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**Attachment and mentalisation in Borderline Personality
Disorder: a meta-analysis of attachment, and a mixed method
evaluation of a group only mentalisation based treatment**



THE UNIVERSITY
of EDINBURGH

John Flood

Thesis submission for the degree of Doctor of Clinical Psychology

May 2017

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THESIS ABSTRACT

Introduction: Dysfunction in interpersonal relationships is central to Borderline Personality Disorder (BPD) and provides the context in which self-harming behaviour, impulsivity and affective liability manifest (Lazarus et al., 2014). A growing evidence base exists for Mentalisation Based Treatment (MBT) in regard to symptom burden and extent of personality disturbance in BPD (Choi-Kain, Albert, & Gunderson, 2016). Less is known about patients' experience of MBT, potential moderators or the utility of group only MBT.

Method: First, a meta-analysis examining the relationship between attachment organisation and BPD diagnosis was conducted. Second, a mixed method design was employed to assess change in interpersonal problems and symptomatic distress following a group only MBT intervention. Potential moderators were examined and patient narratives were elicited and qualitatively analysed.

Results: Across 20 studies including 1,948 participants, we found significant, medium to large effect sizes linking BPD to insecure attachment organisation. The largest effect sizes were found for a negative relationship between BPD diagnosis and attachment security, and a positive relationship between BPD and unresolved, anxious and avoidant attachment. The results of the empirical study revealed a significant reduction in interpersonal problems and psychological distress over the course of the intervention. Pre-treatment level of interpersonal problems did not function as a moderator. Patients found the group to be a challenging but rewarding experience.

Conclusion: There is a strong relationship between BPD and insecure and disorganised attachment. Less intensive, group only MBT interventions may be effective in reducing levels of interpersonal problems and psychological distress in adults with a diagnosis of BPD.

PAPER 1: SYSTEMATIC REVIEW**

TITLE: A meta-analysis of attachment organisation in Borderline Personality Disorder

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**Written in accordance with author guidelines for publishing in the Journal of Personality Disorders (Appendix A).

ABSTRACT

There is increasing evidence of the importance of attachment in understanding the development and course of Borderline Personality Disorder (BPD; Levy, Johnson, Clouthier, Scala, & Temes, 2015). Reviews of the literature on the relationship of attachment organisation to BPD have produced inconsistent results and have not adequately addressed publication bias or potential moderators. Across 20 studies including 1,948 participants, we found significant, medium to large effect sizes linking BPD to insecure attachment organisation. Studies which employed a narrative measure of attachment, reported the largest effect sizes in regard to unresolved (OR= 7.080, CI: 2.702 – 18.549, $p<.001$) and secure (OR=.107, CI: .057 - .201, $p<.001$) attachment. No significant relationship was found between dismissing attachment and BPD. A large effect size was found for attachment anxiety ($g=.834$, CI: .569-1.098, $p<.001$) and a medium effect for attachment avoidance ($g=.767$, CI: .594-1.163, $p<.001$) in eleven studies that employed self-report measures of attachment. No consistent moderator was identified, but the control group used moderated specific analyses. The included studies were generally of good methodological quality but lacked statistical power.

Borderline personality disorder (BPD) is amongst the most commonly diagnosed of personality disorders (Sansone & Sansone, 2011; Zimmerman, Rothschild, & Chelminski, 2005); and is associated with substantial disability and a high economic and psychosocial burden (Soeteman, Roijen, Verheul, & Busschbach, 2008; Soeteman, Verheul, & Busschbach, 2008). Individuals with a diagnosis of BPD often experience considerable psychological distress, engage in self-harming behaviours and meet criteria for additional Axis I and II disorders including depression, anxiety and substance dependency (Grant et al., 2008; Hawton, Houston, & Townsend, 2001)

There is increasing evidence of the importance of attachment in understanding the development and course of Borderline Personality Disorder (Fonagy, Target, & Gergely, 2000; Frias, Palma, Farriols, Gonzalez, & Horta, 2016; Levy et al., 2015). Impairment in attachment organisation has been linked to many of the core features of BPD including difficulties in emotional regulation (Shaver & Mikulincer, 2007), unstable self-image (Mikulincer, 1995), impulsivity (Fossati et al., 2005) and interpersonal functioning (Choi-Kain, Fitzmaurice, Zanarini, Laverdiere, & Gunderson, 2009). Attachment is thought to shape engagement in the social world and although the diagnostic criteria for BPD indicate dysfunction across a range of domains, there is an awareness that disturbance in interpersonal relationships is centrally implicated in the development of the disorder and forms the context in which other negative experiences and harmful behaviours manifest (Lazarus, Cheavens, Festa, & Rosenthal, 2014).

Measurement of attachment in adulthood

Attachment theory posits that the repeated early interactions between child and caregiver shape the child's emerging view of self and others. When a caregiver meets a child's biological and psychological needs they provide a 'secure base' for future development and exploration as well as 'safe haven' for the child to turn to in times of distress. These early

experiences are the foundation upon which the child builds the 'internal working models' that constitute a framework for personality development and a stable sense of self. In doing so they shape an enduring pattern in the manner in which individuals relate to others, generate emotional appraisals and react to rejection (Bowlby, 1990). Individuals exhibiting secure attachment patterns display a developmental pattern consistent with trusting others in close relationships and are able to process emotional emotions in an adaptive and non-defensive manner. Moreover, while secure attachment organisation is linked with successful adaptation to adversity (Karreman & Vingerhoets, 2012), disorganised and insecure attachment are associated with the development of psychopathology including, self-harm, depression and anxiety (Madigan, Atkinson, Laurin, & Benoit, 2013; Mikulincer & Shaver, 2012).

Although sharing a common heritage in Bowlby's theory of attachment (1990), research on adult attachment has diverged into two distinct traditions - self-report and narrative - with differing conceptual frameworks and methodological preferences. Narrative approaches, including the Adult Attachment Interview (AAI: Hesse, 1999; Main & Goldwyn, 1998) and Adult Attachment Projective (George & West, 2011), assess narrative coherence as a marker of attachment security. The AAI assigns individuals to one of four categories: 'free and autonomous' (secure), 'dismissing of attachment' (dismissing), 'enmeshed or preoccupied' (preoccupied) and 'unresolved with respect to trauma' or 'cannot classify' (disorganised). Proponents of narrative approaches to the measurement of attachment contend that by stimulating the attachment system in interview, and focusing on coherence as opposed to content, it is possible to more readily reveal implicit attachment patterns. The narrative approach has been favoured by developmentally-oriented researchers and those focused on applying the insights gained from categorical research to clinical settings (Steele & Steele, 2008).

