Exploring the Effects of Attachment Security Priming on Factors Relevant to Mental Health and Wellbeing

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Declaration

This thesis has been submitted for the Doctorate in Clinical Psychology at The University of Sheffield. It has not been submitted for any other qualification or to any other institution. This thesis is my own original work and all other sources have been referenced accordingly.

Word Count

Literature review

a) Without references and tables- 7126

b) With references and tables- 10527

Research report

a) Without references and tables- 7233

b) With references and tables- 9643

Total (Overall Abstract + Literature review + Research report)

a) Without references and tables- 14801

b) With references and tables- 20621

Overall Abstract

Attachment refers to the deep and lasting emotional bond that connects a person to another. Attachment can be conceptualized along two dimensions: anxiety and avoidance, and when these are both low, it indicates attachment security. Those with a secure attachment tend to have more positive views of themselves and others and are able to effectively regulate their emotions and cope with stressful life events. Although early attachment experiences are important in shaping an individual's attachment style, this is malleable in response to experiences across the lifespan. Attachment security priming is a social-cognitive technique that aims to increase attachment security. Priming attachment security has been studied in relation to a variety of outcomes, including those relevant for mental health and wellbeing, and findings are promising. However, research has largely been conducted with student populations in non-clinical settings. The current thesis aimed to contribute to the current literature regarding the

effectiveness of attachment security priming on variables relevant to mental health and wellbeing.

The first part of the thesis reports a systematic literature review and meta-analyses exploring the effect of attachment security priming on outcomes relevant to mental health and wellbeing. Sixteen studies were included in the review and 13 of these were included in the main meta-analysis. There was a significant medium effect size indicating that attachment security priming led to improved mental health and wellbeing.

The second part of the thesis reports a quantitative pilot and feasibility study utilising a pragmatic additive trial design. The study aimed to explore whether it was feasible to conduct a trial within an IAPT setting, comparing the effect of a guided self-help (GSH) behavioural activation (BA) intervention with BA intervention with embedded attachment security priming task. The study aimed to preliminarily explore whether the attachment security priming intervention enhanced treatment effects for BA on outcomes relevant to mental health and wellbeing in those with low-moderate depressive disorders. Results demonstrated reasonable feasibility for conducting a larger-scale trial into the effects of attachment security priming as a potential enhancement to existing GSH low-intensity interventions for individuals with mild-moderate mental health difficulties. Clinicians demonstrated willingness to recruit participants and service users demonstrated reasonable willingness to engage in the research. No significant differences were found between groups with regards to outcomes of dropout, attendance, stepping-up, and the clinical outcomes.

Taken together, both parts of the thesis indicate that attachment security priming has clinical potential. More research in real world clinical settings across various diagnoses is needed to generalise findings, but the study indicates that a larger-scale

RCT is possible and feasible. The findings from this thesis can be used to inform future experimental and clinical trial designs exploring the effectiveness of attachment security priming for use with clinical populations.

Acknowledgments

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Contents

Part One: Literature Review

The Efficacy of Attachment Security Priming on Mental Health and Wellbeing: A Systematic Review and Meta-Analysis

Abstract

Objective: Attachment insecurity has been associated with various mental health difficulties. Attachment security priming is a social-cognitive technique that aims to increase attachment security, which is associated with increased resilience and coping abilities. The current study sought to provide a quantitative synthesis of the efficacy of attachment security priming on outcomes relevant to mental health and wellbeing.

Method: Systematic review and meta-analysis. Literature searches were conducted in PsycINFO (OvidSP), MedLine (OvidSP) and Scopus databases using keywords based on variations of 'attachment', 'security' and 'priming'. Only those studies that had used a randomised and experimental design were included. All eligible studies were assessed for risk of bias and the GRADE assessment tool was used to rate the quality of the meta-analysis. A narrative synthesis and a random effects meta-analysis was conducted. Moderator and sensitivity analyses were also completed.

Results: Sixteen studies were identified and included in the review and 13 included for the meta-analysis. Results indicated a significant medium effect size for the effect of attachment security priming on mental health and wellbeing (r= 0.50 [CI 0.32 – 0.68]). None of the moderators were significant.

Conclusion: This study found that attachment security priming was efficacious in improving mental health and wellbeing. Attachment security priming therefore may be of use within clinical practice for improving outcomes. The current review should be interpreted in line with its limitations. Further research is also needed to examine the utility of attachment security priming for use with differing clinical populations.

Practitioner points:

- Attachment security priming may offer potential future directions for improving outcomes when working with clinical populations.

- More research is needed into the effects of attachment security priming on variables relevant to mental health and wellbeing within clinical populations to determine its feasibility for use within real-world clinical settings.

Introduction

Attachment theory

Attachment refers to the deep and lasting emotional bond that connects a person to another (Ainsworth, 1973; Bowlby, 1969). Bowlby suggested that humans possess an innate behavioural system driving the formation of attachments, in order to increase chances of survival. Attachment behaviours, such as proximity seeking, are said to be instinctive and will be triggered by threatening or dangerous situations (Bowlby, 1969). The manner in which relationship partners (e.g. parents, romantic partners) respond to an individual's attachment behaviours become internalised over time, as chronically accessible internal working models of self, others, and the social world, known as 'attachment styles' (Bretherton & Munholland, 1999; Cassidy, Jones, & Shaver, 2013).

Individual Differences in Attachment Style and Their Relevance for Mental Health

Adult attachment can be conceptualized along two dimensions: anxiety and avoidance (Brennan, Clark, & Shaver, 1998; Shaver & Fraley, 2004). When relationship partners are experienced as responsive and available for support, a person will develop a secure attachment style. Attachment security is characterised by low attachment anxiety and low attachment avoidance. Such individuals tend to have positive views of self and others and balanced emotion regulation capabilities (Cooper, Shaver, & Collins, 1998). Experiencing relationship partners as inconsistently available over time leads to the development of attachment anxiety. People high in attachment anxiety are often preoccupied with relational worries and feelings of worthlessness (Mikulincer & Shaver, 2012). Conversely, experiencing relationship partners as consistently rejecting leads to the development of attachment avoidance. Those high in attachment avoidance are uncomfortable with closeness and often suppress their feelings, engaging in

compulsive self-reliance to manage their distress (Bogdan, Ericson, Jackson, Martin, & Bryan, 2011).

Those low on attachment anxiety and avoidance dimensions are generally secure and able to effectively self-regulate (Bowlby, 1988). Moreover, those with secure attachments have increased resilience and are more able to cope with stressful life events (Bowlby, 1988). Therefore, those with insecure attachments are generally more vulnerable to developing mental health difficulties (Mikulincer & Shaver, 2012). Individuals with secure attachments have been found to experience higher levels of psychological wellbeing overall (Love & Murdock, 2004); they are generally more able to cope with stress, recover quicker from periods of distress, and have longer episodes of general positive affect, which all promote positive wellbeing and mental health (Mikulincer & Shaver, 2012).

A review by Mikulincer & Shaver (2007) discovered that attachment insecurity was frequent among individuals with various mental disorders. Recent studies have supported this, indicating that attachment insecurity is associated with a range of mental health difficulties, including depression (Cantazaro & Wei, 2010), anxiety (Bosmans, Braet, & Van Vlierberghe, 2010) obsessive-compulsive disorder (Doron, Moulding, & Kyrios, 2009), post-traumatic stress disorder (PTSD; Ein-Dor, Doron, & Solomon, 2010), suicidal tendencies (Gormley & McNiel, 2010), eating disorders (Illing, Tasca, & Balfour, 2010) and personality disorders (Crawford, Livesley, & Jang, 2007). Researchers advocate that attachment is likely to interact with other factors, such as temperament, life history, and intelligence in order to influence development of psychopathology, rather than there being a direct cause and effect relationship (Mikulincer & Shaver, 2012). Moreover, psychological problems can inversely influence attachment insecurity (Mikulincer & Shaver, 2012), indicating that mental

disorders themselves may erode a person's sense of attachment security. Individuals high in attachment anxiety are more likely to experience ruptures in therapeutic relationships (Eames & Roth, 2000), with those high in avoidance being less likely to seek professional help for psychological problems (Riggs, Jacobovitz, & Hazen, 2002; Vogel & Wei, 2005). Altogether, research indicates that attachment security is an important factor to consider in increasing resilience and improving mental health (Mikulincer & Shaver, 2012).

Stability of Attachment

A failure to form secure attachments early in life can have a negative impact on individuals in childhood that persists throughout life (Bretherton, 1992). Early attachment experiences influence an individual's future social, interpersonal and emotion regulation capacities (Weinfield, Sroufe, Egeland, & Carlson, 2008). According to Bowlby (1973), internal working models are resistant to change but malleable, as individuals integrate continuing experiences into their existing working models. However, attachment style can change if a person encounters experiences that do not fit with their existing models (Fraley, 2002). This indicates that attachment styles have plasticity and so can evolve throughout the lifespan in response to different life events and relational experiences (Gillath, Karantzas, & Fraley, 2016). Baldwin and Fehr (1995) observed that individuals could exhibit different attachment styles within different relationships, advocating the idea that most people have working models that are consistent with multiple attachment styles, but that some are more accessible than others depending on their underlying attachment disposition.

Attachment Security Priming

As internal working models are considered to be key within attachment theory, researchers have utilised experimental methods to study these cognitive structures

(Gillath et al., 2016). Specifically, 'priming' attachment security has been utilised in an attempt to manipulate the cognitive processes involved with internal working models that influence attachment-related affect and behaviour (Gillath & Karantzas, 2019).

Priming is a social cognitive technique where mental representations in memory are made accessible, leading to 'spreading activation' of related semantic and affective nodes (Gillath et al., 2008). Priming attachment security involves inducing a sense of security by bringing to mind the presence of secure attachment figures (Gillath et al., 2008). There are various methods used to prime attachment security, including exposing people to security-related words (e.g. affection, love); to the names of secure attachment figures through engaging in different tasks; exposing individuals to pictorial representations of attachment security; and prompting participants to recollect memories related to their attachment figures or asking them to imagine such scenarios (Gillath & Karantzas, 2019). Priming can be delivered subliminally (i.e. exposing individuals to stimuli that occurs quickly enough (e.g. approx 20 ms, and with backwards masking, that it is not consciously observable), or supraliminally (i.e. primes are delivered for a longer period of time within conscious awareness [Elgendi et al., 2018]). Priming attachment security is thought to render individuals temporarily more secure, meaning their cognitive and affective processing should resemble that associated with attachment security (Rowe & Carnelley, 2003). It is indicated that accessibility to secure internal working models should be increased the more often the schema is activated (Carnelley & Rowe, 2007).

The Present Review

The current review and meta-analysis provides a summary and appraisal of the existing evidence base of controlled experiments testing the impact of attachment security priming interventions on mental health and wellbeing outcomes. Two

systematic reviews have been conducted previously looking at the effects of attachment security priming (Gillath & Karantzas, 2019; Rowe, Gold, & Carnelley, 2020). Gillath and Karantzas' (2019) review consisted of a qualitative synthesis of attachment security priming research published in the previous two years to establish its efficacy on a range of outcomes. Their findings determined that supraliminally delivered security priming had generally positive effects, with these effects being particularly noteworthy for those who had an anxious attachment style. Additionally, Rowe et al. (2020) found that attachment security priming had a beneficial impact on positive affect and reduced negative affect in comparison to control primes.

While these reviews provide a much-needed systematic synthesis of a growing and potentially clinically applicable literature base, there have been no previous attempts to quantify the efficacy of attachment priming on mental health and wellbeing. This meta-analysis therefore offers a novel contribution and will inform the design of future research using security priming and enabling potential application within clinical practice. The review will explore whether there are any potential moderators that influence the effect of attachment security priming on outcomes.

Method

Protocol Registration

The review was pre-registered on PROSPERO (CRD42019152799) and conforms to PRISMA guidelines (Moher et al., 2015). See Appendix A for PROSPERO protocol.

Search Strategy

PsycINFO (OvidSP), MedLine (OvidSP) and Scopus databases were searched using keywords based on variations of 'attachment', 'security' and 'priming'. These were combined using Boolean operators (AND/OR) and wildcard variations, which

were modified depending on database to capture variations of keywords. Further searches were performed using Google Scholar, as well as forwards and backwards reference list searches by hand. Searching took place in March 2020, with the final search being conducted on 30th March 2020.

The grey literature was searched using databases such as Open Grey, in order to maximise the number of studies for inclusion. Including grey literature can reduce the quality of the meta-analysis, as studies are not subject to the same rigorous review process as those published within peer-reviewed journals (Conn, Valentine, Cooper, & Rantz, 2003). However, including grey literature aims to address the issue of publication bias, which can increase methodological rigour (Haddaway & Bayliss, 2015).

After duplicates were removed, the primary reviewer screened titles and abstracts of identified papers and completed full text screening for those that met the inclusion/exclusion criteria. Two members of the research team screened titles and abstracts from the initial search and compared these against the inclusion/exclusion criteria to independently determine their suitability for inclusion. Discrepancies between reviewers were discussed in a consensus meeting and resolved to agree the final set of papers included in the review.

Eligibility Criteria

Table 1 presents inclusion and exclusion criteria as framed by PICO domains (Schardt et al., 2007). Studies were eligible for inclusion if they utilised a randomised experimental design, comparing the effects of a secure attachment priming procedure with a comparator condition on an outcome relevant to intra-psychological constructs of wellbeing.

Table 1

Inclusion/exclusion criteria

	Inclusion	Exclusion
Population	- Participants over the age of 18	- Participants under the age of 18
Intervention	- Utilised a subliminal or supraliminal priming procedure[1] - Assessed security priming in relation to outcome variable/s	- No attachment security priming procedure delivered
Comparator	- Included at least one comparison group utilising another type of priming (i.e. neutral, insecure attachment, or positive priming) or a neutral control group with no priming procedure. - Participants randomised to conditions	- No control/comparison group - Did not randomise participants to conditions
Outcomes	- Included variables relevant to own psychological wellbeing - Use of valid and reliable outcome measures	- Outcome variables not related to own psychological wellbeing - Brain imaging studies - Heart rate monitoring/skin conductance signal studies - Did not use valid and reliable outcome measure/s
Study design	- Randomised control design - Published in English - Published or unpublished studies	- Reviews/book chapters

[1] Validity of priming procedure discussed and determined with experts in attachment security priming

Data Extraction

A bespoke data extraction form was designed and successfully piloted. The following data were extracted from studies: setting, country of study, sample size, demographics, inclusion/exclusion criteria, type of priming intervention (i.e.

supraliminal or subliminal), method of intervention delivery (e.g. online, lab), treatment duration (one-off or repeated priming), type of control group, outcome measures used, study design, method, statistical analysis, findings, and conclusions. Where statistical data required for meta-analysis was not reported, the information was requested from authors by email and included if received.

The grading of recommendations assessment, development, and evaluation (GRADE) approach was used to rate the quality of the evidence included in each meta-analysis conducted (Dijkers, 2013). The quality of evidence was evaluated on five domains: (1) risk of bias in the individual included studies, (2) publication bias, (3) inconsistency, (4) imprecision, and (5) indirectness of treatment estimate effects. Three reviewers graded the meta-analysis and a consensus was established (rated as high, moderate, low, or very low quality).

Risk of Bias

Study quality was assessed using the Downs and Black Checklist (1998; Appendix B). The checklist was adapted and items were removed where they were not relevant for specific studies, with scoring weighted accordingly and converted to a percentage for comparison between studies. Items were scored 1 for 'yes' where relevant and 0 for 'no' or 'unable to determine', where appropriate. Criteria used to assess study quality centred on quality of reporting, external and internal validity, and study power. In line with previous research (Hague, Hall, & Kellett, 2016), item 27 assessing power was amended to fit with other items scoring and was therefore based on whether or not the study included a power calculation for sample size (1 = yes, 0 = no). Quality categories and ranges were defined by adjusting for alterations made to the checklist, with quality ratings of 0-48% indicating 'poor', 49-67% = 'fair', 68-89% = 'good' and 90% or above = 'excellent'.

Two trainee clinical psychologists, who were blind to the author's ratings, acted as independent raters, conducting quality assessment for 100% of the included studies. Studies were randomly allocated to each independent rater. Inter-rater agreement was assessed with Cohen's kappa statistic (*k*), interpreted as .21-.40 demonstrating fair agreement, .41-.60 as moderate agreement, .61-.80 as substantial agreement, and .81-1.0 as almost perfect agreement (Cohen, 1960; Landis & Koch, 1977). With the first rater, there was moderate agreement ($k = .55$) and there was fair agreement with the second rater ($k = .40$). Discrepancies between raters were discussed and a consensus reached in order to determine final quality scores for each study.

Data Analysis

Findings for all eligible studies identified were first synthesised in a narrative format. Studies that provided sufficient experimental data for inclusion in the meta-analysis were quantitatively synthesized using Meta-Essentials (Suurmon, van Rhee, & Hak, 2017). Between-groups effect sizes were calculated for difference in post-priming psychological wellbeing outcomes between the experimental and comparator groups (mean post-intervention score for the experimental group subtracted from the mean post-intervention score for the comparator group, divided by the pooled standard deviation). Effect sizes were converted to Hedges *g* using the *J* correction to adjust for small study biases (Hedges & Olkin, 1985). For one study (Pepping, Davis, O'Donovan, & Pal, 2015), a pre-post control group effect size was calculated and inputted as a hedges g effect size into the main analysis, due to a large difference between groups at baseline.

For studies where the intervention and comparison group/s were split further to represent other categories that were not relevant to the analysis for the purpose of this review (e.g. split groups into high and low attachment avoidance), means and standard

deviations of all groups were combined in order to produce a combined mean and standard deviation to represent the intervention and comparison groups separately (Cochrane Collaboration, 2011). These were then used to calculate the effect sizes. For studies with more than one relevant outcome measure included, an average effect size was calculated to provide an overall effect size for entry into the main meta-analysis to ensure each study only contributed one effect size (Borenstein, Hedges, Higgens, & Rothstein, 2009). Effect size for *g* was interpreted using Cohen's (1992) criteria; small, moderate and large effects represented by 0.2, 0.5 and 0.8 respectively.

Pooled effect sizes and 95% confidence were calculated using the inverse of the variance to weight the effect estimates. Due to the expected level of heterogeneity resulting from different comparator types, a random- effects model was used to account for within and between-study variance (Borenstein et al., 2009). Statistical significance was set at an alpha value of 0.05. Hetereogeneity was explored using the I^2 statistic to indicate percentage of variation and the accompanying Q statistic to report the statistical significance. Heterogeneity was assessed based on Cochrane guidelines (Deeks, Higgins, Altman, & Cochrane Statistical Methods Group, 2019). Deeks et al. indicate that an I^2 statistic of 0 to 40% suggests it may be important; 30 to 60% suggests that there may be moderate heterogeneity; 50 to 90% suggests substantial heterogeneity; and 75 to 100% suggests considerable heterogeneity.

Meta-regression and subgroup analyses were performed to examine potential methodological sources of heterogeneity a priori. Subgroup analyses explored three categorical variables: comparison group type (positive, insecure, neutral); setting of study (lab or online); and repeated or one-time priming. Meta-regression was used to explore three continuous variables: mean age; gender (% female); and study quality (%). A minimum of 10 studies was required to perform moderator analyses (Cochrane

Collaboration, 2011). Due to variability of outcomes across studies, sensitivity analyses were computed in order to determine the effect of removing non-mood related variables.

Publication Bias

Meta-analyses are susceptible to publication bias, as studies with larger effects tend to be published over studies with small effects, therefore biasing findings (Borenstein et al., 2009). This means that published literature may not represent all studies that have been undertaken on a particular topic. However, meta-analyses offer a statistical means to investigate the likelihood of these biases, and their potential impact on the results. Attempts were made by the researcher to gain access to grey literature by database searching, due to the potential 'file-drawer' problem (Rosenthal, 1979). Publication bias was assessed using various methods, as indicated by Card (2012). Funnel plots enable a visual assessment of study effect size plotted against standard errors in order to inspect for asymmetry, which indicates reporting biases in the included studies. Duval and Tweedie's (2000) trim and fill method was used, which adjusts for missing studies, specifying an estimate of unbiased effect size (Borenstien et al, 2009). Egger's regression also allowed for quantification of publication bias (Egger, Smith, Schneider, & Minder, 1997). Lastly, Rosenthal's fail-safe *N* was computed, which estimates the number of missing studies necessary to be included in the analysis in order for the overall effect to become non-significant (Rosenthal, 1979).

Results

Study Selection

Figure 1 outlines the process of study selection. N= 218 studies were initially revealed through database searching, with a further study identified through reference list searching. After duplicates were removed, 102 records were included. Titles and abstracts were screened for relevance, followed by full-text reviews. Following this, 16

studies (from 14 articles) were included for qualitative synthesis and following screening, 13 studies were included within the meta-analytic review. Two studies were excluded from the meta-analysis due to lack of reporting of outcomes (Park, 2007; Hudson & Fraley, 2018). Email contact was attempted with the main study authors to gain appropriate statistical output to run the analysis, however, no response was received within two months by the authors and they were therefore not included in the meta-analysis. Viechtbauer, Wolfgang, & Cheung (2010) indicate that outliers can be detected if the study's confidence interval does not overlap with the confidence interval of the pooled effect. This means that the study can be identified as an outlier, as there is high certainty that the study is not part of the 'population' of effect sizes pooled in the meta-analysis. As the Otway, Carnelley and Rowe's (2014) study's confidence interval did not overlap with that of the confidence interval of the pooled effect, it was identified as an outlier and subsequently removed from the meta-analysis, leaving a total of 13 studies for inclusion.

