex University - ‘How can We Build Learning Communities that Encourage Authentic Belonging amongst our Students?’ – conference presentation
40. June 2022 - Oxford Brookes EdD Colloquium – ‘How can we overcome the problematic aspects of randomised control trials in education research?’ – conference presentation

Glossary – including acronyms

Key terms

Agentic belonging – when students feel able and motivated to take action towards building their sense of belonging in authentic ways. This requires a level of understanding from students about their own belonging needs, opportunities to build belonging and resilience to persist through barriers to their sense of belonging. Agentic belonging also requires appropriate conditions and opportunities for students to develop a sense of belonging in ways meaningful to them, without being pressured to approach belonging in narrow, arbitrary and externally defined ways. An ‘agentic belonging’ intervention can take many forms, but in the context of this thesis, it is a workshop in which the above points are communicated to students through interactive activities.

Authenticity – when acting in alignment with one’s identities, goals and needs. Authenticity is used in broader student belonging and student agency literature, but is used within this thesis primarily as a term to summarise responses used within students’ online diaries about the importance of being true to oneself when taking action to belong.

Online diaries – a longitudinal method of qualitative research that involves participants reflecting on a given topic over an extended period of time. Participants may submit their reflections in a variety of formats, such as blogs, vlogs or audio recordings.

Process evaluation – Whilst impact evaluation deals with the assessing the effectiveness of interventions, implementation and process evaluation helps to assess whether interventions are being implemented as intended and provides useful learnings to revise and improve activities in the future.

Retention – A term used in broader student success literature to denote students who continue successfully and eventually complete their degree of study. Within the context of this thesis, retention has been defined based on the concept of ‘continuation’ used by the Office for Students (OfS) in assessing student outcomes in the UK context (Office for Students, 2024): a student who has continued studies at the same higher education provider one year and 14 days after they have started their studies.

Selective-recruiting – a university may be referred to as selective-recruiting when they have strict entry conditions. These universities will often have a lower proportion of students from

historically underrepresented backgrounds, especially when compared with ‘widening participation’ institutions.

Student agency – to extent to which students feel able and motivated to take action towards their goals in the educational context. Agency can be understood as context-dependent, temporarily embedded, constrained by societal contexts, relational and multi-dimensional. Research has shown how student agency is connected to positive outcomes both during and after students’ time at university.

Student belonging – Students have a sense of belonging when they feel at home, welcomed, mattering to peers and staff, and able to act as their authentic self. Each individual student has different belonging needs, based on their experiences of belonging outside of being a student and their motivations for studying at university. Furthermore, each individual student has different experiences of the factors that enable or thwart their sense of belonging. Students’ sense of belonging changes over time as they experience and reflect on these belonging experiences. There are multiple overlapping domains in which students may develop a sense of belonging, which then contributes collectively to their overall sense of belonging at university.

Student success – Different formal metrics, used by universities and governments such as continuation, completion and on-time graduation are often bundled together under the broader heading of ‘success’. Within the context of this thesis, student success is used primarily to refer to student retention.

Theory of Change (ToC) – an evaluation methodology or approach that encourages users to create a clear connection between short-term activities and the hopeful longer-term outcomes to beneficiaries. As there are often many distinct stages and steps between activities in universities and eventual desired outcomes, ToC can be useful in providing a place to acknowledge the different assumptions that we must make at each stage along the way.

Widening participation – the overall social justice ambition to better align university student demographics with those of the overall population. Whilst the agenda of widening participation is something for all universities to pursue, some universities are often denoted as ‘widening participation institutions’ when they have a large proportion of historically underrepresented students.

Acronyms

Abbreviations and acronyms are explained the first time that they are used in a chapter. However, to support accessibility of reading for those may be less familiar with these terms, all acronyms used within the thesis are also captured here in alphabetical order.

AME – Average Marginal Effect

HE – Higher Education

HESA – Higher Education Statistics Agency

OfS – Office for Students

RCT – Randomised control trial

TASO – Transforming Access and Student Outcomes

ToC – Theory of Change

References

Please note that the studies included within the systematised review of student belonging within [Chapter 2](#) – Literature Review are all included within Appendix 2.2. References only feature here if they have been cited within the main text of the thesis.

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