Self-report measures of attachment rely on an individual's belief and attitudes regarding attachment behaviours; generating scores on dimensions that reflect attachment styles. Initial self-report attachment scales modelled themselves on Ainsworth's (1978) three category model of secure, anxious and avoidant attachment (Hazan & Shaver, 1987). This was followed by a four-factor model identifying preoccupation, security and two separate forms of avoidance, fearful of intimacy and dismissing of intimacy (Bartholomew & Horowitz, 1991). This led to a proliferation of measures with conceptual differences and an unknown degree of redundancy and convergence (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). In 1998 Brennan and colleagues factor analysed 60 subscales of all known measures of attachment and developed a new measure, Experiences in Close Relationships (ECR), based on two orthogonal subscales: attachment avoidance and attachment anxiety. Although bearing close relation to the four-category model proposed by Bartholomew and Horowitz it is distinct, with fearfulness conceptually related to both Brennan and colleagues' avoidant and anxious subscales.

Meta-analytic evidence (Roisman et al., 2007) suggests a trivial to small relationship between narrative (AAI organisation) and self-report (attachment style) measures of attachment. A rapprochement (Ravitz et al., 2010) suggests that both approaches are generally reliable and well validated but assess distinct constructs and attachment related behaviours. While self-report measures may reflect a stress-diathesis perspective on attachment dynamics, the narrative approach may assess unconscious processes and states of mind.

Theoretical links between attachment and BPD

A number of theories implicate a disruption of attachment-related adaptive processes in the aetiology of BPD (Holmes, 2004; Levy, 2005; Levy et al., 2015). Individuals with a diagnosis of BPD have been found to commonly display disorganised and insecure attachment organisation (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004). Preoccupied individuals,

who have experienced inconsistency in their early attachment relationships, have a lower threshold for perceiving threat in social relationships resulting in increased distress and frequent activation of the attachment system. This may account for the over-dependency and compulsive-care seeking found in many individuals with a diagnosis of BPD. Conversely, individuals who received little support in early attachment relationships are likely to exhibit a dismissing attachment style characterised by denying the importance of close social relationships and a tendency toward compulsive self-reliance (Fonagy, Lorenzini, Campbell, & Luyten, 2014).

Fragmented and contradictory internal working models associated with unresolved attachment may also account for the unstable sense of self and others characteristic of BPD (Levy 2015). These individuals, presenting with an anxious avoidant attachment style, experience an approach-avoidance dilemma - in which the search for a secure base requires relational proximity despite the attachment figure being viewed as threatening. Fonagy and colleagues (2009; 2011) posit that secure early attachment experiences facilitate the child's ability to explore the caregivers mind in safety and, through doing so, move to an internal stance in which they learn to 'mentalise'. Mentalising is conceptualised as the ability to consider the behaviour of others and oneself in terms of mental states and inferred desires. It is implicated in facilitating reflection upon one's own emotional state and aiding in emotional regulation (Fonagy, Bateman, & Luyten, 2012). Early attachment relationships marked by trauma or neglect are thought to contribute to an impaired capacity to mentalise and a failure to integrate primitive modes of experiencing the internal world. The emotional dysregulation and interpersonal lability found in BPD can thus be conceptualised as a failure in mentalising rooted in early experiences of attachment trauma or neglect (Allen, Fonagy, & Bateman, 2008). Moreover, the frequent activation of the attachment system found in disorganised and insecure attachment patterns contributes to an impaired ability to mentalise and a related partial loss of

awareness of the relationship between external and internal reality during periods of heightened affect (Fonagy & Target, 2013).

Reviews of the relationship between attachment with BPD

Systematic review evidence from 13 studies published between 1991 and 2003 (Agrawal et al., 2004) reported a strong association between insecure forms of attachment and BPD. Unresolved attachment was the most common form of attachment reported in studies using the AAI while a fearful attachment style was most prevalent in studies which used self-report measures. In contrast, a narrative review by Levy (2005) proposed that while BPD is associated with insecure attachment, it is not associated with any particular attachment style. The author reported that the strong relationship found between BPD and preoccupied and unresolved attachment found in early studies is not supported by later work. Both reviews were limited by the poor methodological and design quality of the evidence base such as small sample sizes, differing comparison group and differing sources of sample acquisition, the inclusion of case studies, clinician-rated attachment measures and studies that lack any formal diagnosis of BPD. Moreover, neither review considered the role of moderators in a systematic fashion and little consideration was paid to the threat posed by publication bias (Sutton, 2006).

Rationale for the current study

The current review aims to update the empirical data on attachment organisation and BPD. In doing so we address some of the limitations of previous reviews; namely, a failure to distinguish BPD traits from a formal diagnosis of BPD, or to address publication bias. In addition, previous reviews did not address two dangers of underpowered studies: Type II errors and inflated effect size estimates (Button, Ioannidis, Mokrysz, Nosek, Flint, Robinson, & Munafo, 2013). We include only those studies in which the BPD sample has a formal diagnosis

of BPD and apply meta-analytic procedures to the data. Meta-analyses allow for a valid synthesis of effect sizes and provide a more clinically useful estimate of the magnitude of effect, particularly when individual studies have poor statistical power (Borenstein, Hedges, Higgins, & Rothstein, 2011). In addition, we address the potential role played by moderators and publication bias. Specifically, the review sought to establish the following:

- What is the magnitude of the relationship between attachment and BPD?
- What are the moderators of the association between attachment organisation and BPD?
- What are the methodological sources of bias in the literature?

Methods

Search strategy

A PRISMA review format was adopted (Moher, Liberati, Tetzlaff, & Altman, 2009), using an iterative approach for identifying articles for inclusion. The electronic databases PsychInfo, Pubmed, CINAHL, Medline and Web of Science were searched in January 2017 using database specific headings for ‘Borderline Personality Disorder’ or ‘Borderline traits’ or ‘BPD’ and ‘attachment’. An example of the search strategy is illustrated in Appendix B and a PRISMA flow chart of the search process is provided in Figure 1. Studies were eligible for inclusion based on the following criteria: a) allow for comparison of attachment organisation in individuals with a diagnosis of BPD to an independent comparison group b) reported sufficient data for effect sizes to be calculated for specific attachment categories or styles c) published in English d) included a standardised measure of attachment e) included a BPD sample in which at least 75% of participants had a valid diagnosis of BPD. The first author examined all abstracts returned by this search process, excluding duplicates and citations that did not meet inclusion criteria. The full text of the remaining 146 articles were obtained and suitability of inclusion determined through close reading. Relevant review articles (Agrawal et

al., 2004; Levy, 2005) were examined for additional studies. When a study was available as grey literature and in published format, the published version was included. Where the same cohort was used in multiple studies, the one with the largest sample size was included.