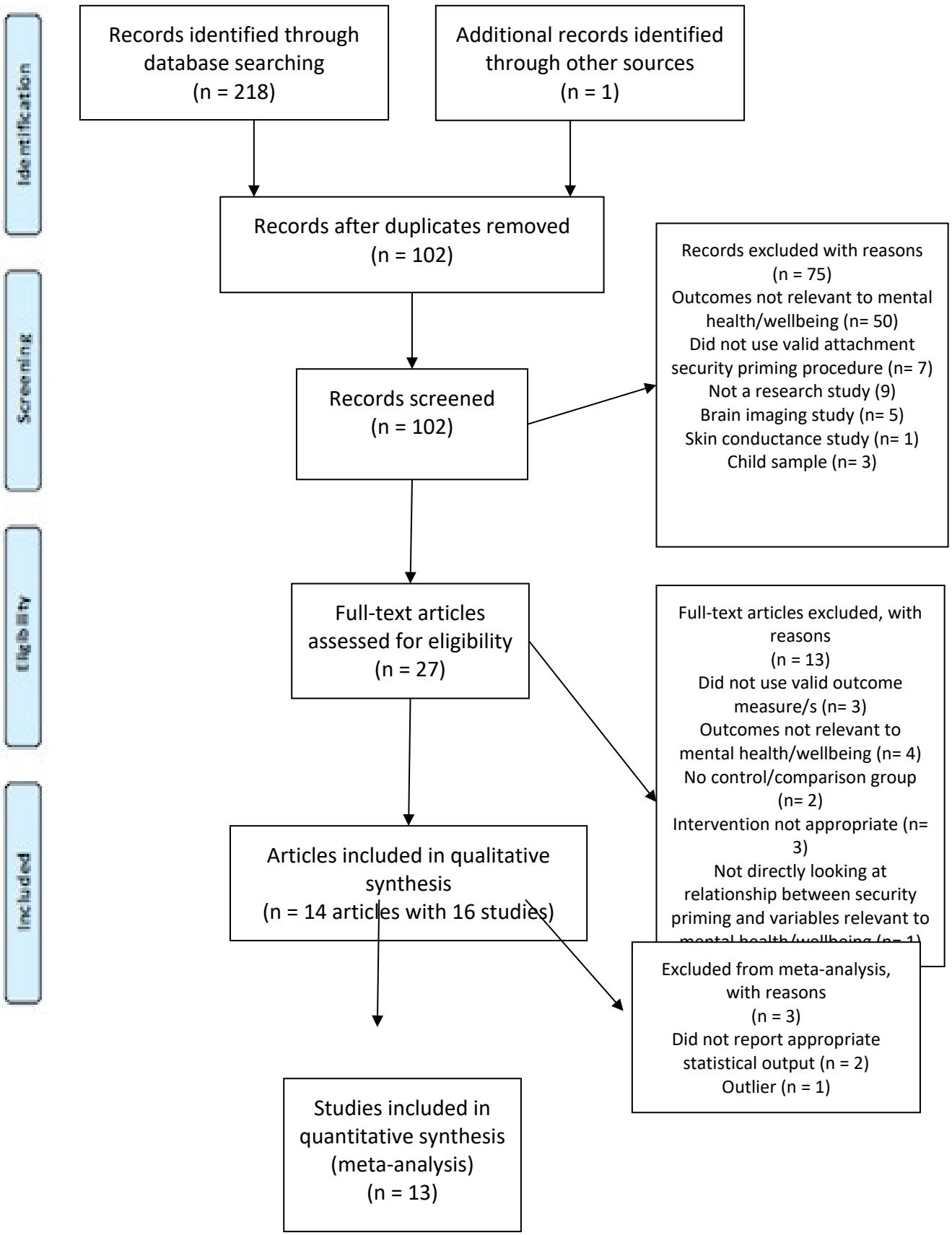

Figure 1. PRISMA diagram (Moher, Liberati, Tetzlaff, & Altman, 2009)

Quality Appraisal

Overall study quality (M = 70.81, SD = 6.89) was 'good'. Studies ranged in quality, with four being rated as 'fair' and 12 rated as 'good'. Study quality by subdomain revealed that studies scored highest with regards to methodological reporting, aside from reporting adverse events, for which most studies were rated 'no'. For reporting the distributions of principal confounders in each group, only 50% of studies were rated 'yes'. Study quality was lowest for external validity. This was largely due to many studies being rated as 'unable to determine' based on reporting of recruitment processes and uncertainty regarding the representativeness of the study sample. In terms of power, only 44% of studies reported conducting a power calculation. Appendix C presents full details of quality scoring.

Study Characteristics

Fourteen papers with 16 studies in total were included in the overall narrative synthesis and 13 studies were included in the meta-analysis. Study characteristics and key findings are displayed in Table 2.

Table 2.

Characteristics of included studies

Study	Country	Population	N	Mean age *(SD)*	Gender (% female)	Study setting	Type of priming intervention	Frequency of priming	Comparison group/s	Follow-up?	Relevant outcome measures	Relevant findings	Quality score
Bryant & Chan (2017)	Australia	Undergraduate students	69	19.25 *(3.07)*	75%	Lab	Supraliminal	Once	Positive priming	No	Depression, Anxiety and Stress Scale-21 items (DASS-21) Implicit Positive and Negative Affect Test (IPANAT)	Those exposed to attachment security prime had less diistress following exposure to a traumatic film compared with the control group.	65% (Fair)
Bryant & Datta (2019)	Australlia	Undergraduate students	71	19.49 *(2.74)*	67.6%	Lab	Supraliminal	Once	Positive priming	No	Depression, Anxiety and Stress Scale-21 items (DASS-21)	Attachment security priming reduced distress following exposure to a traumatic film.	78% (Good)

Carnelley et al. (2018)	United Kingdom	Clinical sample with primary diagnoses of a depressive disorder	48	50.9 *(13.6)*	60.42%	Lab	Supraliminal	Repeated	Neutral priming	Yes (1 day later)	Experiences in Close Relationship Scale- Short Form (ECR-Short Form) Profile of Mood States (POMS)	Attachment security priming group showed reduced depression and anxiety scores and higher felt-security after the final prime compared with control group	83% (Good)
Carnelley et al. (2016) (Study 1)	United Kingdom	Undergraduate students	144	20.1 *(3.38)*	88%	Online	Supraliminal	Once	Anxious, avoidant, and neutral priming	No	Felt security scale Profile of Mood States (POMS)	Higher depressed and anxious mood and lower felt-security in insecure priming and neutral groups.	79% (Good)
Carnelley et al. (2016)	United Kingdom	Undergraduate students	81	20.32 *(3)*	86%	Online	Supraliminal	Repeated	Neutral priming	Yes (1 day later)	Felt security scale	Those in secure priming group reported higher felt security and lower depressed and	77% (Good)

(Study 2)											Profile of Mood States (POMS)	anxious mood than those in neutral prime condition.	
Carnelley & Rowe (2007)	United Kingdom	Undergraduate students	64	21.18 *(4.91)*	71.9%	Lab	Supraliminal	Repeated	Neutral priming	Yes (2 days later)	Self-views	Participants primed with attachment security reported more positive self-views.	77% (Good)
Doron, et al. (2012)	Israel	Non-clinical adult sample	85	Median age= 24*	44.7%	Lab	Subliminal	Once	Neutral priming	No	Depression, Anxiety and Stress Scale-21 items (DASS-21) Hand-washing tendencies (Menzies, Harris, Cumming, & Einstein, 2000)	Compared with neutral priming group, security priming reduced OC-related washing tendencies among participants high on attachment anxiety and avoidance. Security priming led to higher OC-related washing tendencies than neutral priming among more	70% (Good)

												securely attached participants.	
Hudson & Fraley (2018)	United States	Undergraduate students	144	20.15 *(1.57)*	69%	Online	Supraliminal	Repeated	Attachment anxiety priming and neutral control (no priming)	No	Satisfaction with Life Scale (SWLS) Positive and Negative Affect Schedule (PANAS) Emotional stability subscale from the Big Five Inventory	Neither prime significantly impacted participants' wellbeing.	70% (Good)
Hutton et al. (2017)	United Kingdom	University students	59	21 *(3.5)*	80%	Lab	Supraliminal	Once	Neutral priming and positive affect priming	No	Paranoia and Depression Scale (PDS)	Secure attachment priming did not buffer paranoid thinking and had a negative impact for	79% (Good)

												participants high in attachment anxiety.	
Karreman et al. (2019) (Study 2)	Netherlands	Undergraduate students	73	20.82 ** (SD not reported)	Not reported	Lab	Supraliminal	Once	Neutral priming	No	Profile of Mood States (POMS)	Priming security reduced mood disturbance following performance of frustration induction task.	82% (Good)
Luke et al. (2012) (Study 1)	United Kingdom	Undergraduate students & adults recruited online through various websites	102	Range= 93.1 % between 18-35 (Mean & SD not reported)	100%	Online	Supraliminal	Once	Anxiety and avoidant priming	No	The Felt Security Scale	Felt security was significantly higher in secure priming condition.	68% (Fair)

Otway et al. (2014)	United Kingdom	Undergraduate students	50	22.43 *(SD not reported)*	62%	Lab	Supraliminal	Repeated	Neutral priming	Yes (1 day later)	The Felt Security Scale	Those in the secure priming condition reported significantly higher felt security compared with those in the neutral priming condition.	64% (Fair)
Park (2007) (Study 3)	United States	Undergraduate students	129	19.13 *(2.41)*	69.2%	Lab	Supraliminal	Once	Neutral priming and self-affirmation priming groups	No	State self-esteem scale (adapted from Rosenburg self-esteem inventory)	High appearance-based rejection sensitive participants who engaged in positive or secure attachment priming were buffered from the negative effects of an appearance threat.	65% (Fair)
Pepping et al. (2015) (Study 2)	Australia	Undergraduate students	32	21.31 *(8.02)*	75%	Lab	Supraliminal	Once	Neutral priming	No	12-item short form self-compassion scale	Those in attachment security priming group showed increase in state self-compassion.	77% (Good)

Sim et al. (2019) (Study 1)	South Korea	Undergraduate students	93	22.4 *(1.84)*	71%	Lab	Supraliminal	Once	Insecure priming	No	From scale of positive and negative experience developed by Diener et al. (2009), six items were used to measure positive affect. The Single-Item Self-esteem scale	Higher self-esteem and positive affect in secure attachment group primed non-verbally compared with insecure group.	68% (Good)

Sim et al. (2019) (Study 2)	South Korea	Undergraduate students	409	38.3 *(8.35)*	63.1%	Online	Supraliminal	Once	Neutral priming and insecure priming groups	No	From scale of positive and negative experience developed by Diener et al. (2009), six items were used to measure positive affect. The Single-Item Self-esteem scale	Participants primed with attachment security showed higher self-esteem and positive affect.	77% (Good)

* Did not report mean and standard deviation ** Mean age of men and women reported separately so calculated by author

Studies were conducted across a number of countries: Australia (k = 3); United Kingdom (UK; k = 7); United States (US; k = 2); South Korea (k = 2); Israel (k = 1); and Netherlands (k = 1). Studies were primarily conducted with student populations (k = 13). One study was completed with a clinical population of patients with depressive disorders (Carnelley et al., 2018); one with a non-clinical adult population (Doron et al., 2012); and one with a combination of students and adults in the community (Luke et al., 2012). Setting of study was recorded based on where the initial attachment security priming procedure took place, for those where priming was repeated. The majority of priming took place in a laboratory setting (k = 11), with the remainder (k = 5), taking place online. Most studies utilised a supraliminal priming procedure (k = 15), which involved a visualisation task, with only one study utilising a subliminal priming procedure, exposing security-related stimuli below conscious threshold (Greenwald, Drain, & Abrams, 1996). Most studies delivered priming only at a single time point (k = 11), with five studies delivering repeated priming at multiple time points following administration of an initial prime. Studies utilised a range of comparison groups, with some studies including multiple comparison groups to compare against attachment security priming. Studies included comparison groups that utilised only positive priming procedures (k = 2), neutral priming (k = 7), or insecure attachment priming (k =2). Other studies included multiple comparison groups: insecure attachment and neutral priming (k = 2); insecure attachment and neutral control group with no priming (k = 1); and neutral priming and positive priming (k = 2). Of the 16 studies, four completed follow-up measures (Carnelley et al., 2018; Carnelley et al., 2016 [study 2]; Carnelley & Rowe, 2007; Otway et al., 2014), with 12 completing measures at a single time point (Bryant & Chan, 2017; Bryant & Datta, 2019; Carnelley et al., 2016 [study 1]; Doron et al., 2012; Hudson & Fraley, 2018; Hutton et al., 2017; Karreman et al., 2019 [study 2];

Luke et al., 2012; Park, 2007 [study 3]; Pepping et al., 2015 [study 2]; Sim et al. 2019 [study 1 & 2].

Studies utilised a variety of measures. The Depression, Anxiety and Stress Scale 21 (DASS-21; Lovibond & Lovibond, 1995) was used in three studies (Bryant & Chan, 2017; Bryant & Datta, 2019; Doron et al., 2012) to measure depression and anxiety. Depression and anxiety was also measured using the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1992) in four studies (Carnelley et al., 2017; Carnelley et al., 2016 [study 1 & 2]; Karreman et al., 2019). The Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998) was utilised to measure paranoia and depression in one study (Hutton et al., 2017). Positive and negative affect was measured in two studies (Bryant & Chan, 2017; Hudson & Fraley, 2018) using the Implicit Positive and Negative Affect Test (IPANAT; Quirin, Kazen, & Kuhl, 2009; $k = 1$) and the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988; $k = 1$). Positive affect was measured by two studies (Sim et al., 2019 [study 1 & 2]) using the scale of positive and negative experience, developed by Diener et al. (2009), utilising six items used to measure positive affect only. Felt-security was measured as an outcome in five studies (Carnelley et al., 2018; Carnelley et al., 2016 [study 1 & 2]; Luke et al., 2012; Otway et al., 2014), utilising the Experiences in close relationships short version (ECR; Wei, Heppner, Russel, & Young, 2006; $k = 1$) and the Felt-Security scale (Luke, Sedikides, & Carnelley, 2012; $k = 4$). Subjective wellbeing was measured in a single study (Hudson & Fraley, 2018), utilising the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). One study measured emotional stability as an outcome (Hudson & Fraley, 2018), utilising the Emotional stability subscale from the Big Five Inventory (BFI; John & Srivastava, 1999). Self-views were measured using Tafarodi & Swann's (2001) measure in a single study

(Carnelley & Rowe, 2007). Self-compassion was measured in one study Pepping et al., 2015), using the 12-item short form self-compassion scale (Raes, Pommier, Neff, & Van Gucht, 2011). Obsessive-compulsive hand-washing tendencies (Menzies, Harris, Cumming, & Einstein, 2000) were measured as an outcome in one study (Doron et al., 2012). Self-esteem was measured as an outcome in three studies in total (Park, 2007 [study 3]; Sim et al., 2019 [study 1 & 2], with two utilising the single-item self-esteem scale (Robins, Hendin, & Trzeniewski, 2001), and one using the state self-esteem sale (adapted from Rosenburg self-esteem inventory; RSE, 1965).

Primary Meta-analysis

Meta-analytic comparisons were conducted between attachment security priming and comparison groups for each study, on outcomes relevant to mental health and wellbeing.

GRADE assessment

All comparisons were based on RCT evidence, therefore starting as high-quality evidence. There was not significant heterogeneity or publication bias across studies or publication bias and confidence intervals of individual study effect sizes were narrow, indicating precision in results. Across the meta-analyses, limitations were found in terms of small sample sizes, lack of representativeness across samples that largely utilise student populations, variability in outcome measures, and lack of reliability with regards to adherence to intervention. For this reason, the level of evidence was downgraded by one to indicate moderate-quality evidence.

Effect of attachment security priming versus comparison group

All outcomes determined to be relevant to intra-psychological constructs of wellbeing were included in the main meta-analysis (see figure 2). Thirteen studies were included, with an overall sample of 1276 participants. A medium and significant effect

size was demonstrated for the effect of attachment security priming versus controls on outcomes (*ES* = 0.50, 95% *CI* 0.32 – 0.68; 95% *prediction interval (PI)* 0.05 – 0.95; *Z* = 6.19; $p < .001$). This indicates a significant beneficial effect of attachment security priming on outcomes relevant to mental health and wellbeing. Moderate heterogeneity was indicated but was not significant ($Q = 20.98$, $p = 0.051$, $I^2 = 42.80\%$).

Study name	ES	Weight
Doron et al. (2012)	0.10	8.40%
Bryant & Chan	0.12	7.45%
Karreman	0.15	7.70%
Pepping (study 2)	0.17	4.45%
Carnelley et al. (2018)	0.21	5.89%
Carnelley et al. (2016 (study 1)	0.39	9.61%
Bryant & Datta	0.56	7.40%
Luke	0.72	8.43%
Carnelley et al. (2016)	0.74	7.85%
Sim et al. (study 2)	0.75	14.41%
Sim et al. (study 1)	0.76	5.87%
Carnelley & Rowe	0.79	6.64%
Hutton	0.83	5.88%
Total	0.50	100%
Test for overall effect: Z = 6.19, ($p < 0.01$)		
Heterogeneity: $Q = 20.98$; $df = 12$ ($p = 0.05$); $I^2 = 42.80\%$		

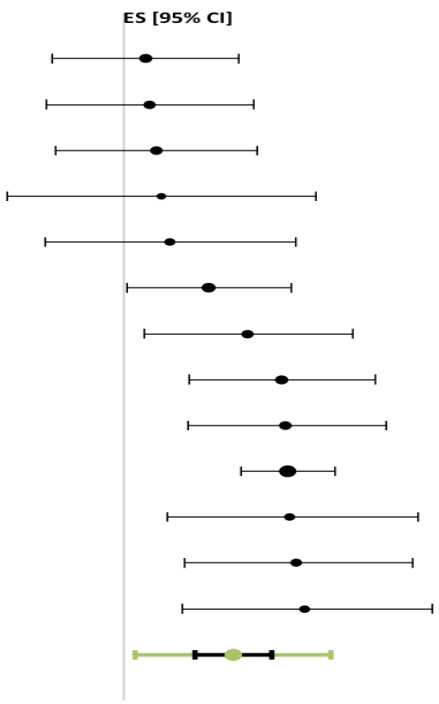

Figure 2. Forest plots of effect of attachment security priming on outcomes

Publication Bias

Visual inspection of the funnel plot (figure 3) and statistical testing using Egger's regression did not indicate substantial asymmetry in study distribution (t= -0.78, $p = 0.45$). Moreover, the trim and fill analysis did not identify any studies to be imputed in order to adjust for publication bias. Rosenthal's failsafe N analysis indicated

that 305 null studies would need to be conducted in order to reduce the effect to non-significance. Overall, these findings indicate a lack of publication bias.

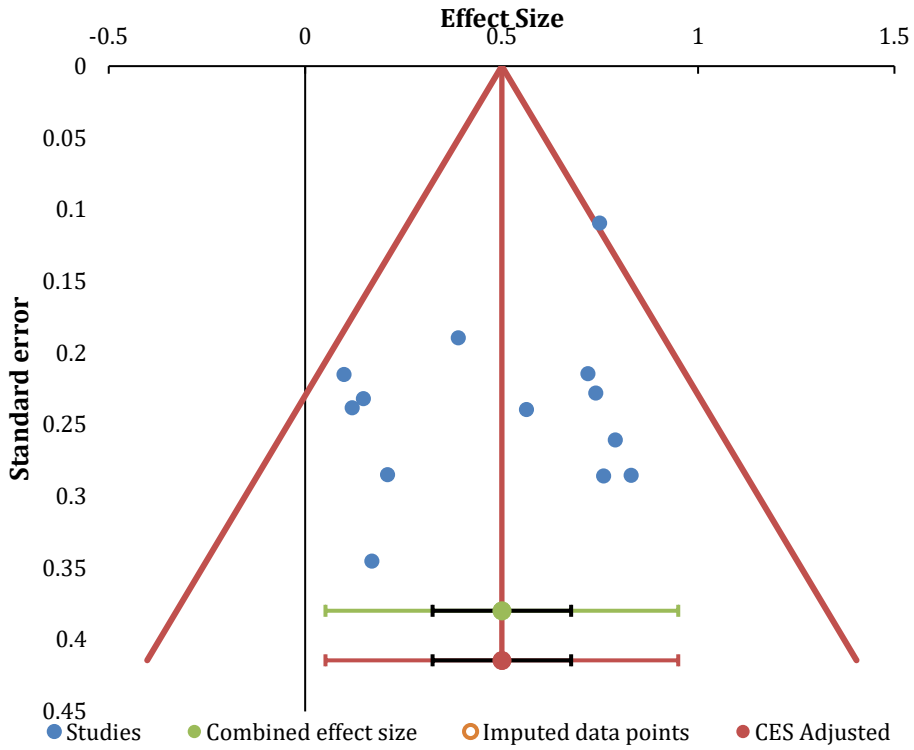

Figure 3. Funnel plot for the distribution of studies reporting psychological wellbeing outcomes for attachment priming versus comparators

Sensitivity Analyses

Sensitivity analyses explored the impact of removing 'non-mood' related variables (i.e. those not measuring depression, anxiety, or affect) from the analysis to determine whether this had an effect, due to the variability in outcomes included in the main analysis (see table 2). Nine studies were included, with an overall sample of 995 participants. A moderate, significant effect size was demonstrated for the effect of attachment security priming on outcomes relevant to mood-related intra-psychological constructs of wellbeing (ES = 0.50, 95% CI 0.14 – 0.87; 95% PI -0.67 – 1.68; Z = 3.21; p = 0.001; figure 4). The overall aggregate effect was not affected when non-mood

related variables were excluded from the analysis, indicating the inclusive inclusion criteria for types of wellbeing outcomes was appropriate. There was significant, large between-study heterogeneity (I^2 = 83.67%, Q = 48.99, p < .001).

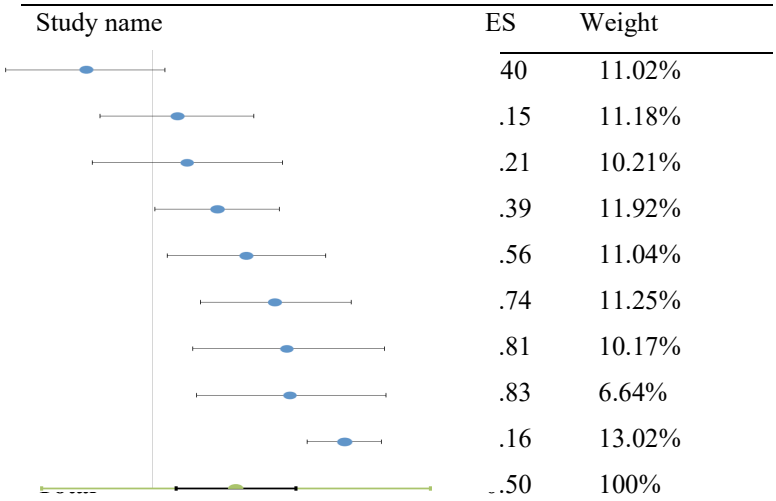

Figure 4. Forest plots of effect of attachment security priming on wellbeing outcomes

Publication bias

Visual inspection of the funnel plot (figure 5) and statistical testing using Egger's regression indicated some evidence of asymmetry (t= -2.31, p = 0.05). However, the trim and fill analysis did not identify any studies to be imputed in order to adjust for publication bias. Rosenthal's failsafe N analysis indicated that 192 null studies would need to be conducted in order to reduce the effect to non-significance. Overall, these findings indicate some influence of publication bias in the sensitivity analysis comparison.

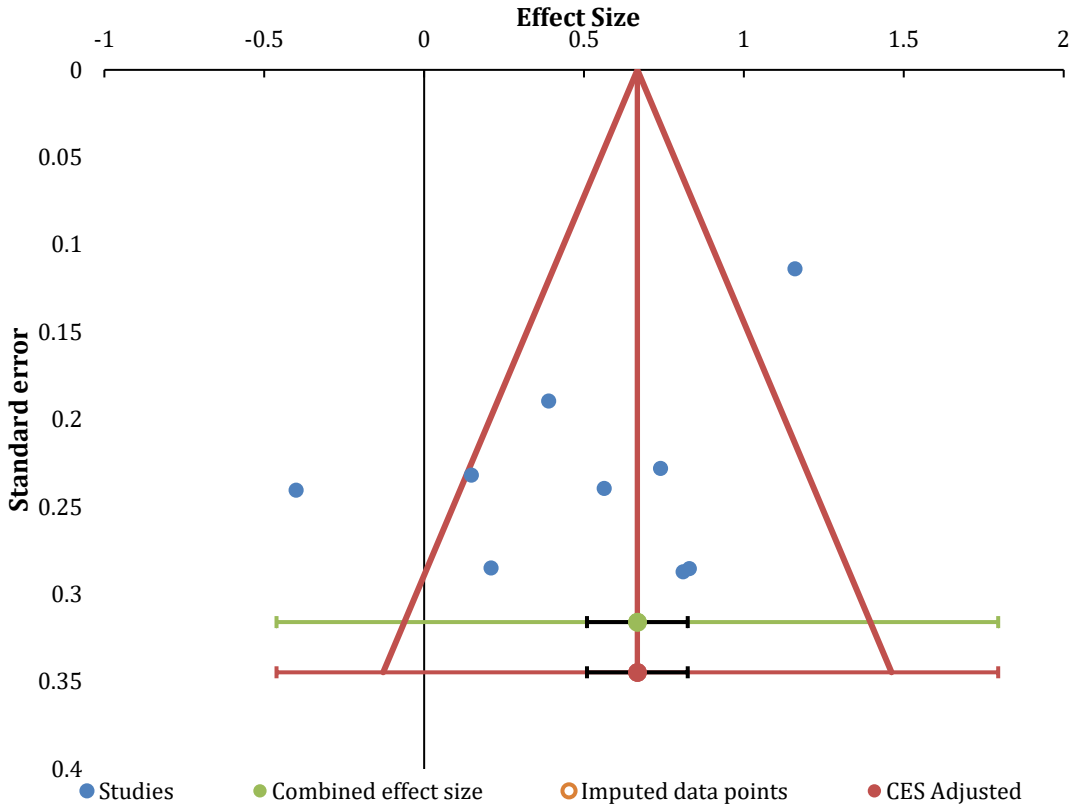

Figure 5. Sensitivity analysis funnel plot for the distribution of studies following removal of 'non-mood' related variables from the analysis

Moderator Analyses

Studies were included in meta-regressions if they reported appropriate data outputs. Table 3 details continuous moderators analysed through univariate meta-regression analysis. Results from meta-regressions for continuous moderators indicated that the relationship between attachment security priming and outcomes was not significantly moderated by age, gender, or study quality.

Table 3.

Outcomes from moderator analyses for age, gender, and study quality

Moderator	k	B- coefficient	95% CI	SE	*p*	R_2 *(%)*
Age	11	0.00	-0.02 – 0.02	0.01	0.89	0.22
Gender (% female)	13	0.01	0.00 – 0.02	0.00	0.08	24.77
Study quality (%)	13	0.00	-0.03 – 0.03	0.02	0.99	0.00

Table 4 summarises analyses of categorical moderators on selected outcomes. A slightly larger effect of secure attachment priming was observed for repeated compared to one-off priming, however the difference fell just short of significance. There was a slightly larger effect for studies in which the initial prime was delivered online in comparison to in the lab that also fell short of significance. Comparisons of effects according to type of comparator group demonstrated small-moderate effects of attachment priming compared to neutral and positive prime and a moderate effect when compared to insecure priming. However, the difference between subgroups was not significant. In summary, none of the moderator variables were found to significantly moderate the effects of attachment security priming on outcome.

Table 4.

Outcomes from subgroup analyses for comparison group type, study setting, and frequency of priming

Subgroup	Subgroup category	k	ES (g)	95% CI	*Q*	*p* (between subgroups)	I^2 (%)
Comparison group type	Insecure	2	0.68	0.54 – 0.83	1.57	0.14	0
	Neutral	6	0.47	0.26 – 0.67	13.54		40.93
	Positive	3	0.43	0.05 – 0.82	2.97		32.61
Study setting*	Laboratory	9	0.40	0.19 – 0.60	11.93	0.05	32.94
	Online	4	0.52	0.52 – 0.83	2.86		0
Frequency of priming	One-off	10	0.47	0.29 – 0.66	17.90	0.05	49.73
	Repeated	10	0.61	0.26 – 0.95	2.77		27.80

*Laboratory at first prime, subsequent primes delivered outside lab for repeated priming studies

Discussion

The current review aimed to examine the evidence base investigating the efficacy of attachment security priming on instrapsychological constructs of mental health and wellbeing. Results indicated a significant medium effect size for attachment security priming on mental health and wellbeing outcomes compared to comparators, which was not affected by the removal of non-mood related variables within the sensitivity analysis. This indicates a positive and beneficial impact of attachment security priming for a variety of wellbeing and mental health outcomes. Although attachment security priming is a brief method, it appears to have a significantly positive

impact on outcomes relevant to mental health and wellbeing. The effect of attachment security priming on studied outcomes was not significantly moderated by age, gender, study quality, frequency of priming (i.e. repeated or one-time), setting (i.e. lab at initial/only prime or online), or comparison group type.

Comparison with Previous Reviews

The current review expanded upon previous systematic reviews (Gillath & Karantzas (2019; Rowe, Gold, & Carnelley, 2020), by including a meta-analytic component, which was recommended by Rowe et al. (2020). Rowe et al.'s review looked at outcomes of positive and negative affect only and so the current review aimed to expand upon this by including all variables relevant to mental health and wellbeing, in order to capture other potentially useful and relevant outomes (e.g. paranoia and felt-security). Following their review into attachment security priming, in which studies were only included if they were conducted within the previous two years, Gillath et al. recommended that future reviews widen their search criteria with regards to date restrictions. The current review searched for and included studies with no date limitations in order to capture as much relevant research as possible. Furthermore, this review sought to include the unpublished 'grey' literature, in order to address the potential 'file-drawer' problem, which previous reviews did not do, reducing the potential impact of publication bias.

The current findings are in line with outcomes from previous reviews (Rowe et al., 2020; Gillath & Karantzas, 2019), indicating that attachment security priming effectively reduces negative affect and increases positive affect.

Contribution of Results to Psychological Theory

The current findings support theory and research proposing that activating working models of attachment security, through priming, render the individual more likely to present the cognitive and affective profile characterised by a secure attachment style, such as greater psychological well-being (Mikulincer & Shaver, 2012). In the current review, findings indicate that attachment security priming has a direct effect on outcomes relevant to mental health and wellbeing. Previous research has indicated that this method may have an indirect effect on outcomes by increasing engagement in therapy. For example, Millings et al. (2019), found that priming attachment security led to more positive and less negative attitudes towards some forms of therapy, via the mechanism of cognitive openness, and Rowe & Carnelley (2003) found that priming led to more positive interpersonal expectations, which might confer greater trust in therapists. The current review found an increase in felt-security in studies that measured this outcome, which may indicate that an improvement in outcomes relevant to mental health and wellbeing are facilitated via greater felt-security. Although beyond the scope of the current review, consideration of the mechanisms involved in the effects of priming attachment security on outcomes related to mental health and wellbeing should be considered in order to understand how priming methods can be utilised effectively to improve outcomes for individuals.

Study Strengths

Significant efforts were made in an attempt to gain access to 'grey literature' for the purpose of this review, in order to address the potential 'file-drawer' problem within research. A particular strength of this review was that studies were only included if participants were randomised to receive either the attachment security priming intervention, or the control condition, which reduces potential bias in the study design and subsequent results (Kunz, Vist, & Oxman, 2007). Moreover, all studies included in

the final review compared attachment security priming against an active control condition, where participants received another form of priming intervention, rather than passive controls, in which no alternative intervention is delivered. Passive controls can lead to confounding variables and affect study validity (Redick, Shipstead, Wiemers, Melby-Lervag, & Hulme, 2015), whilst active controls permit the prospect that participants might benefit from an alternative priming intervention (Temple & Ellenberg, 2000). This further strengthens the findings that attachment security priming had a positive effect on outcomes, by indicating that it is attachment security priming specifically that leads to increased benefits, rather than any form of priming per se.

Study Limitations

The findings of this review should be considered alongside methodological limitations of the identified literature. The current review lacks specificity, due to the variability of outcomes measured in relation to attachment security priming. However, it aimed to capture the impact of attachment security priming on all variables considered to directly relate to individual mental health and wellbeing in order to determine potential implications for future research and clinical practice. Outcomes measured in this review were decided upon by researchers, based on their subjective understanding of intrapsychological constructs of mental health and wellbeing, which could have led to bias within the review's findings. To counteract potential bias, all three members of the research team separately screened papers for inclusion and discussed and ratified any differences around what outcomes were suitable for inclusion. However, another way to reduce the presence of bias in the inclusion of outcomes would have been to have had an independent reviewer screen and identify studies suitable for inclusion in order to ratify any potential differences. Moreover, inter-rater agreement for risk of bias ratings was poor, which indicates another limitation of the current review.

Although moderator analyses indicated that study setting did not significantly moderate the relationship between priming and outcomes, there were few studies to compare the potential differences between those delivered in the lab and those that were completed online. The majority of studies included were conducted within laboratory settings (k = 11), which may reduce generalizability of findings to real-world settings (Vissers, Heyne, Peters, & Guerts, 2001). Only two of the original studies were conducted with clinical populations, and so the efficacy of attachment priming as a clinical intervention is still open to debate. Researchers conducting priming experiments in the lab would have had more control over ensuring that participants completed priming tasks, whereas it is unclear whether researchers were able to determine whether participants completed the tasks or not when studies were conducted online, therefore making it difficult to determine whether outcomes are due to priming effects or not. Studies being conducted in the lab also increase internal validity by controlling for potential extraneous variables that may exist more readily in real-world settings (McDermott, 2011).

Largely student and female populations were utilised within study samples, which is unlikely to be representative of the general population. Findings may lack generalizability, and should therefore be interpreted with caution.

Although it was not significant, repeated priming studies appeared to show a slightly larger effect, and previous systematic reviews have found that repeated priming enables security to remain elevated over time (Rowe et al., 2020). Moreover, very few studies within the review collected follow-up data (k = 4), meaning that the sustained effects of attachment security priming were not measured in the majority of studies. Those that did collect follow-up data only did so within a short time period following the priming activity. Due to lack of general follow up data collected and paucity of

reporting within studies, this data was not utilised within the current review. There is a lack of research within the attachment security priming literature to determine whether or not priming has a lasting effect on outcomes (Rowe et al., 2020), which is a key criticism of the current evidence base.

The meta-analyses were conducted on a relatively small number of studies, which could have reduced the probability of finding small but significant effects. Where there are a small number of studies, it is difficult to estimate between-study heterogeneity, leading to inaccurate estimations that can result in biased effect estimates (Mathes & Kuss, 2018).

Directions for Future Research

In order to gain a greater understanding of the utility of priming methods outside of lab settings, future research should focus upon delivering attachment security priming in real-world settings. The efficacy of attachment priming in clinical samples needs to be better researched, as does how attachment primes can be feasibly and well integrated into extant evidence-based psychological interventions. Future research should aim to study the effects of priming on outcomes relevant to mental health and wellbeing within clinical populations, in order to determine whether this method could be effectively utilised to aid the reduction of symptoms of distress. Many studies did not report power calculations, and future research should aim to do this in order that studies are sufficiently powered to accurately detect a significant effect.

Due to the current review and previous reviews indicating a potentially larger effect for repeated priming versus single-time priming, future research should look to examine the effects of repeated priming on outcomes relevant to mental health and wellbeing. Clinically, the role of attachment priming as a relapse prevention measure should also be investigated. Moreover, follow-up data should be collected across longer

time periods (i.e. weeks/months rather than days), in order to determine whether or not attachment security priming has long-lasting effects following a priming intervention, and how long these effects persist for if so.

Any future reviews on attachment security priming should seek to involve an independent coder for screening and data extraction processes, in order to ensure validity and reliability of studies included. This was not possible in the current review due to practical limitations (i.e. availability of independent coders).

Clinical Implications

The current review shows promising findings for the effects of attachment security priming on variables relevant to mental health and wellbeing. Attachment security priming could therefore have clinical utility within mental health settings. Although research in the field is in its infancy with regards to its effectiveness for those with diagnosable mental health conditions, the initial findings are promising. They indicate that attachment security priming has the potential for use in supporting the reduction of symptoms associated with mental distress.

Research indicates that having a secure attachment is associated with an increased ability to effectively utilise emotional support (Mikulincer & Shaver, 2016) and greater capability to form positive therapeutic relationships (Slade, 2008). The findings of the current review indicate that attachment security priming has a positive effect on increasing felt-security. This indicates that priming methods could potentially be utilised in order to increase felt-security between client and therapist within therapy or between the client and important members of their life. Moreover, the current review indicates that attachment security priming may lead to improvements in outcomes relevant to mental health and wellbeing. Future research would be needed within clinical settings to examine the utility of priming methods alongside existing therapeutic

techniques in order to determine whether it positively impacts the relationship between client and therapist, and whether this makes a significant difference to client outcomes either directly through the delivery of attachment security priming or indirectly through improving a sense of felt-security within the therapeutic relationship.

Conclusion

Attachment security priming was found to be efficacious in a meta-analytic review and associated with significant improvements in outcomes related to individual mental health and wellbeing. Therefore, priming attachment security may be a useful method that can be easily utilised either as a stand-alone intervention, or in conjunction with other interventions that aim to reduce symptoms of mental illness and improve overall wellbeing. The promise of the method lies in its brevity and is also grounded in a well-established and well-evidenced theory. Further research is needed to examine the utility of attachment security priming for use with clinical populations. The present review provides the foundation for the continued extrapolation of attachment security priming methods from the research lab into clinical tools.

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Appendices

Appendix A: PROSPERO Protocol

NOTICE: PROSPERO will not be available from Fri Nov 22 2019 04:00:00 GMT+0000 (Greenwich Mean Time) for approximately two hours. Please do not use PROSPERO during this time

Systematic review

To edit the record click Start an update below. This will create a new version of the record - the existing version will remain unchanged.

1. * Review title.

Give the working title of the review, for example the one used for obtaining funding. Ideally the title should state succinctly the interventions or exposures being reviewed and the associated health or social problems. Where appropriate, the title should use the PI(E)COS structure to contain information on the Participants, Intervention (or Exposure) and Comparison groups, the Outcomes to be measured and Study designs to be included.

The effect of attachment security priming on intra-psychological constructs of mental health and wellbeing: a meta-analysis

2. Original language title.

For reviews in languages other than English, this field should be used to enter the title in the language of the review. This will be displayed together with the English language title.

3. * Anticipated or actual start date.

Give the date when the systematic review commenced, or is expected to commence.

04/11/2019

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

29/05/2020

5. * Stage of review at time of this submission.

Indicate the stage of progress of the review by ticking the relevant Started and Completed boxes. Additional information may be added in the free text box provided.

Please note: Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. Should evidence of incorrect status and/or completion date being supplied at the time of submission come to light, the content of the PROSPERO record will be removed leaving only the title and named contact details and a statement that inaccuracies in the stage of the review date had been identified.

This field should be updated when any amendments are made to a published record and on completion and publication of the review. If this field was pre-populated from the initial screening questions then you are not able to edit it until the record is published.

The review has not yet started: No

Review stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No

Review stage	Started	Completed
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Provide any other relevant information about the stage of the review here (e.g. Funded proposal, protocol not yet finalised).

Preliminary searches have been conducted to scope the literature in order to determine an appropriate title and to review the types of variables that study's measure and the types of comparison groups utilised. Eligibility criteria have been discussed among the research team and methods of analysis agreed.

Preliminary searches have been conducted to scope the literature in order to determine an appropriate title and to review the types of variables that study's measure and the types of comparison groups utilised. Eligibility criteria have been discussed among the research team and methods of analysis agreed.

6. * Named contact.

The named contact acts as the guarantor for the accuracy of the information presented in the register record.

Charlotte Heathcote

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:
Charlotte

7. * Named contact email.

Give the electronic mail address of the named contact.

cheathcote1@sheffield.ac.uk

8. Named contact address

PLEASE NOTE this information will be published in the PROSPERO record so please do not enter private information

Give the full postal address for the named contact.

Clinical Psychology Unit
University of Sheffield
Cathedral Court
Floor F
1 Vicar Lane,
Sheffield,
S1 2LT

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.

07939298922

10. * Organisational affiliation of the review.

Full title of the organisational affiliations for this review and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.

University of Sheffield

Organisation web address:

11. * Review team members and their organisational affiliations.

Give the title, first name, last name and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong.

Miss Charlotte Heathcote. University of Sheffield
Dr Stephen Kellett. University of Sheffield
Dr Abigail Millings. University of Sheffield
Dr Katherine Carnelley. University of Southampton
Dr Angela Rowe. University of Bristol

12. * Funding sources/sponsors.

Give details of the individuals, organizations, groups or other legal entities who take responsibility for initiating, managing, sponsoring and/or financing the review. Include any unique identification numbers assigned to the review by the individuals or bodies listed.

University of Sheffield are sponsoring this review as part of a doctoral thesis for the Doctor of Clinical Psychology programme.

13. * Conflicts of interest.

List any conditions that could lead to actual or perceived undue influence on judgements concerning the main topic investigated in the review.

None

14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members.

15. * Review question.

State the question(s) to be addressed by the review, clearly and precisely. Review questions may be specific or broad. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS where relevant.

What is the effect of attachment security priming on outcomes related to wellbeing and mental health?

The review aims to determine the impact of attachment security priming on variables relevant to intra-psychological constructs of mental health and wellbeing. Research reviewed will compare the impact of priming secure attachment with different types of comparison group, which are:
- Priming insecure attachment style.
- Priming with positive affect.
- Neutral prime that is expected to have no effect.

16. * Searches.

State the sources that will be searched. Give the search dates, and any restrictions (e.g. language or publication period). Do NOT enter the full search strategy (it may be provided as a link or attachment.)

Three online databases will be used for the search between October and November 2019. These are PsycINFO, MEDLINE and Scopus. Reference lists will also be searched for further potential articles in line with the inclusion/exclusion criteria. The unpublished literature will also be explored through database searching, contacting researchers who are well-known in the research area and contacting groups of researchers affiliated with attachment research networks.

17. URL to search strategy.

Give a link to a published pdf/word document detailing either the search strategy or an example of a search strategy for a specific database if available (including the keywords that will be used in the search strategies), or upload your search strategy.

Do NOT provide links to your search results.

https://www.crd.york.ac.uk/PROSPEROFILES/152799_STRATEGY_20191021.pdf

Do not make this file publicly available until the review is complete

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied. This could include health and wellbeing outcomes.

Outcomes being reviewed are those relevant to intra-psychological processes relevant to mental health and wellbeing. These will be split into categories of 'attitudes/cognitions' and 'feelings'. In particular, the researcher will be focusing on outcomes relevant to anxiety and depression.

19. * Participants/population.

Give summary criteria for the participants or populations being studied by the review. The preferred format includes details of both inclusion and exclusion criteria.

Other than the population being studied being over the age of 18, with the review not including child populations (i.e. under 18 years old), there are no other restrictions on the population of study.

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the nature of the interventions or the exposures to be reviewed.

Attachment security priming is a social-cognitive technique in which attachment schemas are activated through 'spreading activation'; triggering semantic and affective nodes that create a sense of security that is comparable to the presence of a secure attachment figure (Gillath et al., 2008). It is suggested that repeatedly priming a secure attachment style in those with an insecure attachment style should increase accessibility to secure internal working models (Carnelley & Rowe, 2007). Therefore, the more often the schema is activated, the more accessible it should become in the future.

Attachment security priming can be delivered via subliminal or supraliminal methods. Subliminal priming is established based on a "primed" stimuli that is below the threshold of conscious detection, whereas supraliminal priming describes cases in which people are aware of an environmental cue, but are not aware of its influence on them.

21. * Comparator(s)/control.

Where relevant, give details of the alternatives against which the main subject/topic of the review will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

There are three types of comparator/ control groups which priming secure attachment will be compared against:

- Priming insecure attachment through exposing participants to and insecure attachment priming procedure.
- Priming positive affect through exposing participants to a stimulus that is expected to have a positive impact.
- Neutral priming, in which a participant is exposed to a task that is not expected to have an impact.

22. * Types of study to be included.

Give details of the types of study (study designs) eligible for inclusion in the review. If there are no restrictions on the types of study design eligible for inclusion, or certain study types are excluded, this should be stated. The preferred format includes details of both inclusion and exclusion criteria.

Inclusion criteria:

- Published in English.
- Utilised a valid and well-defined subliminal or supraliminal priming procedure.
- Use of valid and reliable outcome measure/s.
- Measures variables relevant to intra-psychological processes of mental health and wellbeing.
- Assesses the impact of attachment security priming in relation to an outcome variable/s.
- Published or unpublished.
- Control/comparison condition.
- Participants over the age of 18.
- Participants randomised to conditions.
- Sufficient statistical information to compute effect size (including upon contacting researcher/s).

Exclusion critera:

- Not a research study (e.g. review)
- Does not randomise participants to conditions.

- No control/comparison condition.
- Measures variables not relevant to intra-psychological processes of mental health and wellbeing.
- Heart rate/skin conductance signal studies.
- Does not use a validated attachment security priming procedure.
- Brain imaging studies.
- Did not use valid and reliable outcome measures

23. Context.

Give summary details of the setting and other relevant characteristics which help define the inclusion or exclusion criteria.

We are particularly interested in looking at outcome variables relevant to one's own mental health and wellbeing, due to an interest in determining how attachment security priming might be helpful for individuals with common mental health problems, such as anxiety and depression.

24. * Main outcome(s).

Give the pre-specified main (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

Intra-psychological processes relevant to mental health and wellbeing are split into categories:
- Attitudes/cognitions (e.g. self-view, interpersonal expectations).
- Feelings (e.g. distress, depressive symptoms).

Variables that are not relevant to the intra-psychological processes of mental health and wellbeing will be excluded.

Timing and effect measures
Not applicable.

25. * Additional outcome(s).

List the pre-specified additional outcomes of the review, with a similar level of detail to that required for main outcomes. Where there are no additional outcomes please state 'None' or 'Not applicable' as appropriate to the review

None.

Timing and effect measures
Not applicable.

26. * Data extraction (selection and coding).

Describe how studies will be selected for inclusion. State what data will be extracted or obtained. State how this will be done and recorded.

Study selection:
- One reviewer will select studies based on inclusion criteria for the review. Following this, two further reviewers will screen and check the first reviewers' decisions.

- Any disagreements among reviewers will be resolved within meetings where reviewers will discuss progress of the review, coming to joint decisions.

- A data extraction tool will be created and utilised to extract relevant information from studies for the purpose of the review.

Data extraction:
- Data to be extracted: country research was conducted in; publication status; participant group (e.g. university students); number of participants; mean age of participants; gender split of participants; type of attachment security priming intervention; setting of study (e.g. lab); method of intervention delivery (e.g. text message); length of intervention; type of comparison/control group; outcome measures used; effect size; key findings.

- Two reviewers will check extracted data once initially extracted by the first reviewer.

- Any disagreements in judgements will be discussed within research team meetings and resolved through discussion.

- If studies have missing information, the reviewer will attempt email contact with study investigators in an attempt to obtain this. If the reviewer is not able to gain access to unreported details or missing information that is necessary for the purpose of the review following attempted contact with study investigators, the study will be excluded from the review.

- Data will be recorded in a pre-constructed data extraction table in Microsoft Word.

27. * Risk of bias (quality) assessment.

Describe the method of assessing risk of bias or quality assessment. State which characteristics of the studies will be assessed and any formal risk of bias tools that will be used.

Studies will be assessed using a formal quality appraisal tool (e.g. CASP checklist, Downs and Black).

28. * Strategy for data synthesis.

Provide details of the planned synthesis including a rationale for the methods selected. This **must not be generic text** but should be **specific to your review** and describe how the proposed analysis will be applied to your data.