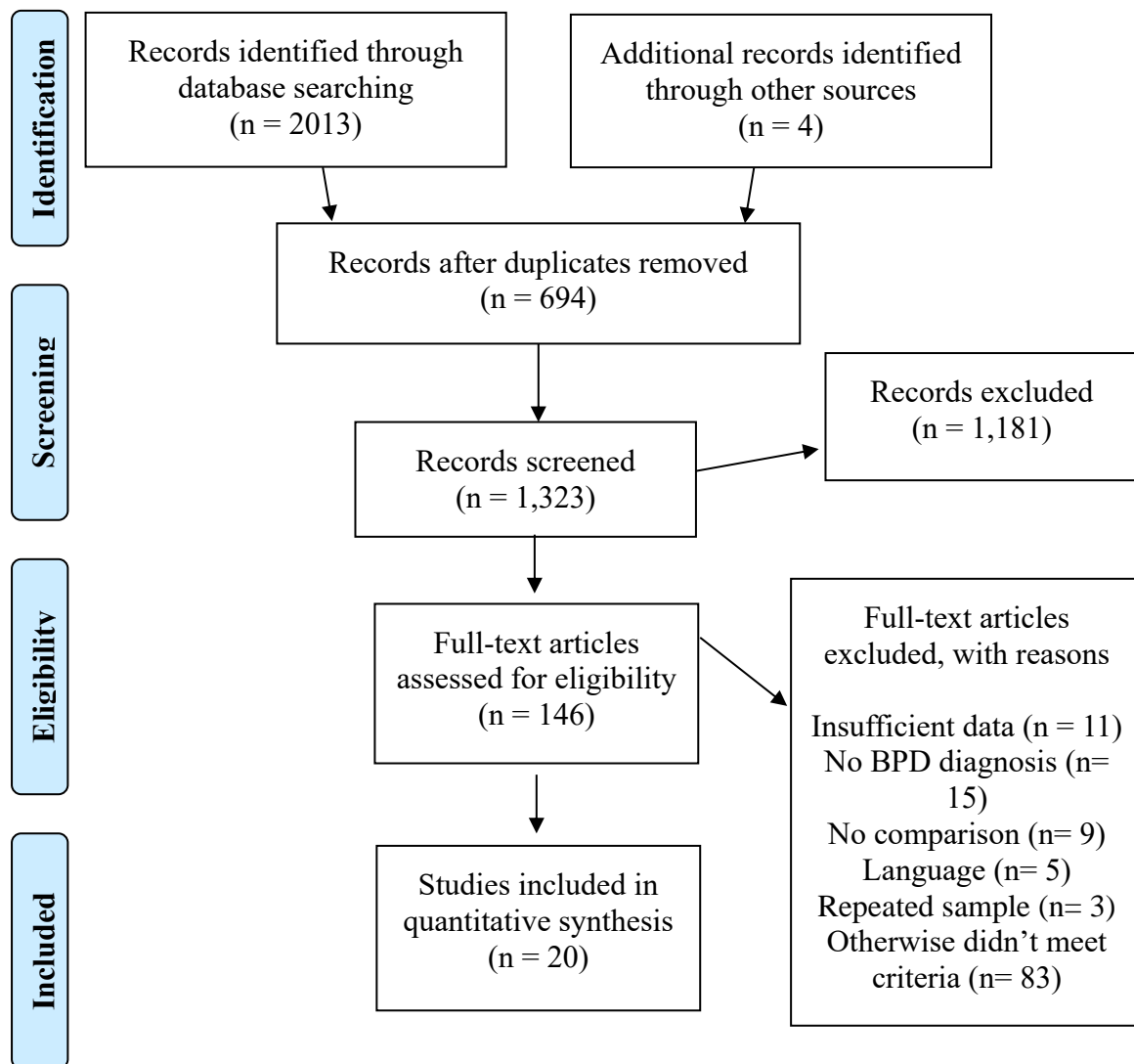
Coding and risk of bias assessment

A coding form developed by the first author was used to extract relevant information from the included studies. This included: identifying information, publication status, study aim, country of origin, method of recruitment, sample characteristics, measures used and relevant statistics and data reported (Appendix C). When a study reported both categorical and dimensional measure of attachment, categorical distribution was favoured in case of narrative measures and dimensional for self-report measures. Ten studies were randomly selected and the extracted data checked for accuracy by a trainee clinical psychologist.

All included articles were evaluated for risk of bias using an author adapted version of the SIGN checklist for case-control studies (Appendix D; Scottish Intercollegiate Guidelines Network, 2014). This tool was selected as case-controlled studies were most prevalent in the literature and due to the cross-sectional focus of the meta-analysis. Modifications made to the guidelines included incorporating questions from a quality appraisal tool developed by the Agency for Healthcare Research and Quality (AHRQ; Williams, Plassman, Burke, Holsinger, & Benjamin, 2010) to better evaluate if the study established controls were not cases and took steps to ensure the scoring of attachment measures was blind to BPD diagnosis. Each study was assessed for statistical power to adequately detect difference in attachment organisation between the BPD and control populations. For self-report studies, sufficient statistical power was defined as a 70% chance to detect a medium effect size ($d=.5$, α err = .05) in a two-tailed t-test. For narrative studies, it was defined as a 70% chance to detect a 30% difference in distribution between the two groups (.2 vs .5, α err = .05) in a Fischer's exact test. Each study

was rated as Excellent, Good, Poor or Unacceptable as regards risk of bias. Six articles were randomly selected and independently rated by a Trainee Clinical Psychologist. This second reviewer was blind to the ratings of the first reviewer. An inter-rater agreement rate of 94% was found.

Figure 1. Prisma flow chart of included articles.



Effect size estimation

An effect size was calculated for each attachment related variable based on the difference in reported attachment style between the BPD and comparison group. Odds Ratio was selected as a measure of effect for narrative approaches which included primarily

categorical distributions of attachment and standardised mean difference (Hedges g) for self-report measures. For the former, in cases where one of more cells equalled zero we applied a Haldane correction whereby .5 was added to each cell for the computation of odds ratio (Haldane, 1956). To prevent related samples from biasing the estimate of summary effect we included only one effect size from each study in each analysis. When a study reported multiple effect sizes or comparison groups we used a mean effect size based on the approach outline by Borenstein and colleagues (2011). Relatedly, when comparison was made between diagnostic categories that were not mutually exclusive (Fonagy et al., 1996), we only included samples which were independent to prevent the introduction of bias through the double counting of individuals. When a study reported both a three category and four category model of attachment, the three-category model was preferred when examining organised attachment categories, as it increased statistical power. To increase the power of our analysis in cases when subgroup analysis suggested comparison group played a moderating role, we ran separate analysis for psychiatric and community control groups.