Experimental study data will synthesized using Meta-Essentials (Suurmond, van Rhee, & Hak, 2017). Only experimental studies will be included. The data extracted from the original attachment security priming experimental studies are the outcomes related to feelings and cognitions. Pooled effect sizes and 95% confidence intervals will be computed using the inverse of the variance to weight the effect estimates (i.e., outcomes in favour of attachment priming will be indicated by a positive effect size). Due to the expected level of heterogeneity resulting from different comparator types, a random-effects model will be used to account for within- and between-study variance. Statistical significance will be set at an alpha value of 0.05. Heterogeneity will be investigated using the I squared statistic to indicate percentage of variation and the accompanying Q statistic to report the statistical significance. Heterogeneity benchmarks (Higgins, Thompson, Deeks, & Altman, 2003) will be used to identify low (25%), moderate (50%), and high study heterogeneity (75%). Standardized mean differences (SMDs) and standard error (SE) terms will be computed for the difference between conditions for each comparison between attachment prime and a comparator condition. SMDs (Cohens d) will be calculated by subtracting the mean post manipulation score of the comparator condition from the mean posttreatment score of the attachment prime intervention, and then dividing the result by the pooled standard deviation (SD) of both conditions posttreatment. Due to the risk of small-sample bias, the J correction will be applied to convert SMDs to Hedges's g (Hedges & Olkin, 1985). Effect sizes will be interpreted according to Cohen's criteria, where 0.2 is indicative of a small effect, 0.5 a moderate effect, and 0.8 a large effect (Cohen, 1992).

29. * Analysis of subgroups or subsets.

State any planned investigation of 'subgroups'. Be clear and specific about which type of study or participant will be included in each group or covariate investigated. State the planned analytic approach.

Subgroup analyses will be conducted on:
- Type of prime (subliminal vs. supraliminal methods). This is to see if one method of priming appears to be more effective than the other.

- Country of study. This is to see whether there are differences in the effects of attachment security priming across different countries where research is conducted.

30. * Type and method of review.

Select the type of review and the review method from the lists below. Select the health area(s) of interest for your review.

Type of review

Cost effectiveness	No
Diagnostic	No
Epidemiologic	No
Individual patient data (IPD) meta-analysis	No
Intervention	No
Meta-analysis	Yes
Methodology	No

Narrative synthesis	No
Network meta-analysis	No
Pre-clinical	No
Prevention	No
Prognostic	No
Prospective meta-analysis (PMA)	No
Review of reviews	No
Service delivery	No
Synthesis of qualitative studies	No
Systematic review	Yes
Other	No

Health area of the review

Alcohol/substance misuse/abuse	No
Blood and immune system	No
Cancer	No
Cardiovascular	No
Care of the elderly	No
Child health	No
Complementary therapies	No
Crime and justice	No
Dental	No
Digestive system	No
Ear, nose and throat	No
Education	No
Endocrine and metabolic disorders	No
Eye disorders	No
General interest	No
Genetics	No
Health inequalities/health equity	No

Infections and infestations	No
International development	No
Mental health and behavioural conditions	Yes
Musculoskeletal	No
Neurological	No
Nursing	No
Obstetrics and gynaecology	No
Oral health	No
Palliative care	No
Perioperative care	No
Physiotherapy	No
Pregnancy and childbirth	No
Public health (including social determinants of health)	No
Rehabilitation	No
Respiratory disorders	No
Service delivery	No
Skin disorders	No
Social care	No
Surgery	No
Tropical Medicine	No
Urological	No
Wounds, injuries and accidents	No
Violence and abuse	No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.

English

There is not an English language summary

32. * Country.

Select the country in which the review is being carried out from the drop down list. For multi-national collaborations select all the countries involved.

England

33. Other registration details.

Give the name of any organisation where the systematic review title or protocol is registered (such as with The Campbell Collaboration, or The Joanna Briggs Institute) together with any unique identification number assigned. (N.B. Registration details for Cochrane protocols will be automatically entered). If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

34. Reference and/or URL for published protocol.

Give the citation and link for the published protocol, if there is one

No I do not make this file publicly available until the review is complete

35. Dissemination plans.

Give brief details of plans for communicating essential messages from the review to the appropriate audiences.

The report will be written up and the paper will be submitted to a leading journal in this field.

Do you intend to publish the review on completion?

No

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords will help users find the review in the Register (the words do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

Systematic review; meta-analysis; attachment; priming; wellbeing; mental health; intra-psychological processes

37. Details of any existing review of the same topic by the same authors.

Give details of earlier versions of the systematic review if an update of an existing review is being registered, including full bibliographic reference if possible.

38. * Current review status.

Review status should be updated when the review is completed and when it is published. For newregistrations the review must be Ongoing.

Review_Ongoing

39. Any additional information.

Provide any other information the review team feel is relevant to the registration of the review.

A systematic review was conducted by Gillath (2018), including published studies that were conducted between 2016 and 2018. As the review did not include a meta-analysis and included published research only within a specific time-frame, it was felt to be appropriate to complete the current review.

40. Details of final report/publication(s).

This field should be left empty until details of the completed review are available.

Appendix B: Downs & Black Checklist

Checklist for measuring study quality

Reporting

1. *Is the hypothesis/aim/objective of the study clearly described?*

yes	1
no	0

2. *Are the main outcomes to be measured clearly described in the Introduction or Methods section?*
   If the main outcomes are first mentioned in the Results section, the question should be answered no.

yes	1
no	0

3. *Are the characteristics of the patients included in the study clearly described ?*
   In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.

yes	1
no	0

4. *Are the interventions of interest clearly described?*
   Treatments and placebo (where relevant) that are to be compared should be clearly described.

yes	1
no	0

5. *Are the distributions of principal confounders in each group of subjects to be compared clearly described?*
   A list of principal confounders is provided.

yes	2
partially	1
no	0

6. *Are the main findings of the study clearly described?*
   Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).

yes	1
no	0

7. *Does the study provide estimates of the random variability in the data for the main outcomes?*
   In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confidence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.

yes	1
no	0

8. *Have all important adverse events that may be a consequence of the intervention been reported?*
   This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).

yes	1
no	0

9. *Have the characteristics of patients lost to follow-up been described?*
   This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of patients lost to follow-up.

yes	1
no	0

10. *Have actual probability values been reported(e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001?*

yes	1
no	0

External validity

All the following criteria attempt to address the representativeness of the findings of the study and whether they may be generalised to the population from which the study subjects were derived.

11. *Were the subjects asked to participate in the study representative of the entire population from which they were recruited?*
    The study must identify the source population for patients and describe how the patients were selected. Patients would be representative if they comprised the entire source population, an unselected sample of consecutive patients, or a random sample. Random sampling is only feasible where a list of all members of the relevant

population exists. Where a study does not report the proportion of the source population from which the patients are derived, the question should be answered as unable to determine.

yes	1
no	0
unable to determine	0

12. *Were those subjects who were prepared to participate representative of the entire population from which they were recruited?*
The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population.

yes	1
no	0
unable to determine	0

13. *Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?*
For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population. The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend.

yes	1
no	0
unable to determine	0

Internal validity - bias

14. *Was an attempt made to blind study subjects to the intervention they have received ?*
For studies where the patients would have no way of knowing which intervention they received, this should be answered yes.

yes	1
no	0
unable to determine	0

15. *Was an attempt made to blind those measuring the main outcomes of the intervention?*

yes	1
no	0
unable to determine	0

16. *If any of the results of the study were based on "data dredging", was this made clear?*
Any analyses that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses were reported, then answer yes.

yes	1
no	0
unable to determine	0

17. *In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls ?*
Where follow-up was the same for all study patients the answer should yes. If different lengths of follow-up were adjusted for by, for example, survival analysis the answer should be yes. Studies where differences in follow-up are ignored should be answered no.

yes	1
no	0
unable to determine	0

18. *Were the statistical tests used to assess the main outcomes appropriate?*
The statistical techniques used must be appropriate to the data. For example non-parametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes.

yes	1
no	0
unable to determine	0

19. *Was compliance with the intervention/s reliable?*
Where there was non compliance with the allocated treatment or where there was contamination of one group, the question should be answered no. For studies where the effect of any misclassification was likely to bias any association to the null, the question should be answered yes.

yes	1
no	0
unable to determine	0

20. *Were the main outcome measures used accurate (valid and reliable)?*

For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered as yes.

yes	1
no	0
unable to determine	0

Internal validity - confounding (selection bias)

21. *Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population?*
For example, patients for all comparison groups should be selected from the same hospital. The question should be answered unable to determine for cohort and case-control studies where there is no information concerning the source of patients included in the study.

yes	1
no	0
unable to determine	0

22. *Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time?*
For a study which does not specify the time period over which patients were recruited, the question should be answered as unable to determine.

yes	1
no	0
unable to determine	0

23. *Were study subjects randomised to intervention groups?*
Studies which state that subjects wererandomised should be answered yes except where method of randomisation would not ensure random allocation. For example alternate allocation would score no because it is predictable.

yes	1
no	0
unable to determine	0

24. *Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?*
All non-randomised studies should be answered no. If assignment was concealed from patients but not from staff, it should be answered no.

yes	1
no	0
unable to determine	0

25. *Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?*
This question should be answered no for trials if: the main conclusions of the study were based on analyses of treatment rather than intention to treat; the distribution of known confounders in the different treatment groups was not described; or the distribution of known confounders differed between the treatment groups but was not taken into account in the analyses. In non-randomised studies if the effect of the main confounders was not investigated or confounding was demonstrated but no adjustment was made in the final analyses the question should be answered as no.

yes	1
no	0
unable to determine	0

26. *Were losses of patients to follow-up taken into account?*
If the numbers of patients lost to follow-up are not reported, the question should be answered as unable to determine. If the proportion lost to follow-up was too small to affect the main findings, the question should be answered yes.

yes	1
no	0
unable to determine	0

Power

27. *Did the study have sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%?*
Sample sizes have been calculated to detect a difference of x% and y%.

	Size of *smallest* intervention group	
A	$<n_1$	0
B	n_1–n_2	1
C	n_3–n_4	2
D	n_5–n_6	3
E	n_7–n_8	4
F	n_8+	5

Appendix C: Downs & Black Quality Rating Assessment Table

	Bryant & Datta (2019)	Bryant & Chan (2017)	Carnelley et al. (2018)	Carnelley et al. (2016) study 1	Carnelley et al. (2016) study 2	Carnelley & Rowe (2007)	Doron et al. (2012)	Hudson & Fraley (2018)	Hutton et al. (2017)	Karreman et al. (2019) study 2	Luke et al. (2012) study 1	Otway et al. (2014)	Park (2007) study 3	Pepping et al. (2015) study 2	Sim et al. (2019) study 1	Sim et al. (2019) study 2
Q1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q5	0	0	1	1	0	0	1	0	1	1	1	0	1	0	0	1
Q6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q7	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
Q8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q9	n/a	n/a	1	n/a	n/a	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Q10	1	1	1	1	1	0	0	0	1	1	1	1	0	1	1	1
Q11	1	0	1	0	1	1	0	1	1	0	1	0	0	1	0	1
Q12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q13	n/a	n/a	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Q14	0	0	1	0	1	1	1	1	0	0	0	0	1	1	0	0
Q15	0	0	n/a	n/a	n/a	1	n/a	n/a	1	n/a	n/a	n/a	0	n/a	n/a	n/a
Q16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q17	n/a	n/a	n/a	1	n/a	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Q18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q19	1	1	0	0	0	1	1	1	1	1	0	0	0	1	1	1
Q20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q24	0	0	1	1	0	1	1	0	1	1	0	1	1	1	1	1
Q25	1	0	0	1	1	0	1	0	1	1	0	0	1	0	0	0
Q26	n/a	n/a	n/a	1	n/a	1	n/a	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Q27	1	1	1	1	1	0	0	1	0	1	0	0	0	0	0	0
Overall quality rating score	18/23	15/23	20/24	19/24	17/22	20/26	17/22	16/23	19/24	18/22	15/22	14/22	15/23	17/ 22	15/22	17/22
Quality rating percentage	78%	65%	83%	79%	77%	77%	77%	70%	79%	82%	68%	64%	65%	77%	68%	77%

Quality rating category	Good	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Fair	Fair	Fair	Good	Good	Good

Part Two: Research Report

Priming Attachment Security within an IAPT Setting: A Feasibility and Pilot Study

Abstract

Objective: There is some evidence that attachment security priming may be useful for promoting engagement in therapy and improving clinical outcomes. The current study aimed to determine whether it was feasible to conduct a larger-scale RCT of integrating attachment security priming into behavioural activation (BA) for depression.

Method: A feasibility and pilot study utilising a pragmatic additive trial design in which participants were randomised to receive either BA (i.e. treatment as usual) or BA-prime (i.e. BA plus attachment security priming). Participants were recruited with depressive disorders that were suitable for a low intensity BA intervention in an IAPT service. Feasibility outcomes assessed service users' willingness to participate in the research, clinician's willingness to recruit, and study attrition rates. Pilot outcomes were attendance, dropout, and stepping up rates and clinical effectiveness comparisons.

Results: Participants demonstrated a reasonable willingness to engage in the research, clinician's demonstrated willingness to recruit, and there was no participant attrition from the study. No significant differences were found between the arms with regards to dropout, attendance, stepping-up, and the clinical outcomes.

Conclusion: It appears feasible to conduct a larger-scale pragmatic RCT on the efficacy of attachment security priming as an enhancement for BA or other low intensity interventions. Limitations to the current study were the small sample size and the lack of adherence evidence. Findings are viewed as preliminary but promising with regards to potential for future research.

Introduction

Improving Access to Psychological Therapies (IAPT)

Background

At any one time, up to 15% of the population may experience a common mental health problem, such as depression or anxiety (National Institute for Health and Care Excellence, [NICE], 2011). Research indicates that around twice as many patients state a preference for psychological intervention over medication (Kwan, Dimidjian, & Rizvi, 2010). However, only a small percentage of people living in the community with common mental health problems are offered an evidence-based psychological treatment (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2009).

The Improving Access to Psychological Therapies (IAPT) programme was launched within the National Health Service (NHS) in England in 2008 in order to increase the availability of evidence-based psychological therapies (Gyani, Shafran, Layard, & Clark, 2013), aiming to offer treatment to a minimum of 15% of people living in the community with depression and/or anxiety disorders (Clark, 2011). The IAPT programme initiative was proposed by a group of economists and clinical researchers, who emphasised the anticipated economic and social benefits (Layard et al., 2006), including a reduction in suffering, reduced public costs (e.g. welfare benefits) and increased revenues (e.g. increased productivity).

To facilitate treatment access for common mental health problems, a stepped care model of service provision was implemented (Department of Health, 2008), recommending that most people should initially be offered a low intensity intervention, such as guided self-help (GSH) and stepped up to receive high-intensity face-to-face

intervention if this is not effective (NICE, 2011). Outcome monitoring is a key feature of IAPT services, collecting patient-rated outcome measures at each contact (Griffiths & Steen, 2013), allowing for continued evaluation of treatments and services. A recent meta-analysis looking at the evidence base for IAPT interventions indicated a significant large pre-post treatment effect size for reductions in depression and anxiety and a medium effect indicating improvements in work and social adjustment (Wakefield, Kellett, Simmonds-Buckley, Stockton, Bradbury, & Delgadillo, 2020).

Psychological therapies

One of the other cornerstone features of the IAPT model is that services only deliver NICE recommended interventions (Layard & Clark, 2014). Since 2004, NICE has primarily recommended use of cognitive behaviour therapy (CBT) as the frontline treatment for depression and anxiety (Gyani et al., 2013). Evidence indicates that CBT is effective in the treatment of depression and/or anxiety disorders (Butler, Chapman, Forman, & Beck, 2006). However, CBT as a treatment for depression is complex and costly, due to the need for intensive training of psychological therapists (Richards et al., 2016) and the treatment protocol suggesting 16-20 sessions (NICE, 2009). Low intensity workers (i.e. psychological well-being practitioners [PWPs]) are trained to deliver behavioural activation (BA) as a GSH intervention (UCL, 2014) in a 6-8 - session format at step 2 of IAPT services.

Jacobson et al.'s (1996) component study demonstrated that the BA component of CBT produced equivalent outcomes to the full treatment protocol, kickstarting the development of BA as a standalone treatment. BA aims to increase engagement in activities that are associated with experiencing mastery or pleasure; decrease activities that maintain or increase risk for depression; and identify and solve any barriers to activity that arise (Dimidjian, Barrera, Martell, Munoz, & Lewinsohn, 2011). Ekers,

Richards, McMillan, Bland, and Gilbody (2011) found that generic mental health professionals could deliver effective BA, indicating advantages in comparison to CBT in terms of cost-effectiveness, ease of training and the parsimonious nature of the treatment.

Systematic reviews and meta-analyses have indicated that BA compares favourably with CBT as an intervention for depression (Ekers et al., 2014; Shinohara et al., 2013). A trial by Richards et al. (2016) found no difference in treatment outcomes between BA and CBT following treatment and at follow-up at step 2. Moreover, BA was 21% cheaper, indicating that it has equivalent outcomes to CBT for a lesser cost.

The IAPT programme initially had a recovery rate target of 50% (Department of Health, 2008). In 2019-20, IAPT exceeded this target by reaching a recovery rate of 51.1% (NHS Digital, 2020). However, recovery rates indicate a need for improvement in treatments (Simmonds-Buckley, Kellett, Hague, & Waller, 2020). Research indicates an increased sense of hopelessness and demotivation to pursue future treatment when individuals do not experience meaningful positive change from seeking treatment (Ten Have, Graaf, Ormel, Vilagut, Kovess, & Alonso, 2010). Therefore, Lambert (2007) indicated a need to improve the quality of treatments in order to enhance outcomes within services. The three types of improvements were indicated within: treatment guidelines and protocols; outcome monitoring; and treatment enhancement.

As BA is deemed to be a simple and practical treatment, it is potentially suitable for treatment enhancement, without influencing adherence to the protocol and its theoretical groundings (Simmonds-Buckley et al., 2020). Utilising methods for improving engagement in treatment may be a viable target for enhancing treatment quality and outcomes. As indicated by Hopko, Magidson & Lejuez (2011), engagement in treatment is key in BA, due to the emphasis on activation homework. Although

treatment enhancement methods may improve clinical outcomes for depression, few empirical studies have specifically analysed whether low-cost treatment enhancements are effective (Portela, Pronovost, Woodcock, Carter & Dixon- Woods, 2015). Simmonds-Buckley et al. (2020) found that a theory-driven enhancement of BA intervention was associated with significant improvements in depression outcomes. This indicates that BA can be successfully enhanced utilising low-cost methods in order to effectively improve outcomes.

Additive clinical trial designs aim to shape interventions starting with a single effective component and successively add further components in an attempt to identify the influence of each new component (Papa & Follette, 2015). These trial designs may be of use in examining which components of BA are effective in influencing change, and whether other components can be utilised to enhance treatment effects.

Attachment and Relevance to Psychological Therapies

Attachment theory

Attachment theory explains how the quality of relationships with early caregivers ('attachment figures') is internalised into mental models of the self and others known as attachment styles (Bowlby, 1969). These working models are resistant to change, but malleable in response to repeated new experiences, such that an individual's global attachment style is not only based upon early relationships with caregivers, but the sum total of their experiences with attachment figures to date (Mikulincer & Shaver, 2016). Attachment styles are conceptualised along two continuous dimensions of insecurity: avoidance and anxiety. Attachment avoidance occurs when caregivers have been experienced as rejecting, and is characterised by avoidance of intimacy, compulsive self-reliance, and deactivating affect regulation strategies. Attachment anxiety develops in response to inconsistently responsive

caregiving, and is characterised by anxiety about abandonment, excessive support seeking, and hyperactivating affect regulation strategies. Individuals with low levels of both avoidance and anxiety have a prototypically secure attachment style. Such individuals are generally comfortable with being close to and depending on others, feel that they are worthy of love and see others as trustworthy.

Secure attachment has been consistently related to numerous optimal psychological outcomes, including higher self-esteem and perceived social support, and lower depression and anxiety (see Mikulincer & Shaver, 2016 for a review). In the context of seeking psychological therapy, attachment security has been associated with an ability to effectively utilise emotional support (Mikulincer & Shaver, 2016), greater willingness to seek therapy, and the capacity to form more positive relationships with therapists (Slade, 2008). Indeed, relationships with therapists can be viewed as attachment relationships. The therapist who is empathic and understanding acts as a secure attachment figure that over time should steer an individual's attachment style in the direction of greater felt-security (Gillath, Selcuk & Shaver, 2008), reducing fears of abandonment and increasing feelings of comfort (Davila & Sargent, 2003). While global attachment styles are trait-like, it is also posited that adults have multiple 'relationship-specific' attachment styles, which can differ from their global style (Collins & Reed, 1994). Moreover, priming can be used to activate these relationship-specific styles (Baldwin, Keelan, Fehr, Enns & Koh-Rangarajoo, 1996).

Attachment security priming

Attachment security priming is a social-cognitive technique in which secure attachment schemas are made salient through 'spreading activation'; triggering semantic and affective nodes that create a sense of security that is comparable to the presence of a secure attachment figure (Gillath et al., 2008). It is suggested that repeatedly priming a

secure attachment style in those with an insecure attachment style should increase accessibility to secure internal working models (Carnelley & Rowe, 2007). Therefore, the more often the schema is activated, the more accessible it should become in the future.

Different techniques have been used to prime attachment security (Gillath & Karantzas, 2019). Security priming tasks are delivered either subliminally (i.e. outside of conscious awareness) or supraliminally (i.e. within conscious awareness) and involve exposing people to: security-related words (i.e. words associated with secure attachment); the names of secure attachment figures; pictures representing attachment security (e.g. a mother hugging her child); recalling memories associated with being loved and supported by attachment figures, or asking them to imagine how this would be (Gillath & Karantzas, 2019).

Security priming may be useful as an intervention to promote engagement in therapy. Millings et al. (2019) found that primed security led to more positive and less negative attitudes towards some types of therapy, for those with high attachment avoidance and anxiety, via the mechanism of cognitive openness. Rowe and Carnelley (2003) found that making a secure attachment style temporarily accessible via priming methods led to more positive interpersonal expectations, which might confer greater trust in therapists. Furthermore, Carnelley and Rowe (2007) found that repeated security priming led to more positive self-views and relationship expectations, and less (state) attachment anxiety at two-day follow-up in comparison to those primed with a neutral prime, indicating that repeated priming could have a long-term impact on attachment style. Security priming has also been found to increase willingness to engage in further mindfulness training (Rowe, Shepstone, Carnelley, Cavanagh, & Millings, 2016).

Taken together, this body of evidence indicates that security priming may be effective for increasing engagement in therapy.

Additionally, there is reason to believe that security priming could have beneficial effects on symptoms. In a non-clinical sample, McGuire, Gillath, Jackson and Ingram (2018) found that individuals that were repeatedly exposed to a security prime for two weeks showed lower depressive symptoms than those exposed to neutral primes. Moreover, in a clinical population of outpatients with primary depressive disorders, those exposed to repeated security primes showed reduced symptoms of anxiety and depression (Carnelley, Bejinaru, Otway, Baldwin and Rowe, 2018). This research indicates that security priming might also be helpful for improving clinical outcomes.

Study Rationale

Research suggests that there is still much room for improvement in the effectiveness of psychological interventions delivered for common mental health problems. The current research base indicates a need to understand how best low intensity interventions can be utilised in order to improve clinical outcomes.

Moreover, research is needed to consider use of additive methods that may enhance engagement in treatment and also effectiveness in terms of clinical outcomes. Therefore, the current study utilises an additive trial design in order to determine whether attachment security priming can be used to enhance BA GSH treatment.

Aims

The effectiveness of attachment security priming has not yet been investigated with a clinical sample in an NHS IAPT setting. Therefore, the current study will incorporate a feasibility and pilot trial design to determine whether it would be appropriate to conduct a future large-scale randomised control trial (RCT).

The feasibility element of the study explored issues related to study design. The study aimed to explore clients' willingness to participate in the study; clinicians' willingness to recruit participants; whether the recruitment method is effective in recruiting participants; and to assess attrition rates. The pilot element of the study was conducted in order to determine whether the recruitment, randomisation and treatment processes could be carried out effectively. Finally, the study aimed to determine whether the attachment security priming intervention appears to be effective in reducing therapy drop-out; increasing attendance to therapy; decreasing rates of clients' being stepped-up to step 3 high-intensity treatment; and on clinical outcomes of depression, anxiety, and work and social adjustment.

Method

Ethical Considerations

Ethical approval was sought from the NHS via the Integrated Research Application System ([IRAS]; see Appendix A for approval letters).

Design

The current study is a two-arm pragmatic feasibility and pilot study, utilising an additive trial design (Papa & Follette, 2015). Participants were randomised to receive either GSH-BA as usual (BA group) or a version enhanced with an attachment security-priming task (BA-prime group). The Medical Research Council (MRC) explicitly recommend conducting feasability and pilot studies in order to identify problems that might occur prior to conducting a full-scale RCT (Craig, Dieppe, Macintyre, Michie, Nazareth, & Petticrew, 2008). Although there are not clear and definite definitions of 'feasibility' and 'pilot' studies, Eldridge et al. (2016) indicate that feasibility studies attempt to answer questions about whether the trial can be done, without necessarily implementing the processes that would be involved in an RCT. Moreover, a pilot study

is considered to be a smaller scale version of a larger trial to determine whether the processes proposed in the study protocol work effectively together, and determine whether any of these need to be altered prior to conducting a full-scale trial. Pilot trials also conduct initial examinations of effectiveness, but lack the statistical power to enable definitive analyses (i.e. this is completed in a full trial). Changes were made to data collection upon commencement of the trial, due to limitations within the service (see Appendix B for deviations from the research protocol).

Feasibility

Clients' willingness to engage in the research and clinicians' willingness to recruit was measured to inform recruitment for a future RCT.

The number of participants who dropped out of the research study was recorded in order to assess attrition rates for a future potential RCT.

Pilot

Study processes. The researcher explored study processes to identify areas that were not effective in order to make recommendations for a potential future large-scale trial.

Outcomes. The study utilised data collected from service outcomes, which were: attendance to therapy (i.e. number of sessions attended); dropout of therapy (i.e. dropping out of therapy following attendance to at least one session); and stepping-up to step 3 services. The study also utilised data collected from routine outcome measures delivered within the service at each session measuring severity of depression, anxiety, and work and social adjustment.

Participants and Recruitment

Participants were recruited through an IAPT service in North Yorkshire that covers a wide geographical area. At local authority level, North Yorkshire is ranked

125th least deprived out of 152 upper tier local authorities on the Index of Multiple Deprivation (IMD), but also has pockets of high levels of deprivation (e.g. three areas in Scarborough town are within the most deprived 1% in England [Ministry of Housing, Communities & Local Government, 2015]).

The service offers low and high-intensity psychological interventions to clients with mild to moderate mental health difficulties. Clients who presented with a depressive disorder and were allocated to receive step 2 GSH BA were invited to take part in the study. Participants were eligible for the study if they were over the age of 18 and spoke fluent English, due to the need to be able to read and understand the information sheet in order to fully consent to taking part.

Due to the feasibility and pilot nature of the study, a formal power calculation was not required. Previously, sample sizes of between 12 and 50 have been recommended for feasibility and pilot studies (Lancaster, Dodd, & Williamson, 2004; Sim & Lewis, 2012; Julious, 2005). Figure 1 displays the participant recruitment process (Eldridge et al., 2010). The final sample consisted of 24 participants, with 16 in the BA group and eight in the BA-prime group. Due to an error in recording of assignment to groups, one participant who was randomised to the BA-prime group accidentally received BA, and was therefore included in the BA group.

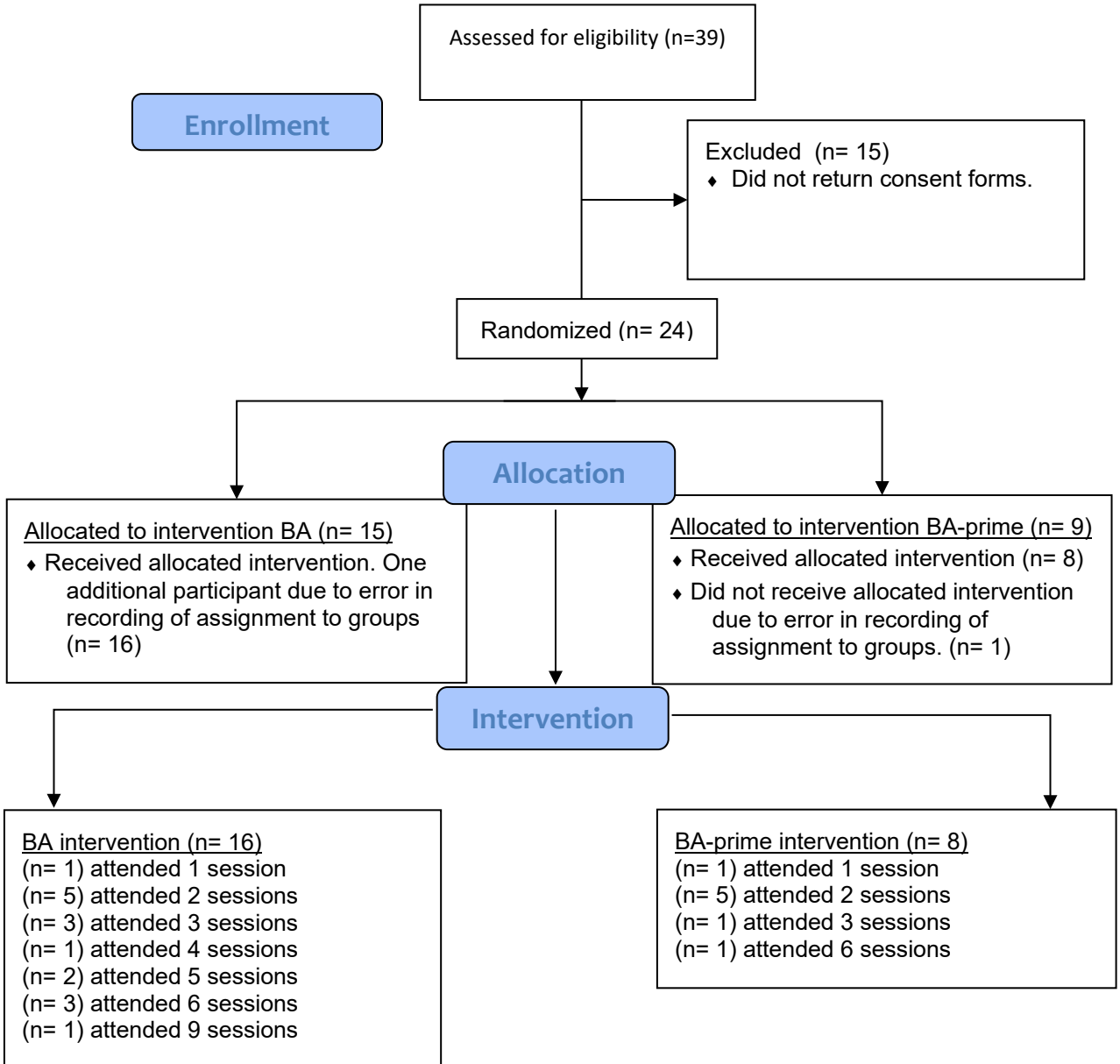
Assessed for eligibility (n=39)
Enrollment
Excluded (n= 15)
♦ Did not return consent forms.
Randomized (n= 24)
Allocation
Allocated to intervention BA (n= 15)
♦ Received allocated intervention. One additional participant due to error in recording of assignment to groups (n= 16)
Allocated to intervention BA-prime (n= 9)
♦ Received allocated intervention (n= 8)
♦ Did not receive allocated intervention due to error in recording of assignment to groups. (n= 1)
Intervention
BA intervention (n= 16)
(n= 1) attended 1 session
(n= 5) attended 2 sessions
(n= 3) attended 3 sessions
(n= 1) attended 4 sessions
(n= 2) attended 5 sessions
(n= 3) attended 6 sessions
(n= 1) attended 9 sessions
BA-prime intervention (n= 8)
(n= 1) attended 1 session
(n= 5) attended 2 sessions
(n= 1) attended 3 sessions
(n= 1) attended 6 sessions

Figure 1. CONSORT flowchart of participant recruitment and research process

Service Delivery and Interventions

Participants in both conditions were offered six sessions of GSH BA with a PWP, taking place for approximately 35 minutes once a week over the telephone. During each session, the client completed a set of routine outcome measures, engaged in BA intervention, and clinicians assessed ongoing risk to self and others.

BA versus BA-prime treatment

GSH BA treatment follows a workbook format utilising the principles of BA and is divided into 'steps' to guide treatment (see Appendix C for workbook). Table 1 summarises workbook content for BA and BA-prime groups. The core BA intervention across groups remained the same, with those in the BA-prime group completing a short additional security-priming task prior to each session, which was embedded within the workbook.

Table 1.

Description of BA workbook content

Step	Workbook content (BA group)	Workbook content (BA-prime group)
Introduction	Session content: • Tips for treatment. • Understanding low mood/ depression. • The impact of low mood/depression. • How your depression/low mood is affecting you. • What you want to get out of treatment. • Explanation of BA.	*At beginning of session with PWP:* • Attachment security priming task Session content: • Tips for treatment. • Understanding low mood/ depression. • The impact of low mood/depression. • How your depression/low mood is affecting you. • What you want to get out of treatment. Explanation of BA.
1	Record what you are currently doing: • What you're doing, where, and who with (morning/afternoon/evening)	*Prior to session:* • Attachment security priming task Record what you are currently doing:

		• What you're doing, where, and who with (morning/afternoon/evening)
2	Identifying activities: • Routine activities • Pleasurable activities. • Necessary activities.	*Prior to session:* • Attachment security priming task Identifying activities: • Routine activities • Pleasurable activities. Necessary activities.
3	Organising activities as to how difficult they are: • Identifying activities from least to most difficult. • Break down more difficult activities into smaller steps.	*Prior to session:* • Attachment security priming task Organising activities as to how difficult they are: • Identifying activities from least to most difficult. • Break down more difficult activities into smaller steps.
4	Planning: • Putting activities into diary plan and monitoring.	*Prior to session:* • Attachment security priming task Planning: • Putting activities into diary plan and monitoring.
5	Staying well: • Keeping an eye on your mood. • Developing a low mood alarm and activity toolkit.	*Prior to session:* • Attachment security priming task Staying well: • Keeping an eye on your mood. Developing a low mood alarm and activity toolkit.

Attachment security prime

A diagrammatic priming task was developed for the purpose of the current study, based on the version developed by Rowe, Palmer, & De Gietlink (2017; Appendix D). The brief nature of the attachment prime was therefore in keeping with the brief low intensity intervention. Participants were prompted with a caption regarding what it means to have a secure attachment. Following this, they were asked to list up to six people with whom they felt that they had this type of relationship. They were then

presented with a diagram of concentric circles, representing their social networks, with themselves in the middle. They were asked to plot the names of up to six people that they included onto the diagram in relation to how close they felt these people were to themselves and each other (i.e. the closer they place them to the innermost circle, the closer they see this person to them). During the first session, the PWP guided the participant through their initial priming task in order to explain this fully, giving them the opportunity to ask any questions.

Outcomes

Feasibility outcomes

Clients' willingness to engage in the research was measured by comparing the number of participants who were sent the information sheet with the number who consented to take part. Clinicians' willingness to recruit was determined by comparing how many PWPs attended the research training with how many recruited participants. The number of participants who dropped out of the research study was recorded in order to assess attrition rates.

Pilot outcomes

Attendance. Attendance was measured by recording the number of sessions that each participant attended.

Dropout. Dropout was measured by measuring the number of participants who dropped out of treatment after having started a course of GSH BA.

Stepping-up. Stepping-up was measured by determining the number of participants who began a course of step 2 GSH BA that were subsequently stepped-up to a step 3 intervention.

Depression. The PHQ-9 (Kroenke, Spitzer & Williams, 2001; Appendix E) contains nine items monitoring the severity of depression. The PHQ-9 had excellent internal

consistency when used with an adult primary care population (Cronbach's α = 0.89; Kroenke et al., 2001). It asks individuals 'over the past 2 weeks, how often have you been bothered by any of the following problems?' listing several items associated with depression. Each item is scored on a Likert scale between 0-3, with a score of 0 indicating 'not at all'; 1 indicating 'several days'; 2 indicating 'more than half the days'; and 3 indicating 'nearly every day'. Total scores of 5, 10, 15, and 20 are taken as the cut-off points for mild, moderate, moderately severe, and severe depression, respectively.

Anxiety. The GAD-7 (Spitzer, Kroenke, Williams, & Lowe, 2006; Appendix F) is a seven-item scale used to measure severity of generalised anxiety. The GAD-7 demonstrated excellent internal consistency with an adult population (Cronbach's α = .92). It asks 'over the past 2 weeks, how often have you been bothered by any of the following problems?' listing seven items associated with generalised anxiety. Each item is scored on a Likert scale between 0-3, with a score of 0 indicating 'not at all'; 1 indicating 'several days'; 2 indicating 'more than half the days'; and 3 indicating 'nearly every day'. Total scores of 5, 10, and 15 are taken as the cut-off points for mild, moderate and severe anxiety, respectively.

Functioning. The Work and Social Adjustment Scale (WSAS; Mundt, Marks, Shear & Greist, 2002; Appendix G) is a 5-item questionnaire used to measure impaired functioning. The WSAS demonstrated excellent internal consistency in adult populations with mood or anxiety disorders (Cronbach's α = 0.70- 0.94; Mundt et al., 2002). The measure looks at how an individual's depression/anxiety disorder impairs their ability to function day to day. Each of the 5 items are scored on a 8-point Likert scale, with 0 indicating 'not at all', 2 indicating 'slightly', 4 indicating 'definitely', 6 indicating 'markedly' and 8 indicating 'very severely'. A WSAS score above 20

appears to suggest moderately severe or worse psychopathology. Scores between 10 and 20 are associated with significant functional impairment but less severe clinical symptomatology.

Training

PWPs within the service attended a half-day training workshop at the research site on attachment theory and attachment security priming, delivered by the research team, one of whom is an expert within the attachment security-priming field (AM). The training covered a basic overview of attachment theory as well as information regarding the study including: aims; design; recruitment; participants; delivery of the attachment security prime; study measures and ethical issues. Attendees completed a satisfaction with training questionnaire (Appendix E). Answers were measured on a Likert scale between 1 and 10, with 1 indicating 'not at all' and 10 indicating 'extremely'.

Training satisfaction. Training satisfaction data were collated from questionnaire measures (N= 13). Of the 13 attendees, three were managers and 10 were PWPs. Figure 2 presents mean scores across attendees for each question. Higher mean scores indicate greater satisfaction with training.

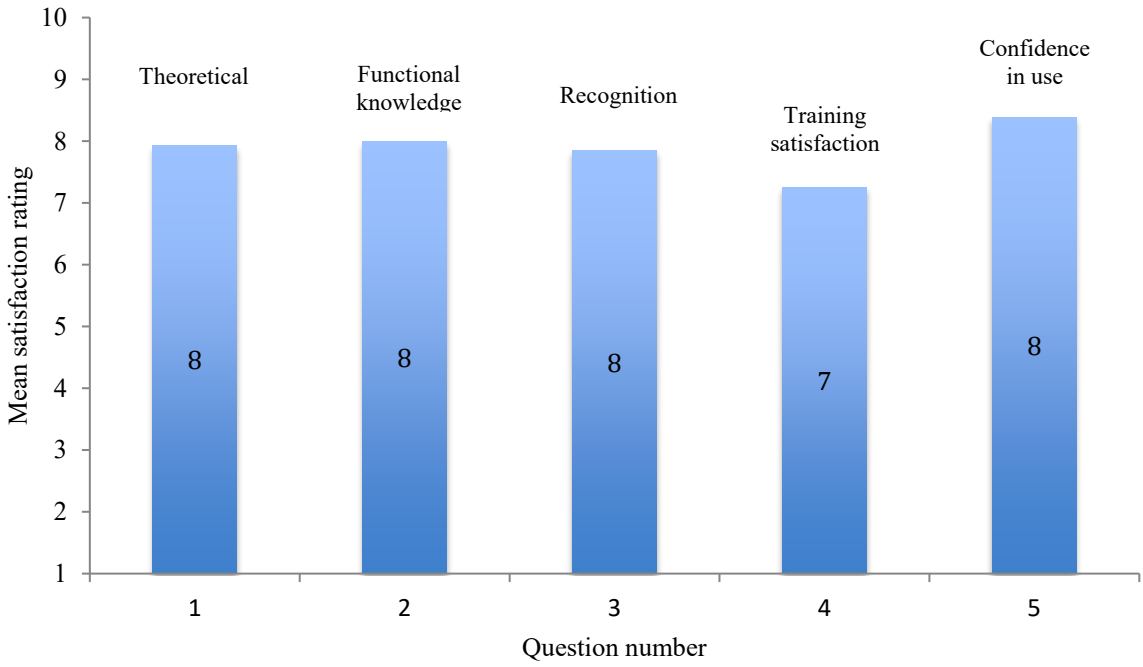

Figure 2. Training satisfaction questionnaire mean question ratings

Figure 3 presents overall mean satisfaction score per individual. Mean satisfaction ratings ranged from 6 to 9.75 out of 10, indicating some variation in satisfaction with training delivered. Mean overall score for participant satisfaction with training was 8, indicating relatively high satisfaction with training overall.

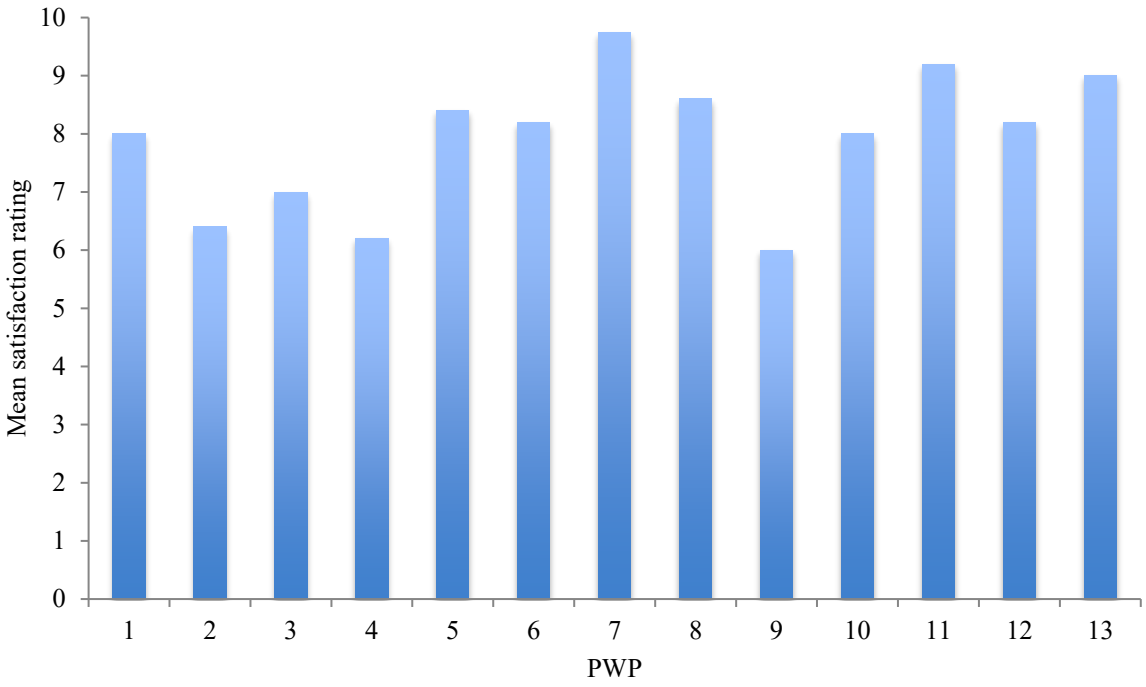

Figure 3. Training satisfaction questionnaire mean rating per attendee

Study Procedure and Data Collection

Clients who were deemed to be suitable for BA GSH were asked at assessment if they would like to hear more about the study (see Appendix F for telephone script). If the client agreed, their name and address was sent via secure email to the researcher, who sent out the information sheet and consent form (Appendix G). If the client consented to taking part, they were asked to return the consent form using the addressed envelope sent to them. Participants were allocated numbers to ensure maintenance of confidentiality and anonymity throughout the study. No personal information was shared that allowed for participants to be identified in any way. Data collected was stored within a secure database that was accessible only to the research team (trainee, supervisors, and collaborators).

Once the consent form was returned, participants were randomly allocated to receive BA or BA-prime. A member of the research team who was not directly involved

in data collection or management completed randomisation utilising a simple allocation method. Prior to recruitment, it was planned to utilise block randomisation to obtain more equal sample sizes in each group. However, this was not possible due to low numbers recruited during the study process. Once randomisation was complete, the outcome was sent to the principal investigator at the study site who recorded this on the participant's clinical record for PWPs awareness. Participants were blind to treatment allocation.

Once allocated, participants engaged in their treatment and PWPs collected data on individual participants and recorded this on a secure database. Once the participant had finished treatment and all study processes were complete, they were given the debrief form (Appendix H) and had the opportunity to ask their PWP any further questions.

Analysis

Data for feasibility outcomes are reported using descriptive statistics.

In terms of pilot outcomes, demographic data were analysed non-parametrically using Mann-Whitney U Test for continuous data and Fisher's Exact Test for categorical data. Dropout, stepping-up, attendance, and other data collected that was deemed relevant were also analysed using Mann-Whitney U Test and Fisher's Exact Test.

Mann-Whitney U Test was used to compare outcome measure scores (GAD-7, PHQ-9, & WSAS) between groups at screening and post-treatment. Scores on outcome measures at screening were compared using the Mann-Whitney U test between groups to determine if there were any significant differences pre-treatment. They were also compared at post-treatment to determine whether there were any significant differences between groups following intervention. Post-treatment scores were obtained for each participant based on the last set of outcome measures completed.

Wilcoxon Signed-Rank Test was used to compare pre and post scores within the groups separately to determine whether there was a significant difference in outcomes from screening to end of treatment for participants on the GAD-7, PHQ-9, and WSAS.

Data for PHQ-9 and GAD-7 outcomes were compared against clinical cut-off scores in order to determine whether participants met the criteria for 'caseness' by the end of treatment. 'Caseness' is a term used within IAPT to determine whether a client scores high enough on measures of anxiety and/or depression to be considered a 'clinical case' suitable for treatment (Gyani et al., 2013). The cut-off for PHQ-9 is ≥ 10 and for GAD-7 the cut-off is ≥ 8. Scores were also examined for indication of reliable change (Jacobson & Traux, 1991) separately for GAD-7 and PHQ-9 scores within each group, with a change in ≥ 6 indicated as reliable change for the PHQ-9 and ≥ 4 for the GAD-7. In terms of demonstrating reliable recovery, a client must fall below the clinical cut-off on both measures following treatment and demonstrate reliable change in both GAD-7 and PHQ-9 scores. Data were analysed for participants in each group to determine how many participants were deemed to have reliably recovered following treatment.