Data analysis

The studies which met our initial inclusion criteria employed a variety of measures of attachment and combining them in the same analysis was judged to pose a risk of bias (Schmidt, Le, & Oh, 2009). To address this, an additional criterion of convergent validity was adopted as different measures of the same construct can be pooled in a meta-analysis if they are sufficiently correlated and have similar responsiveness (Puhan, Soesilo, Guyatt, & Schünemann, 2006). Following Morris and colleagues (2015) we set a strong correlation ($r > .5$) as the minimum needed for the pooling of effect sizes from different measures. As the narrative measures were analysed categorically a criteria of a proportional agreement rate of .7 with the AAI was required. Data on the responsiveness of various measures was not available in the literature. However, as our analysis was focused on cross-sectional relationships, and not

concerned with the response to an intervention, we deemed that pooling was justifiable. Thus, we included a measure of attachment in the meta-analysis if it strongly correlated with either the AAI or the anxiety and avoidance subscales of the ECR. For self-report measures, in each case the highest level sub-scale with sufficient convergent validity was included. To determine if a more stringent level of convergence would have impacted on our results a second analysis was performed for both anxious and avoidant attachment including only those scales with a very strong convergence ($r > .7$) with the ECR. Similarly, as the Fearful scale of the RQ and RAQ diverges conceptually from the ECR, a separate analysis was performed with these scales removed.

The ECR and AAI measures were selected based on the strength of evidence supporting their validity and reliability and due to the availability of literature reporting on their convergent validity with other measures (Ravitz et al., 2010). Extent of convergence for each reported attachment variable was culled from the literature (Beck & McDonald, 2004; Brennan et al., 1998). Included self-report subscales and the strength of their relationship to the ECR are outlined in Appendix E. We found a strong convergence between the AAI and AAP with a proportional agreement of 85% reported in the literature (George & West, 2011). As the research examining convergence between the AAI and the BAICS excluded individuals categorised as fearful due to conceptual divergence, we did not include the fearful category in our analysis. The reported proportional agreement of the three remaining scales was 78% (Bartholomew & Shaver, 1998). Applying these criteria led to three studies being dropped from our analysis (Frias et al., 2016; Sack, Sperling, Fagen, & Foelsch, 1996; Sperling, Sharp, & Fishler, 1991) due to a lack of research evaluating the relationship between the AAPR, ASI or AAQ and the ECR or AAI. In addition, we excluded one self-report study due to idiosyncratic reporting of subscales (Jin et al., 2016).

Comprehensive Meta-Analysis (Version 2.2.0.6) software was used in the meta-analysis. A random effects model was applied to the data due to the heterogeneity of populations included in the analysis. Random effects models allow for a distribution of true effect sizes and provide non-inflated alpha levels in the presence of heterogeneity. Studies were weighted in accordance with their inverse variance which is considered a more nuanced measure than sample size as it considers both overall sample size and sample size in each group. In addition, inverse variance tempers smaller studies upwardly biasing results and minimises variance in the computed effect size (Borenstein et al., 2011). Q statistics were used as a measure of heterogeneity among effect sizes. To determine if comparison group or gender moderated our findings, subgroup analyses were conducted. To facilitate the latter, studies were divided into two categories: those that over 70% female participants and those that had under 70% female participants. In addition, extent of convergence with the ECR was examined as a moderator for studies that included a self-report measure of attachment. Model of attachment reported was examined as a moderator for studies that used a narrative measure.

Publication bias

The tendency for research findings that reach statistical significance to be published at a greater rate than those that do not poses a threat to the validity of meta-analytic procedures (Sutton, 2006). Publication bias can result an increase in type one errors and an inflated pooled effect size, especially so in meta-analyses relying on studies with smaller sample sizes (Dickersin, 2006). We adopted three approaches to address the risk posed by publication bias. Firstly, we included unpublished academic work found in the grey literature. Secondly, we inspected the distribution of effect sizes for a violation of funnel plot symmetry and applied the trim and fill procedure (Duval & Tweedie, 2000). Finally, we used Rosenthal's (1991) failsafe N to estimate the number of studies with an effect of zero that would have to be added

to our analysis to nullify the observed effect. The pooled estimate was considered robust if the failsafe number was five time greater than the number of studies included in the analysis.

Results

Study Characteristics

Twenty studies with a combined sample size of $n=1,948$ met the inclusion criteria for analysis. The mean number of participants per study was 97.4 ($SD=113.91$) with 36.75 ($SD=30.1$) in the BPD group and 60.65 ($SD= 95.73$) in the control group. The gender balance of participants was unclear in one study (Fonagy et al., 1996) and 77.97% of the remaining sample were female. Ten studies used a non-clinical comparison group (Barone, 2003; Bartz et al., 2011; Bouchard, Sabourin, Lussier, & Villeneuve, 2009; Buchheim et al., 2008; Crittenden & Newman, 2010; Deborde et al., 2012; Jobst et al., 2016; Macfie, Swan, Fitzpatrick, Watkins, & Rivas, 2014; Sack et al., 1996; Simeon, Nelson, Elias, Greenberg, & Hollander, 2003). The remaining studies included a psychiatric control group. Seven studies used an Axis I control (Fonagy et al., 1996; Hulbert, Jennings, Jackson, & Chanen, 2011; Mitra & Mukherjee, 2013; Pace, Guiducci, & Cavanna, 2016; Patrick, Hobson, Castle, Howard, & Maughan, 1994; Schindler & Sack, 2015; van Dijke & Ford, 2015) and one an Axis II control (Aaronson, Bender, Skodol, & Gunderson, 2006). One study included an Axis I and non-clinical control (Choi-Kain et al., 2009) and one a non-clinical, Axis I and Axis II control (Fossati et al., 2001). Study characteristics and computed effect sizes are reported in Table 1.

Risk of bias assessment

Two self-report studies (Choi-Kain et al., 2009; Deborde et al., 2012) and one narrative study (Barone, 2003) were rated as excellent in regard to risk of bias. One study (Mitra & Mukherjee, 2013) was found to be poor, and the rest were rated as good. Due to our strict inclusion criteria, all studies used a robust method for assessing attachment and BPD status.

Table 1. Studies that reported sufficient data to compare attachment organisation in a BPD population to a control.

Study	BPD Group	Comparison Group	% Female	Att. Tool	BPD Tool	Country	Risk of Bias	Att. Org.	Effect Size (g)	Confidence Interval (95%)
Aaronson et al. (2006)	50 Adults	40 Adults with OCPD	82	RAQ	DIPD-IV	United States	2	Anxious Avoidant	.510 .671	.091 - .0929 .247 - 1.094
Barone (2003)	40 Adults	40 Community Control	62.5	AAI	SCID-II	Italy	1	Secure Preoccupied Dismissing Unresolved	.049 2.613 1 12.33	.013 - .186 .732 - 9.322 .334 - 2.991 3.36 - 46.62
Bartz et al. (2011)	14 Adults	13 Healthy Controls	59	ECR	SCID-II	United States	2	Anxious Avoidant	2.262 1.611	1.314 - 3.22 .762 - 2.460
Bouchard et al. (2009)	35 Adult Women in a Relationship	35 Non-clinical Women in a Relationship	100	ECR	SCID-II	Canada	2	Anxious Avoidant	1.525 1.203	.997 - 2.053 .698 - 1.707
Buchheim et al. (2008)	11 Female Inpatients	17 Healthy Females	100	AAP	SCID-II	Germany	2	Unresolved	7.857	1.31 - 47.04
Choi-Kain et al. (2009)	109 Adult Inpatient/Outpatients	64 Community, 44 with MDD	100	RQ	DIB-R, DIPD-IV	United States	1	Anxious Avoidant	1.11 1.11	.864 - 1.356 .864 - 1.356
Crittenden and Newman (2010)	15 Mothers	17 Mothers from the Community	100	AAI	DIFB	Australia	2	Secure Preoccupied Dismissing Unresolved	.057 1.604 2.743 128.42	.003 - 1.119 .387 - 6.641 .64 - 11.753 6.0 - 2707.7
Deborde et al. (2012)	54 Adolescent Outpatients	51 Non-clinical Adolescents	100	RSQ	SIDP-IV	France, Belgium, Switzerland	1	Anxious Avoidant	.465 .586	.08 - .850 .2 - .977
Fonagy et al. (1996)	36 Adult Patients	23 Adult Patients with an Axis I Disorder	Unclear	AAI	SCID-II	United Kingdom	2	Secure Preoccupied Dismissing Unresolved	.258 .275 .720 5.143	.057 - 1.159 .904 - 8.368 .192 - 2.703 1.35 - 19.53
Fossati et al. (2001)	44 Adult Inpatient/Outpatients	206 Non-Clinical, 70 Axis I, 98 Cluster B, 39 Cluster A	71	ASQ	SCID-II	Italy	2	Anxious Avoidant	.539 .551	.328 - .750 .298 - .804
Hulbert et al. (2011)	30 Youth Outpatients	30 Youth with MDD	76	ECR	SCID-II	Australia	2	Anxious Avoidant	.093 .452	-.407 - .593 -.054 - .958
Jobst et al. (2016)	19 Female Inpatient/Outpatients	18 Healthy Controls	100	AAP	SCID-II	Germany	2	Secure Preoccupied Dismissing Unresolved	.032 .656 .533 61.66	.002 - .605 .125 - 3.451 .122 - 2.332 3.2 - 1179.7
Macfie et al. (2014)	31 Low SES Mothers	Healthy Control of 31 Low SES Mothers	100	AAI	SCID-II	United States	2	Secure Preoccupied Dismissing Unresolved	.092 9.346 1.449 3.067	.027 - .310 2.636 - 33.25 .436 - 4.814 1.05 - 8.934
Mitra et al. (2013)	10 Adults	10 Adults with Bipolar 1	45	ASQ	Primary diagnosis of BPD	India	3	Anxious Avoidant	.359 -.379	-.493 - 1.21 -1.22 - .469
Pace et al. (2016)	15 Females with a Diagnosis of BPD and an Eating Disorder	35 Females with a Diagnosis of an Eating Disorder	100	AAI	SCID-II	Italy	2	Secure Preoccupied Dismissing Unresolved	.385 2.429 .594 .826	.073 - 2.022 .142 - 41.60 .168 - 2.099 .246 - 2.776
Patrick et al. (1994)	12 Adult Patients	12 Patients with Dysthmtia	100	AAI	Case note review	United Kingdom	3	Secure Preoccupied Dismissing Unresolved	.168 47.22 .040 15	.007 - 3.02 2.239 - 996 .002 - .827 2.02 - 111.1
Sack et al. (1996)	49 Inpatients with BPD Diagnosis or Mixed PD with Prominent BPD Features	53 Undergraduates	92	RAQ	Primary diagnosis of BPD	United States	2	Anxious Avoidant	.635 .929	.240 - 1.03 .523 - 1.335
Schindler and Stack (2015)	21 Adult Patients	22 Patients with a SUD	55.8	BAICS	SCID-II	Germany	2	Secure Preoccupied Dismissing	.030 3.273 .485	.002 - .533 1.22 - 8.748 .042 - 5.611
Simeon et al. (2003)	20 Adults	24 Healthy Controls	43	RSQ	SIDP	United States	2	Anxious Avoidant	1.521 .871	.857 - 2.185 .216 - 1.527
van Dijke et al. (2015)	120 Outpatients	159 Somatoform Disorder, 64 Mixed Axis I	72	RSQ	BPDSI	Netherlands	2	Anxious Avoidant	.892 .695	.605 - 1.098 .415 - .975

Notes. AAI=Adult Attachment Interview, AAP=Adult Attachment Projective Picture System, ASQ=Attachment Style Questionnaire Att. Tool=attachment measure used, Att. Org.=attachment organisation, BAICS=Bartholomew Attachment Interview Coding System, DIBR= Diagnostic Interview for Borderline Personality Disorder-Revised, DIPD=Diagnostic Interview for Personality Disorders, ECR=Experiences in Close Relationships Scale, MDD=Major Depressive Disorder, OCPD=Obsessive Compulsive Personality Disorder, PD=Personality Disorder, RAQ=Relationship Assessment Questionnaire, RQ=Relationship Questionnaire, RSQ=Relationship Style Questionnaire, SCID-II=Structured Clinical Interview for DSM Disorders, SIDP-IV=Structured Interview for DSM-IV Personality Disorders, SUD=Substance Use Disorder

Five studies (Aaronson et al., 2006; Barone, 2003; Buchheim et al., 2008; Crittenden & Newman, 2010; Sack et al., 1996) did not ensure controls did not meet the criteria for BPD, and it was unclear in one study (Mitra & Mukherjee, 2013). A high degree of Axis I and II comorbidity was reported among the BPD sample in four studies (Barone, 2003; Fonagy et al., 1996; Jobst et al., 2016; Macfie et al., 2014). In nine studies the selection process or analytic strategy failed to, or only partially addressed potential confounding variables (Aaronson et al., 2006; Bartz et al., 2011; Crittenden & Newman, 2010; Fonagy et al., 1996; Mitra & Mukherjee, 2013; Pace et al., 2016; Sack et al., 1996; Schindler & Sack, 2015; van Dijke & Ford, 2015). Among narrative studies, seven ensured attachment rating was blind to BPD diagnosis (Barone, 2003; Buchheim et al., 2008; Crittenden & Newman, 2010; Jobst et al., 2016; Macfie et al., 2014; Pace et al., 2016; Patrick et al., 1994), in two studies it was unclear (Fonagy et al., 1996; Schindler & Sack, 2015). Group membership was clearly defined in all studies.