Results

Feasibility Outcomes

Demographics

Table 1 reports participant demographics to show that significantly more female participants were randomised to the BA-prime arm and participants were significantly older within the BA group.

Table 1.

Demographics

Demographic variable	BA (N=16)	BA-prime (N=8)	Test statistic	Statistical significance
Gender (number female)	10	7		$p = .03$*
Mean age in years (SD)	48.19 (12.31)	35.5 (6.65)	$U = 25.5$	$p = .02$*
Ethnicity (number in each group)	15 white British 1 mixed other	8 White British		$p = 1.00$
Number of participants with a long-term condition	5	3		$p = 1$
Provisional diagnosis (number in each category)	10 moderate depressive episode 2 mild depressive episode 2 severe depressive episode without psychotic symptoms 2 recurrent depressive disorder	6 moderate depressive episode 2 recurrent depressive disorder		$p = .45$
Number of veterans	2	0		$p = .53$
Number perinatal	1	1		$p = 1.00$
Employment status (number in each category)	13 employed 1 unemployed 1 retired 1 long-term sick	4 employed 3 unemployed 1 long-term sick		$p = .12$
Number seeking employment support	4	1		$p = .63$
Civil status (number in each category)	8 married 5 single 1 not reported 1 separated 1 divorced	5 single 2 married 1 living with partner		$p = .47$

Sexual orientation (number in each category)	16 heterosexual	8 heterosexual	$p = 1.00$
Psychotropic medication (number in each category)	14 prescribed and taking 2 not prescribed	4 prescribed and taking 4 not prescribed	$p = .13$

*significant at $p < .05$ level

Clients' willingness to take part

At initial assessment, 39 clients agreed to be sent the information sheet. Of these 39 clients, 24 forms were returned giving consent.

Clinicians' willingness to recruit

Of the 10 clinicians who attended the training session (excluding three managers who would not be involved in recruitment), seven recruited participants for the purpose of the study. The three PWPs that did not recruit had left the service prior to data collection commencing. Therefore, all seven PWPs who attended training and were working within the service at commencement of recruitment recruited participants.

Attrition

No participants dropped out of the study.

Pilot Outcomes

Attendance, dropout and stepping-up

Table 2 reports the pilot outcomes. There were no significant differences in session attendance. BA participants attended slightly more sessions on average (*M*= 3.81) than those in the BA-prime group (*M*= 1.88). When excluding participants who dropped out of treatment, the mean number of sessions attended in each group was higher. Within the BA group, 4/16 dropped out of treatment during the study period and 4/8 dropped out in the BA-prime group. With regards to stepping-up, 4/16 (BA) and 2/8 participants (BA-prime) were stepped up.

Table 2

Data comparing BA and BA-prime groups, including dropout, stepping-up, and attendance

Outcome	BA (N= 16)	BA-prime (N= 8)	Test statistic	Statistical significance
Mean number of sessions attended (overall)	3.81 (1.91)	1.88 (1.17)	$U = 26.5$	$p = 0.19$
Mean number of sessions attended (excluding those who dropped out)	4.17 (1.91)	2.25 (1.48)	$U = 26.5$	$p = 0.58$
Number dropped out of treatment	4	4		$p = .68$
Number stepped up	4	2		$p = 1.00$
Mean number of sessions DNA (SD)	0.19 (0.39)	0.25 (0.43)	$U = 66$	$p = .76$
Mean number of sessions cancelled with >24 hours notice (SD)	0.58 (0.31)	0.25 (0.43)	$U = 63$	$p = .98$
Number treatment changed within Step 2 care	0	2		$p = .09$
Number diagnosis changed	1	1		$p = 1$

Outcome measures

Sessional data. As shown in Table 3, there was a significant reduction in number of participants in treatment at each timepoint. Figures 4, 5 and 6 present mean GAD-7, PHQ-9 and WSAS scores respectively for participants in each group per sessional timepoint.

Table 3

Mean sessional outcome data for GAD-7, PHQ-9, and WSAS in BA and BA-prime groups

	N BA	GAD-7 BA	PHQ-9 BA	WSAS BA	N BA-prime	GAD-7 BA-prime	PHQ-9 BA-prime	WSAS BA-prime
Session 1	16	12.06 (4.75)	16.75 (5.21)	20.75 (7.66)	7	12.57 (6.52)	14.86 (6.66)	18.66 (6.72)
Session 2	15	10.38 (6.17)	14.6 (5.99)	19.66 (9.67)	5	12 (5.1)	16.8 (4.45)	23.6 (7.26)
Session 3	10	10.1 (5.37)	13.9 (6.73)	19 (7.27)	2	17.5 (1.5)	18.5 (1.5)	27.5 (5.5)
Session 4	7	12.43 (5.34)	15.43 (6.37)	18.57 (9.63)	1	12	17	33
Session 5	6	10.33 (6.52)	13.33 (6.52)	17.33 (7.65)	1	13	12	21
Session 6	4	5.25 (4.02)	8.5 (1.5)	12 (7.58)	1	3	4	14
Session 7	1	2	6	14				
Session 8	1	1	4	3				

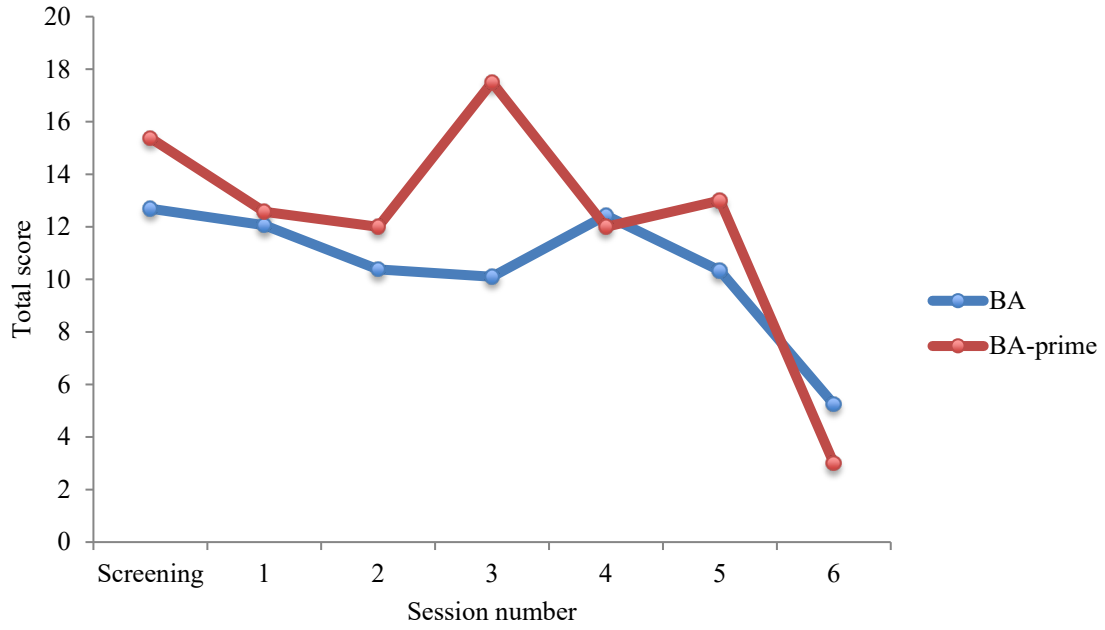

Figure 4. Sessional mean GAD-7 outcomes in BA and BA-prime groups

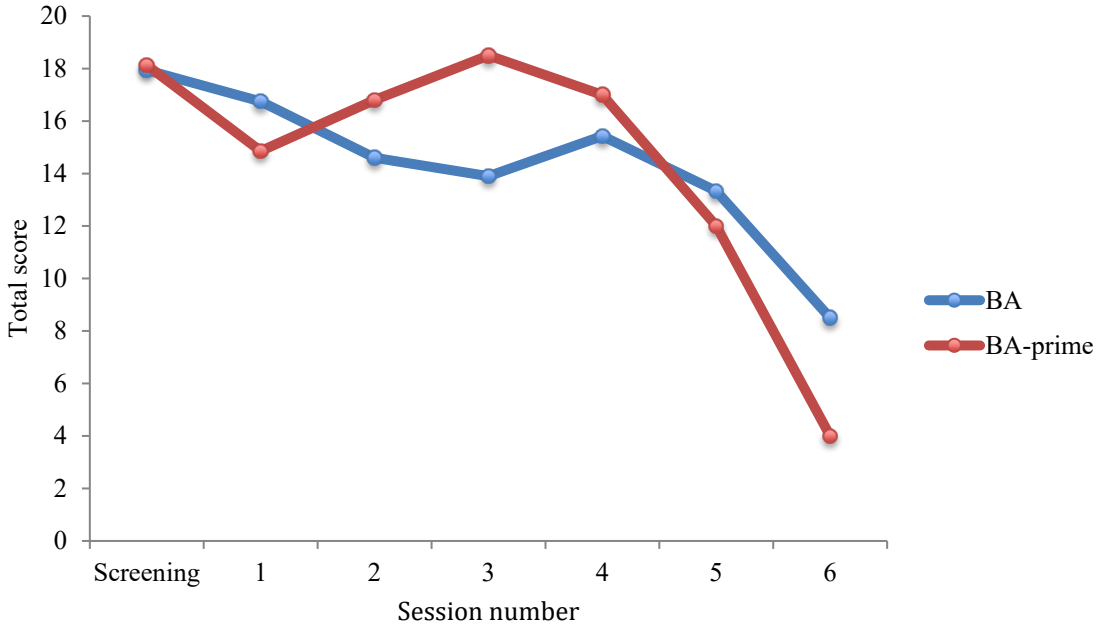

Figure 5. Sessional mean PHQ-9 outcomes in BA and BA-prime groups

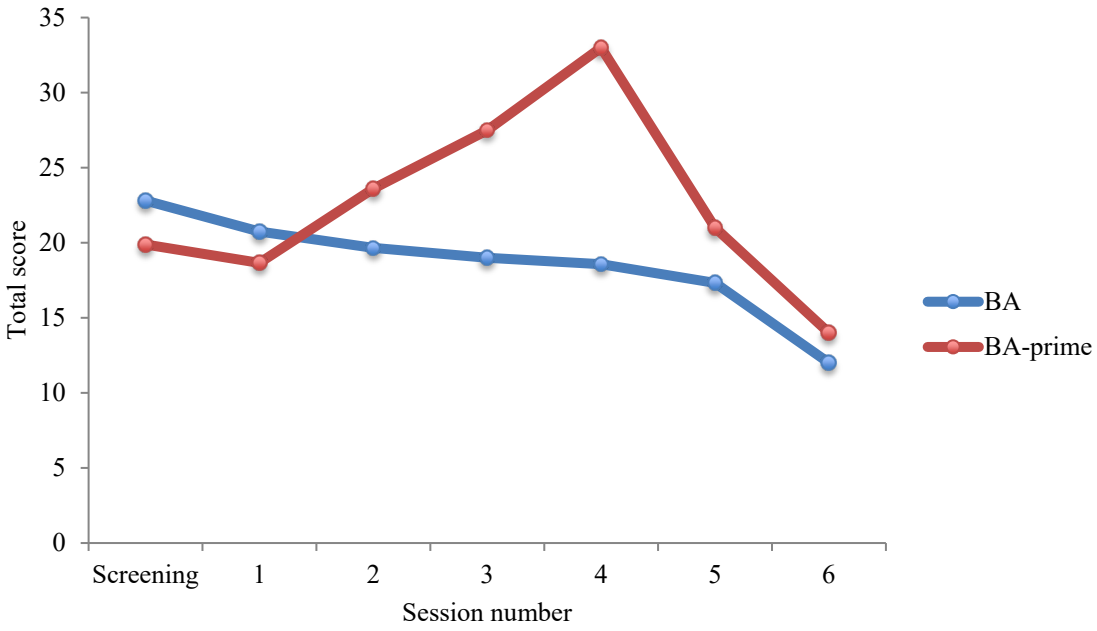

Figure 6. Sessional mean WSAS outcomes in BA and BA-prime groups

Pre-treatment and post-treatment comparison between groups

There were no significant differences between BA and BA-prime groups at screening on the GAD-7 (Z = -.87, *p* = .38), PHQ-9 (Z = -.03, *p* = .98), and WSAS (Z = -1.14, *p* = .26).

There were no significant differences between BA and BA-prime groups at post-intervention on the GAD-7 (Z = -.23, *p* = .82), PHQ-9 (Z = -.44, *p* = .67) and WSAS (Z = -.67, *p* = .54).

Change within groups from pre to post-treatment

BA group. There was no significant difference in scores on the GAD-7 between screening and post-treatment (Z = 1.37, *p* = .17). There was a significant reduction in

PHQ-9 scores from screening to post-treatment (Z = -.259, p = .01) and a significant reduction in WSAS scores (Z = -.251, p = .01).

At screening, 14/16 participants in the BA group fell above clinical cut-off on the GAD-7. By the end of treatment, 8/16 participants in the BA group fell below clinical cut-off for the GAD-7, with 7/16 demonstrating reliable change with a reduction of ≥ 4 in scores. On the PHQ-9, 15/16 participants in the BA group fell above clinical cut-off at screening. At the end of treatment, 7/16 participants in the BA group fell below clinical cut-off for the PHQ-9, with 10/16 demonstrating reliable change with a reduction of ≥ 6 in scores. Overall, 6/16 participants demonstrated reliable change in scores on both the GAD-7 and PHQ-9. In terms of recovery rates, as determined by reliable change on both measures and falling below clinical cut-off post-treatment, 5/16 participants demonstrated reliable recovery.

Table 4 displays BA group participants' scores at screening and post-treatment for GAD-7, PHQ-9, and WSAS.

Table 4

BA group participants' outcome measures scores pre-to-post treatment

GAD-7 score screening	GAD-7 score post-treatment	PHQ-9 score screening	PHQ-9 score post-treatment	WSAS score screening	WSAS score post-treatment
11	4	15	9	24	0
10	6	6	8	10	12
20	19	21	16	32	23
8	5	11	6	7	4
14	7	19	8	29	13
5	11	19	11	12	21
16	7	21	10	20	13
12	21	18	27	29	30
14	17	23	20	21	33

14	15	20	13	26	11
9	2	14	8	24	0
9	1	19	4	20	3
19	6	20	14	19	4
10	9	19	8	30	24
18	19	21	23	35	29
14	18	21	22	37	14

BA-prime group. Analysis revealed that there was a significant difference in scores on the GAD-7 between screening and post-treatment within the BA-prime group ($Z = -2.21$, $p = .03$), indicating a reduction in anxiety scores. There was no significant difference between PHQ-9 scores in the BA-prime group from screening to post-treatment ($Z = -.93$, $p = .35$). There was no significant difference in WSAS scores in the BA-prime group from screening to post-treatment ($Z = -.14$, $p = .18$).

At screening, 7/8 participants in the BA-prime group fell above the clinical cut-off on the GAD-7. By the end of treatment, 4/7 participants in the BA-prime group fell below clinical cut-off on the GAD-7 and demonstrated reliable change, with a reduction of ≥ 4 in scores. On the PHQ-9 at screening, all participants in the BA-prime group scored above clinical cut-off. At post-treatment 2/7 participants fell below clinical cut-off on the PHQ-9 and 3/7 demonstrated reliable change indicating a meaningful positive reduction in depression scores. In terms of recovery rates, as determined by reliable change on both measures and falling below clinical cut-off post-treatment, 1/7 participant's demonstrated reliable recovery.

Table 5 displays BA-prime group participants' scores at screening and post-treatment for GAD-7, PHQ-9, and WSAS.

Table 5

BA-prime participants' outcome measure scores pre-to-post treatment

GAD-7 score screening	GAD-7 score post-treatment	PHQ-9 score screening	PHQ-9 score post-treatment	WSAS score screening	WSAS score post-treatment
20	20	21	24	25	29
7	4	11	1	14	6
18	3	17	4	15	14
17	13	16	14	24	13
21	n/a	21	n/a	14	n/a
12	6	20	11	18	18

18	16	22	20	26	22
10	7	17	27	23	n/a

Discussion

Main findings

This study aimed to determine the feasibility of conducting a larger scale RCT within a routine clinical setting, utilising an additive trial design to determine whether BA could be enhanced with an attachment security-priming task. The findings from the current study found reasonable willingness from clients and PWPs to take part in the research and although the sample size was small, there was no attrition from the study process. These findings would suggest that a full RCT is practically possible.

There were no significant differences between BA and BA-prime groups with regards to attendance, treatment drop out, or stepping up rates. Post-treatment, there were no significant differences between groups with regards to anxiety, depression, and impaired functioning. The BA group demonstrated a significant improvement in depression and impaired functioning scores from screening to post-treatment, and 5/16 participants demonstrated reliable recovery. Within the BA-prime group, participants demonstrated a significant improvement in anxiety only from screening to post-treatment, with 1/7 demonstrating reliable recovery. The findings indicate a higher recovery rate in those in the BA group compared with those in the BA-prime group; however, direct comparison may be inappropriate due to the small, unequal group sizes and significant differences in demographics at baseline. These pilot results would suggest that low intensity BA is not augmented by the addition of an attachment prime. Moreover, it is possible that including a cognitive task within a behavioural intervention may not be effective. However, this would need to be tested in a larger scale RCT.

Comparison of Results to Previous Research

This study was the first to explore the feasibility of conducting a trial comparing the effects of attachment security priming within an NHS IAPT service. Although sample size was small, the study provides valuable information regarding whether a full-scale RCT is feasible to conduct within real-life clinical settings, with much of the attachment security priming evidence-base thus far relying on outcomes from controlled laboratory experiments with largely student populations.

The findings from the current study did not indicate any difference between groups with regards to symptoms following treatment. This is contrary to previous literature, where repeatedly priming attachment security has been found to improve symptoms (McGuire et al., 2018; Carnelley et al., 2018). Aside from the lack of power, uneven group sizes, and different demographic characteristics at baseline in the current study, there are two key differences that might account for this disparity. Firstly, the comparison made here is with an active, effective treatment (BA), rather than a neutral prime group, as per McGuire et al. and Carnelley et al.'s studies. Secondly, the nature of the security prime used here differed. This study used a relatively new diagrammatic prime, whereas Carnelley et al. utilised a written task where participants listed up to 10 of their closest significant others, chose the relevant attachment style illustrating this relationship and rated how representative each relationship was of the chosen style, and McGuire et al. utilised a subliminal task as well as a written supraliminal task. Future studies should aim to have larger sample sizes in order to make comparisons with adequate power to detect a significant effect, and compare different kinds of security primes to ensure that the most effective (as well as the most pragmatic) prime is used and that it is in keeping with the low or high intensity therapy approach and service context.

Although a previous study by Rowe et al. (2016) indicated that priming attachment security led to increased willingness to engage in mindfulness training, the current study did not show any significant differences between BA and BA-prime groups in terms of predictors of engagement (i.e. treatment dropout and attendance). However, this may also be down to the likely lack of power within the current study, and should be explored more in future research.

Implications for Psychological Theory and Clinical Practice

The current study provides a valuable contribution to psychological theory into attachment security priming, in that it is the first study examining whether priming methods could be utilised to enhance existing GSH interventions for people with depressive disorders. The findings of the study provide a basis for a future large-scale RCT into the effectiveness of attachment security priming on outcomes relevant for mental health and wellbeing within a clinical setting, in that it indicates that the study is feasible to conduct. The study processes worked well together and collecting outcome data as part of routine practice meant that there was no additional workload for clinicians.

Although there were no significant differences between groups with regards to outcomes, the current findings indicate that it is feasible to compare two groups of participants within a clinical setting who are receiving GSH interventions. The attachment security-priming enhancement was easily integrated into the existing BA intervention and delivered by PWPs. Moreover, this indicates that clinicians with limited training can deliver the BA-prime intervention, which is cost-effective in comparison to delivering more intensive interventions such as CBT (Ekers et al., 2011). The current findings add to the research base indicating that BA is effective for the treatment of depressive disorders in that those receiving BA-only demonstrated a

significant improvement in outcomes of depression and impaired functioning. Although this was not present in the BA-prime group and there were no significant differences between groups, there is a rationale for priming potentially having a significant impact on outcomes, and this is worth exploring with a larger sample in a full-scale RCT.

Limitations

There are several limitations of the present study with regards to the sample. A small sample size was obtained; indicating that recruiting a large sample for a future RCT may take a significant amount of time and resource. However, it should be noted that the COVID-19 pandemic meant that data collection could not be extended in order to attempt to recruit more participants. Therefore, the sample numbers may not accurately reflect the potential number of participants that could be recruited. The small sample size means that the study is likely to lack power to detect a significant effect, and therefore, findings from statistical analyses cannot be interpreted with any certainty.

Small studies utilising conventional randomisation methods can result in unequal sample sizes and variations in baseline characteristics between control and intervention groups (Scott, McPherson, Ramsay, & Campbell, 2002). The disparity between baseline characteristics can affect the ability to be able to accurately compare outcomes between groups and introduce possible confounding factors (Kang, Ragan, & Hyeon, 2008). The current study had significantly unequal numbers of participants in each group, making meaningful comparisons difficult. This is a limitation of the randomisation strategy due to small participant numbers, in that participants had to be randomised individually, rather than utilising block randomisation, which is designed to randomise participants into groups with equal sample sizes (Suresh, 2011). The current study showed a significant difference between groups with regards to age and gender,

introducing potential confounding variables between groups, making direct comparison difficult and introducing potential bias.

Another limitation of the present study is the lack of reliability with regards to adherence to the security-priming task. Although PWPs completed the initial priming task with participants in the BA-prime group, they did not observe that participants completed this prior to each session, and there is therefore no way of determining whether the task was completed or not. Therefore, the findings of the current study are limited in that we are not able to reliably interpret whether findings are a result of having completed the priming intervention or not and comparing this to those who completed usual BA treatment. Moreover, although clinicians attended training on delivering the attachment security prime, adherence to this was not monitored, and it therefore could have been introduced differently by clinicians and interpreted differently by participants, potentially impacting outcomes.

Some individuals included in the current sample met criteria for 'severe' depression and/or anxiety at screening, whereas low-intensity GSH interventions within IAPT are designed for those with mild-moderate mental health difficulties (NICE, 2011). Therefore, BA GSH may not be the appropriate intervention for some individuals included within the study sample, with lack of change from pre-to-post intervention potentially representing an issue with regards to appropriate allocation to treatment. The lack of any follow-up data precluded the investigation of whether the durability of the clinical outcomes differed over follow-up time and also whether participants continued to use the attachment prime to enable behaviour change.

Directions of Future Research

The current study indicates that a full-scale RCT would be of use to establish whether attachment security priming is a useful enhancement for existing mental health treatments for individuals with common mental health problems such as depression. The current study indicates that implementing a trial within this setting is feasible; a larger-scale RCT would allow for meaningful comparison between groups, which would significantly add to the existing literature on the effects of attachment priming for improving outcomes relevant to mental health and wellbeing. A larger sample could reach power in order to be able to detect a significant effect and would also allow for researchers to utilise block randomisation and reduce the likelihood of potential confounding variables between groups that may influence findings and make comparison between groups less reliable.

Future research should utilise clinical populations with differing diagnoses in order to determine whether attachment security priming is effective and helpful according to presenting problem. Moreover, if future research is to look at the effects of utilising attachment security priming for enhancing current GSH interventions, they should aim to recruit participants who meet the thresholds for mild-moderate mental health difficulties, for whom GSH interventions are aimed at, as including those with severe difficulties may lead to bias within findings in that these difficulties require more intensive psychological interventions. The use of mobile technology to support attachment priming as a treatment additive would also be useful.