The statistical analysis applied was appropriate in all cases, however statistical power was generally poor. Six self-report studies (Aaronson et al., 2006; Bartz et al., 2011; Bouchard et al., 2009; Hulbert et al., 2011; Mitra & Mukherjee, 2013; Simeon et al., 2003) and seven narrative studies (Buchheim et al., 2008; Crittenden & Newman, 2010; Fonagy et al., 1996; Jobst et al., 2016; Macfie et al., 2014; Pace et al., 2016; Patrick et al., 1994; Schindler & Sack, 2015) were insufficiently powered to be sensitive to difference in attachment organisation between the BPD and control population. While we hoped to examine study quality as a moderator there was insufficient variance among studies to allow for this.

Narrative Measures of Attachment

Nine studies with a combined sample size of $n=413$ used a narrative measure of attachment (Barone, 2003; Buchheim et al., 2008; Crittenden & Newman, 2010; Fonagy et al., 1996; Jobst et al., 2016; Macfie et al., 2014; Pace et al., 2016; Patrick et al., 1994; Schindler &

Sack, 2015). The mean number of individuals was 22 (SD=10.77) for the BPD group and 23 (SD=9.46) in the control group, with a range of 12-40 for both groups. With regard to gender, 86.4% (n=356) of the sample were reported to be female. Five studies used a non-clinical control group and four a psychiatric control with an Axis I disorder (Fonagy et al., 1996; Pace et al., 2016; Patrick et al., 1994; Schindler & Sack, 2015). All studies reported attachment categories allowing odds ratio to be calculated. Seven reported at least one organised category of attachment and seven reported on the unresolved/resolved binary. The distribution of attachment categories within the BPD sample for each study is illustrated in Table 2.

Table 2. Percentage distribution of attachment organisation for individuals with a diagnosis of BPD.

Study	4 category model of attachment				3 category model of attachment			
	F	D	E	U	F	E	D	U
Barone (2003)	7.5	20	22.5	50	NA	NA	NA	50.00
Buchheim (2008)	NA	NA	NA	84.62	NA	NA	NA	84.62
Crittenden (2010)	NA	NA	NA	NA	0	46.67	53.33	100.00
Fonagy (1996)	5.56	2.78	2.78	88.89	8.33	75	16.67	88.89
Jobst (2016)	0	21.05	15.79	63.16	NA	NA	0	63.16
Macfie (2014)	12.9	12.9	22.58	51.61	16.13	58.06	25.81	51.61
Pace (2016)	13.33	33.33	6.67	46.67	NA	NA	NA	46.67
Patrick (1994)	NA	NA	NA	NA	0	0	100	75.00
Schindler (2015)*	0	2.86	60	NA	NA	NA	NA	NA
Total**	7.8	15.6	14.9	61.7	8.5	68.1	23.4	67.4

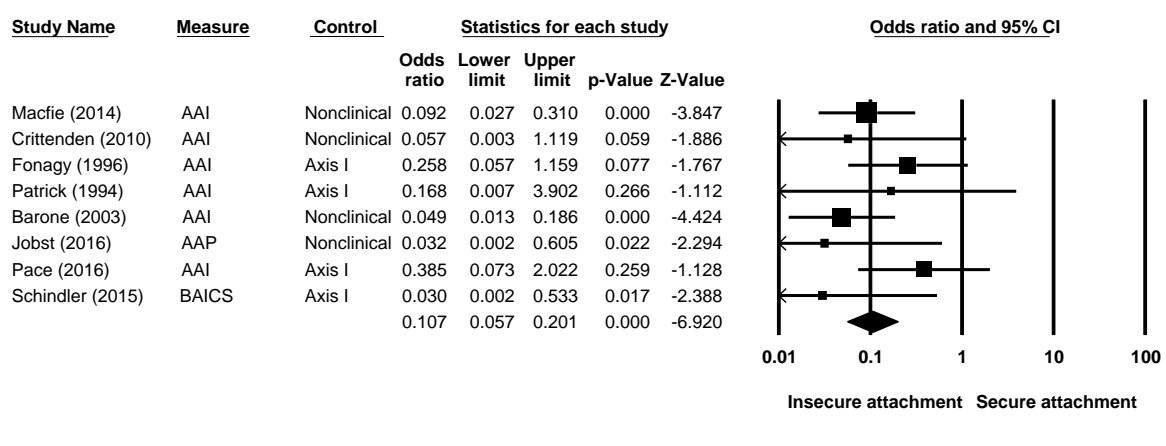
Notes. F=Secure, D=Dismissing, E=Preoccupied, U=Unresolved, NA – Not applicable. * 37.14% were categorised as fearful avoidant and not included in this analysis. ** Percentage of overall sample in each attachment category for 3 and 4 category models of attachment.

Organised Attachment. Eight studies (Barone, 2003; Buchheim et al., 2008; Crittenden & Newman, 2010; Fonagy et al., 1996; Jobst et al., 2016; Macfie et al., 2014; Pace et al., 2016; Schindler & Sack, 2015), with a combined sample size of $n=385$, reported on secure, dismissing and preoccupied attachment categories. The mean sample size was $n=48$ ($SD=18.05$) with a mean of $n=23$ participants in the BPD group ($SD=10.60$) and $n=24$ in the control group ($SD=9.75$). Attachment style of the BPD group was compared with a community sample in four studies and a psychiatric sample in four. For the latter, all studies used an Axis I comparison group. In one study (Schindler & Sack, 2015), which reported the attachment patterns in samples with a diagnosis of BPD, SUD or comorbid SUD and BPD, only the data pertaining to the BPD and SUD populations were included in our analysis. In regard to measure of attachment used, five studies used the AAI and one each used the AAP and BAICS. Three studies (Crittenden & Newman, 2010; Patrick et al., 1994) reported a three-category model of attachment and four studies used a four-category model (Barone, 2003; Jobst et al., 2016; Pace et al., 2016; Schindler & Sack, 2015). For the two studies (Fonagy et al., 1996; Macfie et al., 2014) which reported both a three and four category model only the results of the three-category model were included.

Attachment Security. Secure attachment was rare within the BPD sample with 7.8% of individuals with a diagnosis of BPD categorised as securely attached within a four-category model of attachment; and 8.5% within a three-category model. Meta-analytic modelling (Figure 2) indicated that individuals with a diagnosis of BPD were significantly less likely to be categorised as securely attached than the comparison group ($OR=.107$, $CI: .057 - .201$, $p<.001$). Inspection of the funnel plot indicated the presence of publication bias and applying the trim and fill method resulted an adjusted effect size of .121 ($CI: .066 - .222$). Rosenthal's failsafe N indicated that 85 studies with an effect size of zero would be required to nullify the observed effect. Heterogeneity analyses indicated that the observed dispersion among effect

did not exceed that expected by chance (Q statistic = 6.641, $p > .05$) with a variance rate of $I^2 = 0\%$. A greater effect size was found for the community control group (OR=.064, CI: .026 - .146) than the Axis I control (OR=.221, CI: .082 - .593). However, the control group used did not significantly impact on the pooled effect size ($Q=3.577$, $p > .05$). Similarly, neither the attachment model reported ($Q=.878$, $p > .05$) or gender ($Q=3.407$, $p > .05$) significantly impacted on effect size.

Figure 2. Forest plot of studies in which secure attachment in a BPD sample can be compared to a control



Preoccupied Attachment. Preoccupied attachment was the most commonly assigned category for individuals with a diagnosis of BPD when studies reported a three-category model of attachment was reported (68.1%). When a four-category model was reported, only 14.9% of individuals within the BPD group were classified as preoccupied. Individuals with a diagnosis of BPD were significantly more likely to be categorised as having a preoccupied attachment style than those in the comparison group (Appendix F; OR=3.023, CI: 1.621 – 5.639, $p < .001$). Inspection of the funnel plot suggested the presence of publication bias and applying the trim and fill method resulted in an adjusted effect size of 3.654 (CI: 1.867 – 7.152). Rosenthal’s failsafe N indicated that 32 studies with an effect size of zero would be needed to nullify the observed effect, suggesting that the analysis was not robust against publication bias. An examination of the heterogeneity among effect sizes indicated that the dispersion did not

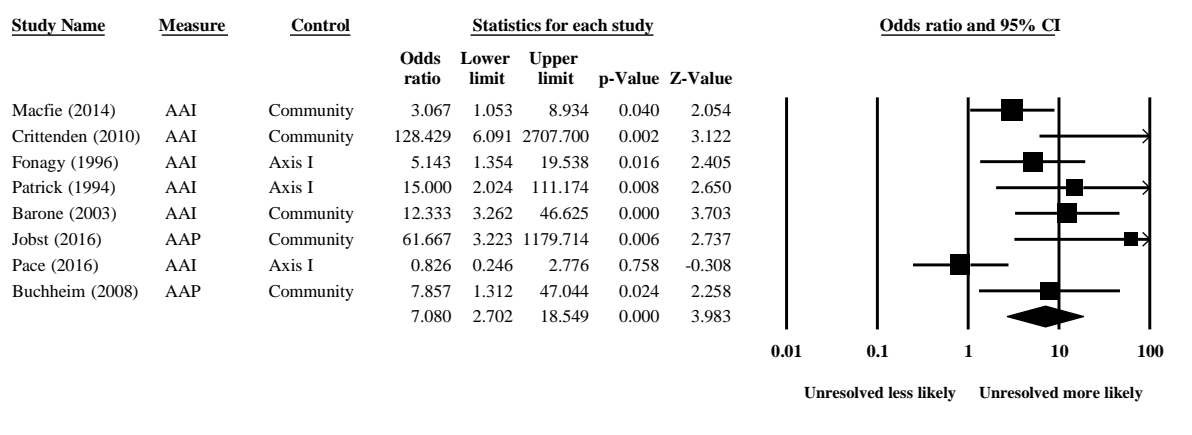
exceeded that expected by chance, with moderate heterogeneity ($Q=10.302$, $p>.05$, $I^2 = 32.05\%$). There was no significant moderation role played by attachment model reported ($Q=2.297$, $p>.05$), gender ($Q=.05$, $p>.05$) or comparison group ($Q=.261$, $p>.05$).

Dismissing Attachment. A greater percentage of individuals with BPD were categorised as having a dismissive attachment organisation when a three-category model of attachment was reported (23.4%) than when a four-category model was employed (15.6%). We found no significant difference between the BPD and control groups in regard to dismissing attachment (Appendix F; $OR=0.855$, $CI: .491 - 1.489$, $p>.05$) and this remained insignificant when the BPD group was only compared with the non-clinical control ($OR=1.199$, $CI: .633 - 2.268$). Inspection of the funnel plot suggested the presence of publication bias and application of the trim and fill method resulted in an adjusted odds ratio of .981 ($CI: .530 - 1.815$). Heterogeneity among effect sizes did not exceed that expected by chance ($Q=8.192$, $p>.05$, $I^2 = 14.547$). The control group did not moderate this relationship ($Q=2.558$, $p>.05$), nor did attachment model reported ($Q=.887$, $p>.05$) or gender ($Q=.280$, $p>.05$).

Unresolved Attachment. The resolved/unresolved contrast was reported on in eight studies (Barone, 2003; Buchheim et al., 2008; Crittenden & Newman, 2010; Fonagy et al., 1996; Jobst et al., 2016; Macfie et al., 2014; Pace et al., 2016; Patrick et al., 1994) with a total sample size of $n=378$ participants. The mean sample size was $n=46$ ($SD=19.39$) with a range of 24 – 80. The mean number of participants in the BPD sample was $n=22$ ($SD=11.51$) and $n=23$ ($SD=10.09$) in the comparison group. Six studies (Barone, 2003; Crittenden & Newman, 2010; Fonagy et al., 1996; Macfie et al., 2014; Pace et al., 2016; Patrick et al., 1994) used the AAI as a measure of attachment and two studies (Buchheim et al., 2008; Jobst et al., 2016) used the AAP. Five studies compared the BPD sample with a non-clinical comparison group and three studies included a psychiatric comparison group with an Axis I disorder. Six studies reported a four-category model, of which 61.7% of participants in the BPD group were

categorised as having an unresolved attachment organisation. Eight studies reported on the unresolved/resolved binary and 67.4% of individuals with a diagnosis of BPD were categorised as unresolved. Meta-analytic modelling (Figure 3) indicated the association between BPD diagnosis and unresolved attachment was OR= 7.080 (CI: 2.702 – 18.549, $p < .001$) representing the odds in favour of having a diagnosis of BPD and being in the unresolved attachment category.