It may be of benefit to future researchers to monitor completion of attachment security priming activities to ensure that effects detected can be more reliably ascribed to priming and differences between groups can be compared based on this. Additionally, training for clinicians should be implemented as per the current study, in

order that those delivering the priming intervention are confident in its rationale and how to present this to participants. Recording and monitoring adherence of clinicians introducing the prime may also be of benefit to ensure consistency across clinicians so that researchers can be more certain of participants' adequately understanding and completing the priming activity as prescribed.

Conclusion

In conclusion, this study generally indicates that it is feasible to conduct an RCT on the use of attachment security priming as an enhancement for existing GSH interventions with clinical samples in routine clinical services. Clients demonstrated a reasonable willingness to participate in the study and clinicians were willing to recruit participants. Although small sample numbers were obtained, there were restrictions to data collection, meaning that a larger sample is likely possible over a longer time period.

The findings indicated no significant differences in outcomes of dropout, therapy attendance, stepping-up, anxiety, depression, and impaired functioning between those receiving BA and those receiving BA with attachment priming. However, due to small sample size, the current study is likely to lack power to detect any significant differences between groups. There were also potential confounding factors due to significant demographic differences between groups at baseline.

Any findings from the study are treated as preliminary, but promising with regards to potential for future research. It is recommended that future research focus on implementing similar procedures for a larger-scale trial (with follow-up) in order to determine the true effectiveness of an attachment security-priming enhancement for existing GSH interventions.

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Appendices

Appendix A: IRAS approval letters

Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

NHS
Health Research Authority

Miss Charlotte Heathcote
5 Midhurst Road
S61EY

Email: hra.approval@nhs.net
Research-permissions@wales.nhs.uk

10 June 2019

Dear Miss Heathcote

HRA and Health and Care Research Wales (HCRW) Approval Letter

Study title:	**Priming Attachment Security within an IAPT Setting: A Feasibility and Pilot Study**
IRAS project ID:	**249633**
Protocol number:	**2**
REC reference:	**19/YH/0111**
Sponsor	**The University of Sheffield**

I am pleased to confirm that HRA and Health and Care Research Wales (HCRW) Approval has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **249633**. Please quote this on all correspondence.

Yours sincerely,
Alex Thorpe

Approvals Manager

Email: hra.approval@nhs.net

NHS
Health Research Authority
Yorkshire & The Humber - Leeds West Research Ethics Committee
NHSBT Newcastle Blood Donor Centre
Holland Drive
Newcastle upon Tyne
NE2 4NQ

Telephone: 0207 1048 088

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

10 May 2019

Miss Charlotte Heathcote
5 Midhurst Road
S61EY

Dear Miss Heathcote

Study title:	**Priming Attachment Security within an IAPT Setting: A Feasibility and Pilot Study**
REC reference:	**19/YH/0111**
Protocol number:	**2**
IRAS project ID:	**249633**

Thank you for your response of 03 May 2019, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact hra.studyregistration@nhs.net outlining the reasons for your request.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a **favourable** ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System, at www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

The Committee has not yet completed any site-specific assessment (SSA) for the non-NHS research site(s) taking part in this study. The favourable opinion does not therefore apply to any non-NHS site at present. We will write to you again as soon as an SSA application(s) has been reviewed. In the meantime no study procedures should be initiated at non-NHS sites.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Insurance Certificate]	1	30 April 2019
IRAS Application Form [IRAS_Form_11032019]		11 March 2019
Other [Intervention Workbook]	1	25 March 2019
Other [Attachment Security Priming Task]	1	30 April 2019
Other [Telephone script for PWPs]	1	30 April 2019
Participant consent form [Participant Consent Form]	3	30 April 2019
Participant information sheet (PIS) [Participant Information Sheet]	4	30 April 2019
Research protocol or project proposal [Research Protocol]	3	28 February 2019
Summary CV for Chief Investigator (CI) [Investigator CV]	1	28 February 2019
Summary CV for supervisor (student research) [Abigail Millings CV]	1	28 February 2019
Summary CV for supervisor (student research) [Stephen Kellett CV]	1	28 February 2019
Summary of any applicable exclusions to sponsor insurance (non-NHS sponsors only) [Public Liability Insurance Certificate]	1	30 April 2019
Validated questionnaire [GAD-7]	1	28 February 2019
Validated questionnaire [PHQ-9]	1	28 February 2019
Validated questionnaire [Work and Social Adjustment Scale]	1	28 February 2019

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at:
https://www.hra.nhs.uk/planning-and-improving-research/learning/

19/YH/0111	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely
pp

[redacted]

Dr Rhona Bratt
Chair

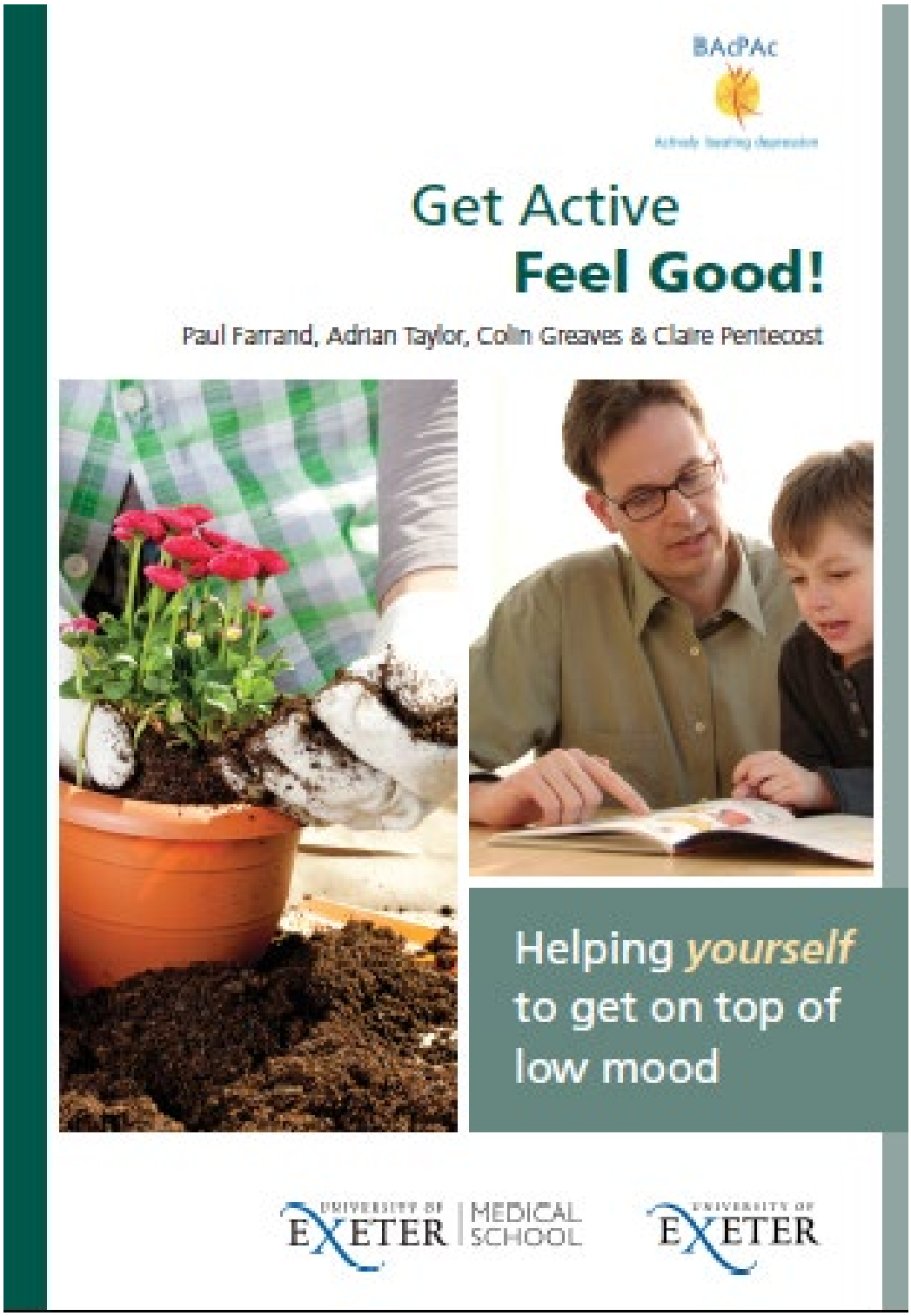
Email: nrescommittee.yorkandhumber-leedswest@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Appendix B: Deviations from research protocol

Outcome	Planned method of data collection taken from research protocol	Revised	Reason
Service users' willingness to engage in the research	Service users' willingness to engage in the research will be determined by the number of participants who consent to taking part in the study against the number who are invited to take part in the study.	Service users' willingness to engage in the research was measured by comparing the number of service users who were sent the information sheet with the number that returned consent forms and agreed to take part.	Data regarding how many service users clinicians invited to take part in the study was not collected within the service.
Clinician's willingness to recruit participants	This will be explored by determining the number of service users entering the service that are eligible compared against the number of service users who are invited to take part in the study by clinicians.	Clinicians' willingness to recruit was measured by determining how many clinicians who attended training recruited participants as part of the study.	It was not feasible to collect data regarding the number of service users entering the service who would be eligible for the research as service users are not allocated to treatment at point of entering the service.

Appendix C: BA Workbook



Sometimes the hardest steps are the first ones, and by getting this far you have already taken your first step to get on top of your low mood.

This self-help programme, with Case Studies, is here to guide you through your recovery based on an approach that has helped many people already in a similar situation to you. At times you may feel like giving up, but don't worry that is perfectly normal. If you can, use the support of a family member or friend, or maybe your GP, as well as your Psychological Wellbeing Practitioner, or PWP for short.

Your PWP is a mental health professional trained to support you to work through this self-help programme. It is likely you will have regular sessions with them to help you identify and solve any problems and answer any questions you may have. The focus is on working together, rather than your PWP simply telling you what you should do. As such they will go at the pace you want to go and really put you in control. Remember you are the expert in how you are feeling. Their expertise is in supporting people as they use this programme.

You are going to ask a lot of yourself in working through this programme, and at times you will simply want to give up. However it is likely your PWP has seen this all before and will be able to help you through any difficult times.

There are no expectations about how quickly you should work, nor the amount of time it will take to get better. However, for this programme to be successful we ask you to commit to two things.

- **GIVE THE ACTIVITIES A GO TO SEE WHAT WORKS FOR YOU**
- **STAY IN TOUCH, FACE-TO-FACE OR BY PHONE! LET YOUR PWP KNOW HOW YOU FEEL SO THEY CAN BETTER SUPPORT YOU**

Before we get started on helping you to understand low mood and the way it affects you, we would just like to share some tips that may be helpful when using this programme. Most of these tips come from people just like you who we have treated for low mood.

GIVE IT YOUR BEST SHOT

Because you have low mood you may find some things difficult. But just give the programme your best shot. Your PWP is there to help you overcome any difficulties you have and is well aware that sometimes things just seem too much. All anyone will ask of you is just to give it a go.

LIKE EVERYONE, EXPECT TO HAVE GOOD DAYS AND BAD DAYS

Hopefully after using the programme for a few weeks you will notice a gradual improvement in your mood. However, you will also have bad days, and this may affect how you use your programme or engage with the activities. This is all perfectly normal and to be expected.

DON'T OVERDO IT

Whilst treatment will proceed at a rate suitable for you, slow and steady is often the best to aim for. Think about breaking things down into small, manageable chunks – that generally makes things easier. Your PWP will be able to help you with this.

INVOLVE FAMILY AND FRIENDS IF YOU CAN

Like all of us, when you are feeling a little down, you may have found that just having others around can be helpful. They may help you look at things differently, find ways to solve problems or maybe just be there for a chat. Getting others involved isn't for everyone and you may not be ready to take this step yet – don't worry if that is the case. But if you think you might find the support of others helpful and they want to help then why not ask? If you show them this programme, they may find the sections on what low mood is and how it is affecting you helpful.

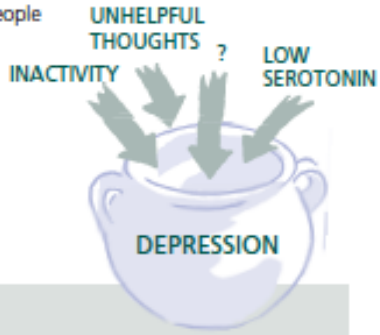
UNDERSTANDING LOW MOOD AND DEPRESSION

Persistent low mood, or as it is often called depression, will affect about one in six people during their lifetime.

Mental health experts are still debating what causes depression and low mood. Some feel it is caused by:

- Low levels of a chemical called serotonin that helps to take signals from one area of the brain to another
- The way we interpret things that happen to us. If you tend to look at things negatively (especially ourselves, our futures and the world around us) or if you tend to jump to negative conclusions, over time this can affect your mood
- A reduction in your normal activities, for whatever reason

Whilst any of these may be true, it is very likely that most people become depressed due to a combination of them. So it may not be easy to pin it down to any one thing.



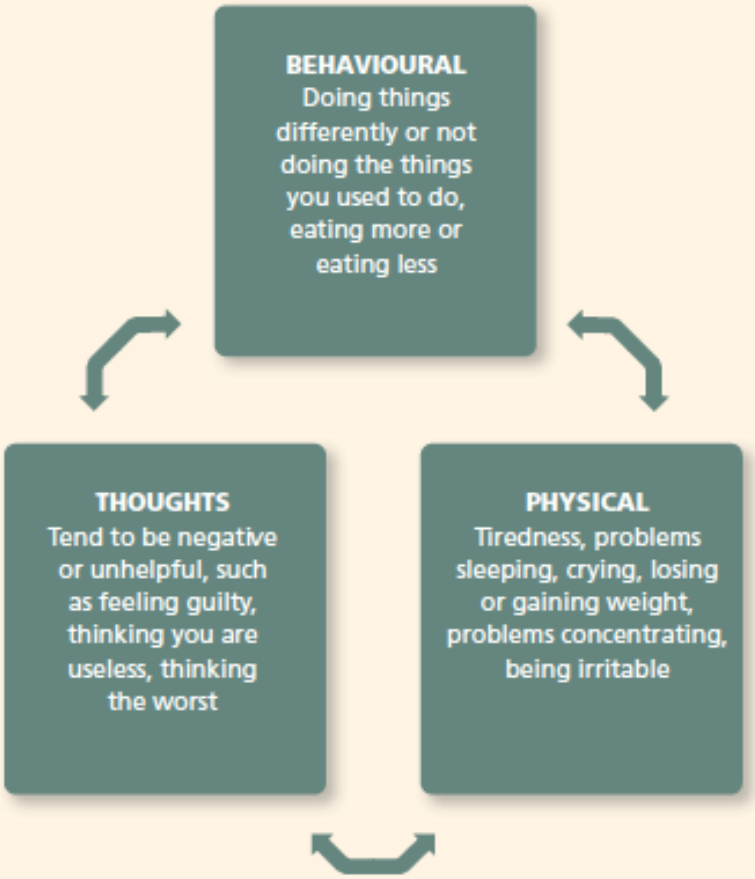
The Impact of Low Mood?

Although everyone will experience depression in their own way, people often say similar things about it.

People with depression often say that depression affects
a) their behaviour,
b) the thoughts that go through their head, and
c) how they physically feel.

One thing leads to another, as we have tried to show in the diagram opposite. You may not be experiencing all these things, but if you have depression you will certainly be experiencing some of them.

The impact of low mood or depression



Depression or low mood impacts upon all three of these areas and one thing leads to another. For example, having unhelpful thoughts can make people feel tired and fatigued which may then stop them from doing the things they want or need to do. Or, problems concentrating can result in thoughts like 'I can't do anything properly anymore' which could result in time off work.

A very important thing about the above diagram is the way that these three areas can reinforce each other. It can become an unhealthy cycle, or a 'downward spiral' that is hard to break out of. These negative effects can spill over into other areas of your life.

HOW IS YOUR DEPRESSION AND LOW MOOD AFFECTING YOU?

People with depression or low mood may also report having a sense that 'they are staring down a black hole, not knowing how to get out'. Before we start to talk about ways in which we can help you get out of this hole, it is worth thinking about how your depression or low mood is affecting you.

Using the diagram opposite think about how your depression or low mood is affecting you. In each of the three boxes write in the type of things you have stopped doing or are doing differently, some of the unhelpful thoughts that commonly go through your head and the way you feel physically. Don't worry if this seems difficult - your PWP will go through this with you.

Behavioural

Write in here the things you have stopped doing or now do differently

Thoughts

Write in here the specific types of unhelpful thoughts that go through your head

Physical

Write in here the physical changes you have noticed

THINKING AHEAD

Hopefully you now know a little more about how your low mood is affecting you. It may therefore be helpful to begin to think about what you would like to get out of your treatment.

Some people with low mood find it difficult to plan ahead but this will be an important part of your treatment. So, it would be useful for you to think about what you may be able to achieve over the next few months. These may be things you have done in the past that you have stopped doing, or new things you would like to achieve.

OK let's get started!

In the 'What do you want to get out of treatment?' boxes opposite, write down three things you are not presently doing but would like to. Then say how well you think you can currently achieve them by circling the appropriate number between 0 and 6 (0 means 'Not at all' and 6 means 'Anytime'). It should be something that you are not able to do at the moment but that you think you can realistically achieve over the coming months. If you are struggling to identify any aims for your treatment, your PWP can help.

What Do You Want to Get Out of Treatment?

Today's Date

Item 1

I can do this now (circle a number):

0	1	2	3	4	5	6
Not at all		Occasionally		Often		Anytime

Today's Date

Item 2

I can do this now (circle a number):

0	1	2	3	4	5	6
Not at all		Occasionally		Often		Anytime

Today's Date

Item 3

I can do this now (circle a number):

0	1	2	3	4	5	6
Not at all		Occasionally		Often		Anytime

BEHAVIOURAL ACTIVATION : GETTING ACTIVE

Now you have identified some things you would like to achieve by the end of your treatment, it is time to move on and think about 'getting active' to reduce your low mood. The way you will be supported to do this is through something called 'Behavioural Activation'. This is a treatment that is often used to help people with low mood and depression.

Why is Behavioural Activation used for depression and low mood?

a) Lots of people with low mood have told us how helpful they have found it in improving their low mood.
b) A lot of research has shown it to be effective.
c) It does not require you to concentrate for long periods of time or think too much. These are both things that people with depression or low mood often tell us they have problems with.

What will I need to do?

It requires you to increase the things you are doing in three main areas of your life:

- routine activities
- pleasurable activities
- necessary activities

Just thinking about this may seem overwhelming as you are possibly struggling with low energy levels and tiredness. However, the really helpful thing about behavioural activation is that it is done in a way that helps you to start doing things again at a level you choose. You will decide how much you feel you can do.

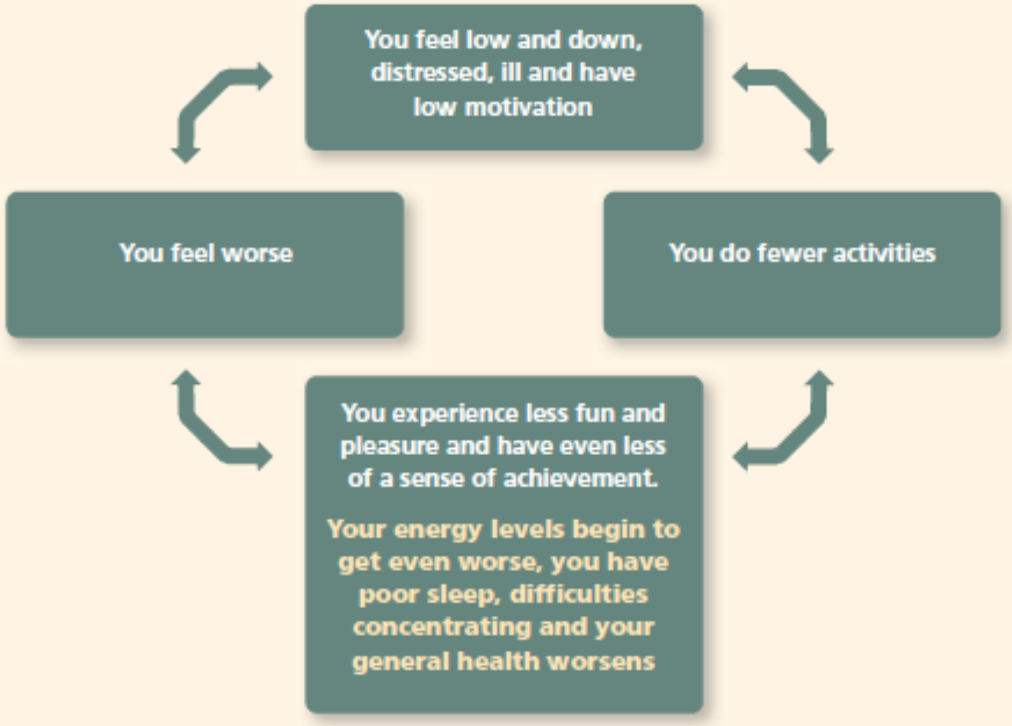
But I am already tired!

By doing more activities you may also notice you slowly start to feel better and your tiredness actually begins to lessen. This may seem a bit odd. But sometimes we do less because we feel tired and less energetic.

So how does it work?

When people are depressed they tend to withdraw from the world in general. They tend to do less of the things they routinely do, things that they find pleasurable, or things that are necessary in life (such as paying the bills or doing the shopping). This might help at first as in the short-term doing less may actually make you feel better – it is a normal 'self defence' type of response. However, doing less in the longer term also means that things that have to be done tend to pile up and you may find yourself doing less of the things you enjoyed. You also have more time to dwell on negative thoughts.

Cycle of low mood and reducing activity



Over time, this lack of activity can make your mood worse rather than better. Then of course, you are likely to want to do even less and this makes you feel even worse – it is a downward spiral (or a black hole as some people describe it).

Behavioural Activation tries to break this cycle by encouraging you to start doing things again – a little at a time. This puts the spiral into reverse and things start to improve. By taking small steps you will start to feel better and have more energy and more confidence to take the next step. Best of all, you are the one who will set the pace, and you are the person who will decide what to do and when.

Getting started with Behavioural Activation

People with depression and low mood often like Behavioural Activation. Have a go to try and work through this yourself, but as ever your PWP is there to help you as well.

STEP 1 : RECORD WHAT YOU ARE CURRENTLY DOING

Use the blank 'My Starting Point Diary' to record what you are currently doing during the week. Start today and record over the next 7 days. There are two boxes each for the morning, afternoon and evening so just try to include the main two things you have done for each.

My Starting Point Diary

		Monday	Tuesday	Wednesday
Morning	What			
	Where			
	Who			
	What			
	Where			
	Who			
Afternoon	What			
	Where			
	Who			
	What			
	Where			
	Who			
Evening	What			
	Where			
	Who			
	What			
	Where			
	Who			
Comments				

At the end of each day have a look at your diary and write any comments you have in the comments box. Think about what you have been up to, and try to note if there were times when you felt better or worse. This will help you and your PWP when you discuss your week at the next session.

It can really help later on if you are able to provide some detail about:

'What' you are doing – i.e. 'watching television'
'Where' you are doing it – i.e. 'lounge'
'Who' you were with – i.e. 'on my own'

Thursday	Friday	Saturday	Sunday

STEP 2 : IDENTIFYING ACTIVITIES

Once you have an idea as to what you have done during the previous week it is time to start to think about some of the things you have given up since feeling down. And perhaps to think of some things you would like to start to do for the first time.

Looking at the three things you said that you would like to achieve previously in the 'What Do You Want To Get Out of Treatment' box may help you think about some of the things you want to put in here.

Try to think about activities in three main areas of your life

Routine

These are activities you used to do regularly and can include things such as cooking, cleaning, shopping for food, walking the dog, shaving, washing, having a bath or shower etc.

Pleasurable

These are things you used to enjoy before your low mood or indeed could be new things that you think you would enjoy and like to try. These are very much down to individual choice. What one person enjoys another may really dislike. Only you can really know what these are, however examples may include going out with friends, or going to the park.

Necessary

These are activities that are often very important and for which there is a consequence if they are not done. For example, paying bills, getting an M.O.T. for the car, taking your children to school, ensuring you phone work to let them know how you are getting on or completing a Personal Sickness Certificate if you are off work.

Use 'Worksheet A' on the next page to write down a few activities in each column. You do not have to do this all at once, and may find it helpful to come back to it a few times. At times you may be unsure as to whether the activity is Routine, Pleasurable or Necessary. Don't worry about it – these categories overlap a lot. For example having a bath could fall into any of the categories. Just put the activity where you feel it fits best.

Worksheet A : Identifying activities

Under each type of activity write down what you want to be able to achieve. Please include all activities you can think of here, regardless of whether you think you can do them or not. We will deal with that in Step 3. Again don't worry if you struggle with this step. Anything you get down will be a bonus as your PWP is always there to help.

Routine e.g. cooking, walking the dog, food shopping	**Pleasurable** e.g. going out with friends, reading	**Necessary** e.g. paying bills, taking children to nursery

If you have managed to identify even a few activities in each column then that is great. You can move onto Step 3. If you have had some problems doing this however, your PWP will help.

STEP 3 : ORGANISING ACTIVITIES AS TO HOW DIFFICULT THEY ARE

Step 3 involves using Worksheet B to put the activities in order of how difficult you feel they are.

If some of the activities you have listed in Worksheet A seem too difficult to do straightaway that is fine. Initially you should focus on trying to do the easier ones. Step 3a will help you organise this.

Step 3a

For each of the routine, necessary and pleasurable activities written in Worksheet A, think about how difficult you would find it to do them in the next week or so. If it seems really impossible for you to do one of them at the moment, write them under 'Most difficult'.

If the activities would be really difficult but not impossible write them under 'Medium Difficult' and those you feel you could possibly manage in the next week or so place under 'Least difficult'. It is possible that those you feel are least difficult may still be challenging.

Sometimes people find it difficult to identify any 'Least difficult' activities. A helpful tip is to try and break the activities down.

Look at the activities you have identified as 'Most difficult' or 'Medium difficult'. Can you think of ways you could break these activities down into smaller ones?

For example 'clean the house' could be broken down into a number of smaller activities such as:

- **clean the lounge**
- **clean the kitchen**
- **clean the bedroom**

If this seems too daunting then you could break these down further:

- **tidy the lounge**
- **vacuum the lounge**

You could keep going doing this until you had broken the task down to a point that you felt you could manage it, although still presenting you some challenge. When you have done this write the activities under the 'Least difficult' heading.

Step 3b

When you have identified a range of activities under each of the headings, go through each activity you have identified from Most to Least difficult and write these into Worksheet B.

Worksheet B : Organising activities by how difficult they are

Least difficult	Medium difficult	Most difficult

STEP 4 : PLANNING

The final stage is to begin to put activities from your 'Least difficult' section into the 'My Next Steps Diary' over the page.

As far as possible, try to include at least one Routine, Pleasurable and Necessary activity from the Least difficult column. However, the number of activities you think you can achieve can only be decided by you.

Sometimes people may feel achieving just two or three to begin with is enough, especially if you have been inactive for a long time. Sometimes people may feel they can achieve more in a week. If you feel like this, great! However be prepared for the possibility that when you come to actually do the activities it may seem harder than you first imagined. If this is the case then it is no problem. Do what you can, and afterwards make a note of the difficulties or what you enjoyed in the Comments section in your 'Next Steps' Diary and discuss these when you next see your PWP.

Important

Although you should try to start off with the 'Least difficult' activities, have a look at your Necessary activities. Necessary activities may also need to be prioritised even if they are under your 'Most difficult' heading, as these may have consequences if they are not done. For example, it may be paying an overdue water bill. If you notice that it needs to be done in the next week then think about ways you could do it. Until you feel better this could involve asking friends or family for help, or if there is time you could raise this at your next meeting with your PWP who could help you to overcome any barriers to getting these done.

Time to put the planned activity into action

When you have managed to write your activities for next week in your diary it's time to start getting active! Use the diary to help you to start doing the things you want to achieve at the times you have indicated. This may or may not be easy. But as long as you try to achieve the activities in your diary you will be making your first steps towards recovery.

See how you get on in the first week. If you have struggled, then try to write down what happened and why it didn't work in the comments box and your PWP will be able to support you. If however you have achieved the activities you set yourself write down why you think it worked then for next week you can start to think about including more activities. Perhaps you could start to include some of the activities that you originally saw as more difficult. If all is well then over time you will notice your diary beginning to fill up once again and you will notice yourself getting back to your regular activities.

A few things to remember however!

Don't expect too much too soon

Some weeks you may find are quite easy to achieve. Other weeks may be a real struggle or you may not achieve the activities you set yourself. This is all perfectly normal and to be expected. But either way is great; whatever happens you and your PWP are learning how best to move forward and you are learning how to steer your way back towards feeling better.

Don't expect to feel better immediately

It can take time to get this ball rolling and you may find that you start to feel you have achieved things before you actually start to experience pleasure, satisfaction or a sense of achievement again. The main thing is just to keep going and the pleasure and sense of achievement will return.

Don't forget you are in control

You should go at the speed you want. No-one is going to put you under any pressure to go quicker than you want to. Also remember you are not alone, your PWP is there to help you throughout.

STEP 4 : PLANNING

Planning activities for the week using My Next Steps Diary.

My Next Steps Diary

		Monday	Tuesday	Wednesday
Morning	What			
	Where			
	Who			
	What			
	Where			
	Who			
Afternoon	What			
	Where			
	Who			
	What			
	Where			
	Who			
Evening	What			
	Where			
	Who			
	What			
	Where			
	Who			
Comments				

There are a few additional helpful tips on planning your activities

- If possible try to plan your activities on different days, spreading them over the week. Do not try to overload yourself on one particular day and have nothing on other days.
- Be as specific as possible when describing your chosen activities. As with the My Starting Point Diary try to include 'What' you are planning to do, 'Where' you are planning to do it and 'Who' you are planning to do it with.

Thursday	Friday	Saturday	Sunday

STEP 5 : STAYING WELL

Well done on getting this far.

You have now completed all the steps that can help you feel better and remain well. You have hopefully learned what works best for you and become aware that starting to do things again helps you keep on top of low mood and depression and can prevent any future dips in your mood.

You may have rediscovered past activities you are enjoying again, or have discovered new ones. Perhaps you have found new freedom to do the things you always wanted to do. Either way to stay well it is important to keep up the good work and carry on doing the routine, pleasurable and necessary activities you have started to do again.

Keeping an eye on your mood

It is however perfectly normal to feel a little down at times. Everyone does and it will be no different for you! Next time you feel down therefore do not get too concerned too quickly. However it is worth keeping an eye on your mood just to ensure it does improve on its own.

Developing a low mood alarm and activity toolkit

To do this it is worth reminding yourself again about the main signs that may indicate your depression is returning. Think back to the time when you were last depressed. Then use the 'Low Mood Alarm' to write the main signs in each box that could indicate your low mood has returned. Also write in the activities that you felt really helped lift your mood. Even now you may have stopped doing some of these. This then becomes your personal alarm that your low mood may be returning and your personal activity toolkit to try and help lift your mood once again.

My low mood alarm and activity toolkit

Last time I was depressed I did the following things differently or stopped doing them altogether...

Last time I was depressed the following unhelpful thoughts ran through my head...

Last time I was depressed I felt the following physical symptoms...

Last time I was depressed, doing the following activities really helped...

Remember: Simply experiencing any of these symptoms for a short time will be perfectly normal. However if you find yourself experiencing them for a while and it is beginning to have an impact on your life again then you may need to do something about it.

Using your Toolkit

It will no doubt be distressing if you feel your low mood has returned. However if you notice this then the first thing to do is to try and start doing those activities again you felt really helped last time.

It may be that working through 'Get Active, Feel Good' again could also be helpful. It worked last time so can do so again. And you can always make contact with your depression service if you feel you need extra support.

Just by doing the routine, pleasurable and necessary activities you have started to do again and keeping structure in your life however there is every chance you will keep on top of your low mood.

ABOUT THE AUTHORS

Dr Paul Farrand is a Senior Lecturer within the Mood Disorders Centre and Director of Psychological Wellbeing Practitioner training within Clinical Education, Development and Research (CEDAR) at the University of Exeter. His main clinical and research interests are in the area of low intensity cognitive behavioural therapy (CBT), especially in a self-help format. Based upon his research and clinical practice he has developed a wide range of written self-help treatments for depression and anxiety.

Professor Adrian Taylor specialises in developing and evaluating interventions and support for health behaviour change as a way of improving and regulating psychological well-being. As one of the Directors of Research in the College of Life and Environmental Sciences at the University of Exeter, he has led and supported many nationally and internationally renowned research studies. His work has featured in a variety of clinical guidelines for helping people to gain control over various health behaviours as well as mood.

Dr Colin Greaves is a health psychologist and Senior Research Fellow at the University of Exeter Medical School. He has research expertise in developing and testing interventions to help people undertake lifestyle change. Based upon his research he has developed an intervention to help people with asthma manage their condition, several weight loss interventions and a self-help manual for people with heart failure.

Dr Claire Pentecost is a Research Associate at the Mood Disorders Centre, University of Exeter. Her research experience is in designing and delivering programmes for lifestyle change for people with diabetes, depression and other long-term conditions. Claire's most recent research looked at the reasons why some people do, and some people do not take up lifestyle change courses recommended by a GP.

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Alzheimer's Research Trust
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Biotechnology and Biological Sciences Research Council
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Department of Health
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Engineering and Physical Sciences Research Council
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Appendix D: Attachment security priming task

INSTRUCTIONS

When anyone is depressed, it is important that they change what they do in order to feel better. Your PWP will talk to you about using this 'outside-in' approach to change, so that you change what you do (on the 'outside') in order to feel better (on the 'inside').

This is what this workbook is all about. We want you to feel better! However, we know that it's often hard to change what you are doing when you feel down, and so you will get more out of this workbook by doing a small task that will help you feel more secure and settled in yourself before attempting to change what you do.

This is called a 'security nudge.' This just means bringing to mind a person (from the past or present) or a number of people with whom you have relationships in which it would be true to say:

"It is easy for me to be emotionally close to this person. I am comfortable depending on them and having them depend on me. In this relationship I don't worry about being alone or that this person doesn't accept me".

These might include a family member, a past or current friend, a romantic partner or maybe even a teacher at school.

An example is 'Aarav' who is struggling with his mood and using this workbook in order to make positive changes in his life. The person he wants to bring to mind is his pal 'Ian' who he knows always has his back and is supportive and encouraging. What is important is that you have a sense that the person (or people) fit the description given above.

Important
Not everyone has people in their lives that fit the description given above. If this is the case for you and you can't think of anyone that fits this description, don't worry!

Instead, bring to mind the names of 'people towards whom you hold or have held warm feelings over the years'. These are positive relationships but not ones that would qualify as secure by the definition in bold above. These might include family members or friends. You can include romantic partners if you feel it is appropriate.

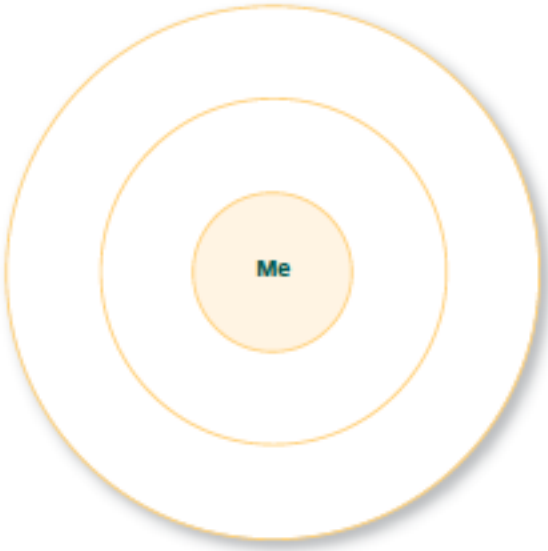
Once you have read and understood these instructions, please move on to complete the task on the next page.

Security Nudge

1. Please bring the person/people to mind now and write their name/s below – feel free to name as few or as many people as you feel fit the description.

2. Please take a moment to reflect and feel this emotional connection with the person or people.

   Now place the names or initials of the people you wrote down on the diagram below. The innermost circle represents your innermost self. Therefore, placing someone closer to you in the diagram indicates that you feel closer to them than placing someone further out in the circles. You can place people anywhere on the diagram that you feel fits for you.



3. Each time that you do a task in this workbook (i.e. when you are doing something different, in order to feel different), it will be useful to 'nudge' yourself, using this before you start the task. There are 'nudges' throughout to remind you to do this and your PWP will remind you about it too as part of your homework.

Appendix E: PHQ-9

Patient Health Questionnaire (PHQ-9)

Patient Name: _____ **Date:** _____

	Not at all	Several days	More than half the days	Nearly every day
1. Over the *last 2 weeks*, how often have you been bothered by any of the following problems?				
a. Little interest or pleasure in doing things	☐	☐	☐	☐
b. Feeling down, depressed, or hopeless	☐	☐	☐	☐
c. Trouble falling/staying asleep, sleeping too much	☐	☐	☐	☐
d. Feeling tired or having little energy	☐	☐	☐	☐
e. Poor appetite or overeating	☐	☐	☐	☐
f. Feeling bad about yourself or that you are a failure or have let yourself or your family down	☐	☐	☐	☐
g. Trouble concentrating on things, such as reading the newspaper or watching television.	☐	☐	☐	☐
h. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.	☐	☐	☐	☐
i. Thoughts that you would be better off dead or of hurting yourself in some way.	☐	☐	☐	☐
2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
	☐	☐	☐	☐

Appendix F: GAD-7

GAD-7 Anxiety

Over the last 2 weeks, how often have you been bothered by the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Column totals: ___ + ___ + ___ + ___

= *Total Score* _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Appendix G: WSAS

Work and Social Adjustment Scale (WSAS)

Mental health can affect one's ability to do certain day-to-day tasks in their lives. Please read each item below and respond based on how much your mental health impairs your ability to carry out the activity.

		Not at All		Slightly		Definitely		Markedly		Very Severely
1.	Because of my mental health my **ability to work** is impaired. '0' means 'not at all impaired' and '8' means very severely impaired to the point I can't work.	0	1	2	3	4	5	6	7	8
2.	Because of my mental health my **home management** (cleaning, tidying, shopping, cooking, looking after home or children, paying bills) is impaired.	0	1	2	3	4	5	6	7	8
3.	Because of my mental health my **social leisure activities** (with other people e.g. parties, bars, clubs, outings, visits, dating, home entertaining) are impaired.	0	1	2	3	4	5	6	7	8
4.	Because of my mental health, my **private leisure activities** (done alone, such as reading, gardening, collecting, sewing, walking alone) are impaired.	0	1	2	3	4	5	6	7	8
5.	Because of my mental health, my ability to form and maintain **close relationships** with others, including those I live with, is impaired.	0	1	2	3	4	5	6	7	8

Appendix H: Satisfaction with training questionnaire

Satisfaction with Training Form

1) I feel sufficiently knowledgable now about attachment at a theoretical level.

1 2 3 4 5 6 7 8 9 10

not at all somewhat extremely

2) I understand the function of an attachment prime.

1 2 3 4 5 6 7 8 9 10

not at all somewhat extremely

3) I feel knowledgable about what an attachment prime looks like.

1 2 3 4 5 6 7 8 9 10

not at all somewhat extremely

4) I feel confident in implementing an attachment prime in my work with BA.

1 2 3 4 5 6 7 8 9 10

not at all somewhat extremely

5) I am generally satisfied with the training provided on attachment primes.

1 2 3 4 5 6 7 8 9 10

not at all somewhat extremely

6) Please write if there is anything else that you need to know about attachment primes or the research below:

……..……..……..……..……..……

……..……..……..……..……..……

……..……..……..……..……..……..

……..……..……..……..……..……

……..……..……..……..……..……

……..……

Appendix I: Telephone script

Thanks for the information that you have given me so far.

I'm going to refer you to the step-2 treatment pathway, which means that you will receive 6 sessions of guided self-help with a low intensity therapist for 30 minutes per session.

The sessions will be with the same person throughout.
I wanted to tell you that we are also conducting a study in the service at the moment, would you like to hear more about that?

If no – then discontinue

As part of your treatment, you will be guided through a workbook to help with your difficulties. We're looking at whether a short additional task will be helpful for people as part of their therapy, as some previous findings have suggested that it is. This will take around 5 minutes to complete before every appointment you have with your PWP.

There is a 50/50 chance that you would receive either the normal guided self-help treatment or this treatment with the additional 5-minute task. Either way, you will receive the usual treatment that we would give in line with the difficulties that you are experiencing.

Getting help from the service is not dependent on you participating in the study and being in the study will not delay you in getting the help you need.
If you are willing, then would you be OK with me passing your address details to the study team, so that they could contact you and tell you more about it?

If no – then discontinue

If yes – see below

Great, I now need to confirm your address to pass to the study team. They will then send you the relevant information in the post and you can read this at your own leisure. If you decide you'd like to take part, you can send the consent form back in the post with the freepost envelope that will be sent out to you. If you decide not to take part after receiving the information, your personal details will

be removed from the research study database and you will receive your treatment as usual with the service.

Appendix J: Information sheet and consent form

Are you accessing psychological intervention for depression with IAPT?

Why have I been invited to take part?

We are inviting you to take part in a research study alongside the psychological treatment you will be receiving with X IAPT. We are looking at improving outcomes for service users in their symptoms of depression.

Who is completing this research?

This research is being conducted by Charlotte Heathcote (Trainee Clinical Psychologist, University of Sheffield), under the supervision of Dr Abigail Millings and Dr Stephen Kellett (University of Sheffield). Ethics approval has been sought from the NHS via the Integrated Research Application System (IRAS). If you would like any further information regarding the current study, please contact Charlotte Heathcote (cheathcote1@sheffield.ac.uk), who will be happy to answer any questions that you have.

What will happen if I decide to take part?

As part of your therapy, you will be asked to work through a workbook. If you take part in this study, an additional task may be included within your therapy workbook to complete prior to every session with your therapist. This should take around 5 minutes to complete. This task will involve you bringing to mind several

people in your life with whom you feel you have a close relationship, and asking you to place them on a circle indicating how close you feel you are to these people.

Do I have to take part?

You do not have to take part in the study if you do not want to! If you do not choose to take part in the study, you will still receive your treatment as usual.

If at any time you decide that you no longer wish to participate in the study, you have the right to withdraw. This will not impact your ongoing treatment with the service.

Are there any risks to taking part?

We do not anticipate the task to cause any distress, as we believe that it is likely to be helpful for people. However, there might be a mild risk of distress to certain individuals. If you become distressed at any point during the study, you can refer to your psychological wellbeing practitioner (PWP) for support. No compensation will be awarded to participants as part of the study.

What will happen to my information?

The University of Sheffield is the sponsor for this study based in the United Kingdom. We will be using information from you and your medical records in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Sheffield will keep identifiable information about you for 5 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum

personally identifiable information possible. You can find out more about how we use your information at https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/data-protection-and-information-governance/gdpr-guidance/ or by contacting the researcher, Charlotte Heathcote (cheathcote1@sheffield.ac.uk).

X IAPT service will use your name, NHS number, and contact details to contact you about the research study, make sure that relevant information about the study is recorded for your care, and to oversee the quality of the study. Individuals from the University of Sheffield and regulatory organisations may look at your medical and research records to check the accuracy of the research study. X IAPT service will pass these details to the University of Sheffield, along with information collected from you and your medical records. The only people in the University of Sheffield who will have access to information that identifies you will be people who need to contact you to provide this information sheet and the consent form for the research study. The people who analyse the information will not be able to identify you and will not be able to link your data to your name or contact details. X IAPT service will keep identifiable information about you from this study for 5 years after the study has finished.

X IAPT service will collect information about you for this research study from your medical records. X IAPT service will not provide any identifying information about you to the University of Sheffield after you have consented to taking part in the study. We will use the information provided for the purpose of the research study.

When you agree to take part in a research study, the information about your health and care may be provided to researchers running other research studies in this organisation and in other organisations. These organisations may be universities, NHS organisations or companies involved in health and care research in this country or abroad. Your information will only be used by organisations and researchers to conduct

research in accordance with the UK Policy Framework for Health and Social Care Research**.** This information will not identify you and will not be combined with other information in a way that could identify you. The information will only be used for the purpose of health and care research, and cannot be used to contact you or to affect your care. It will not be used to make decisions about future services available to you, such as insurance.

Who can I talk to if I have concerns about the study?

If you have any concerns or complaints about the study, please contact Professor Glenn Waller (G.Waller@sheffield.ac.uk), Head of Department, Department of Psychology, University of Sheffield.

Please tick the boxes below to determine whether you agree to take part in the following study.

- I agree to take part in this research study based on the information presented in the information sheet provided. ☐
- I agree for X IAPT service to share my personal information with the research team at the University of Sheffield conducting the current study. ☐
- I have had the opportunity to ask any additional questions and have these answered by the researcher. ☐
- I understand the nature of the study. ☐
- I understand that it is my choice whether to take part in the study or not. ☐
- I understand that taking part in the study is not a requirement of my treatment with X IAPT service. ☐

- I understand that my data will be kept confidential and will not be made identifiable in any reports written. ☐
- I understand that I can withdraw from the study at any time without giving a reason, and that this will not affect my treatment with X IAPT. ☐

Appendix K: Debrief form

There is growing evidence to suggest that increasing a person's feelings of security in relationships leads to greater engagement in therapy and reduced levels of anxiety and depression.

The intervention that was used in the present study is known as 'attachment security priming' and was being tested to see if it could be helpful to service users as part of their therapy. The current study aimed to investigate whether this intervention increased attendance to therapy, reduced dropout and decreased being 'stepped up' to higher intensity services. We also aimed to see whether the intervention had an impact on levels of depression and anxiety, as well as impairment in functioning. You may have been allocated to receive this additional intervention as part of your treatment, or may have received your treatment as usual without the additional intervention. We were looking to see if there were are differences between these two groups to determine whether the attachment security priming intervention was helpful or not in addition to treatment as usual.

Thank you for taking part in the study and contributing to valuable research in this area. We hope that the results of this study can be used to improve services

delivered to individuals and support them in their recovery from depression and anxiety- related disorders. If you wish to receive a summary of the results once the study has come to an end, please contact cheathcote1@sheffield.ac.uk to receive a written summary of the study findings by post.

If you have experienced any distress as a result of the current study, please speak with your PWP or a service manager at X IAPT service. If you have any further questions regarding the study, please feel free to contact Charlotte Heathcote (cheathcote1@sheffield.ac.uk), who will be happy to respond to you regarding this.