Figure 3. Forest plot of studies in which unresolved attachment in a BPD sample can be compared to control



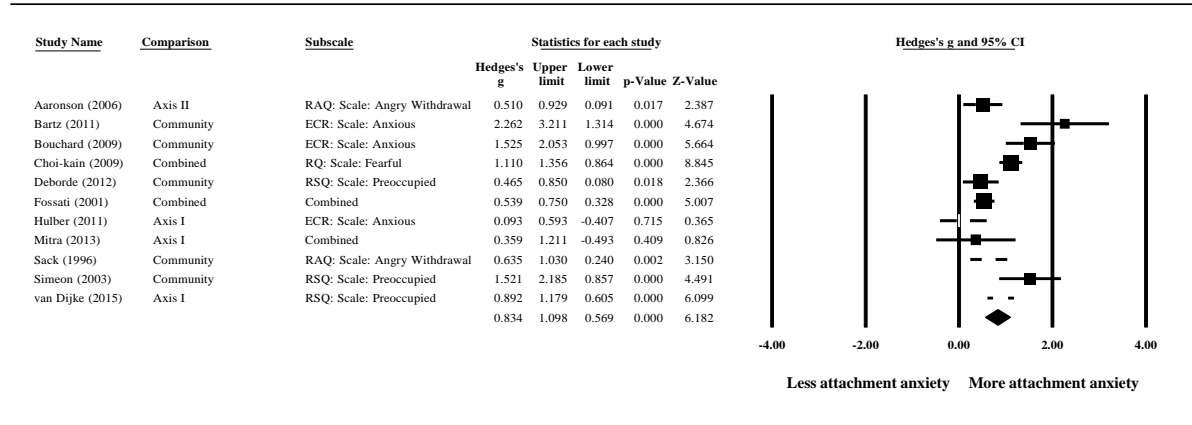
Inspection of the funnel plot indicated that publication bias was present. Applying the trim and fill method resulted in an adjusted effect size of 3.967 (CI: 1.534 – 10.262). Rosenthal’s failsafe N indicated that 83 studies with an effect size of zero were required to nullify the observed effect, suggesting robustness against publication bias. Analysis of effect size heterogeneity indicated that the observed dispersion among effects exceed that expected by chance ($Q = 19.586$, $p < .05$) with moderate to large heterogeneity ($I^2 = 64.3\%$). Subgroup moderation analysis was performed for both comparison population and gender. A larger effect size was found with the non-clinical control (OR=11.964, CI: 3.397 – 42.143) than the psychiatric control (OR=3.412, CI: .777 – 14.977). This difference did not reach significant in moderating the overall effect ($Q=3.697$, $p=.055$). Similarly, gender did not significantly impact on overall effect size ($Q=2.359$, $p>.307$).

Self-Report Measures of Attachment

Eleven studies with a total sample size of $n=1,535$ used a self-report measure of attachment suitable for inclusion in our meta-analysis studies (Aaronson et al., 2006; Bartz et al., 2011; Bouchard et al., 2009; Choi-Kain et al., 2009; Deborde et al., 2012; Fossati et al., 2001; Hulbert et al., 2011; Mitra & Mukherjee, 2013; Sack et al., 1996; Schindler & Sack, 2015; Simeon et al., 2003; van Dijke & Ford, 2015). The median number of participants per study was 90 with a mean of 48 ($SD=35.82$) in the BPD group and 90 in the comparison group ($SD=122.89$). The average age of participants was 28 ($SD=7$) and 76% of the sample were female. Five studies included a non-clinical comparison group, three and Axis I and one an Axis II. One study reported both a non-clinical and Axis I comparison group, and one study included a community comparison group, an Axis I comparison group and two Axis II comparison groups.

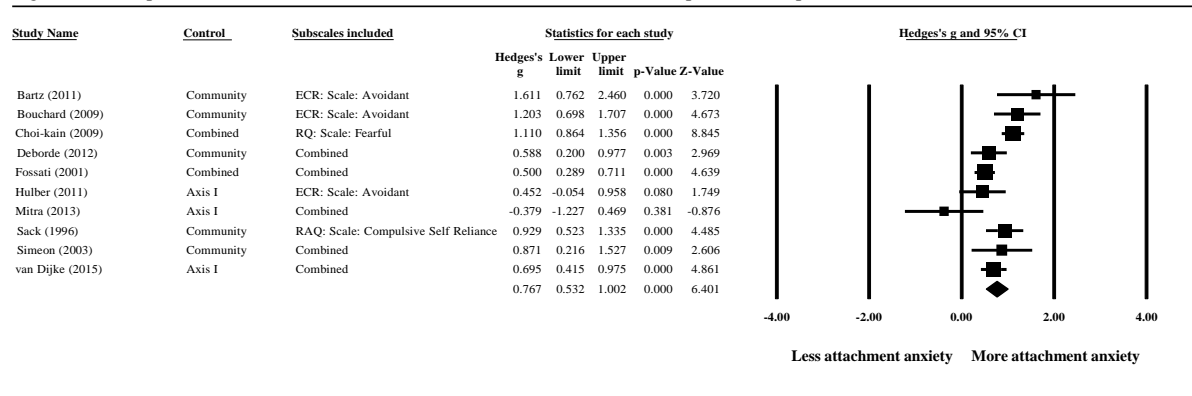
Anxious Attachment Individuals with a diagnosis of BPD displayed a significantly more anxious attachment style than the comparison group ($g=.834$, CI: .569-1.098, $p<.001$, Figure 4). The funnel plot suggested publication bias was present and the trim and fill method resulted in an adjusted effect size of .760 (CI: .483-1.038). Rosenthal's failsafe N indicated that 491 studies with a zero-effect size would have to be added to the analysis to nullify the observed effect. Significant heterogeneity was found among effect sizes ($Q=47.196$, $p<.001$) with an I^2 of 78.8%. A significant difference was found in effect sizes between the community ($g=1.065$, CI: .747-1.382), Axis I ($g=.623$, CI: .255-.991) and Axis II samples ($g=.386$, CI: -.174-.947) but this difference did not reach statistical significance ($Q=5.656$, $p>.05$). Gender was identified as a significant moderator ($Q=8.165$, $p<.05$) with the three studies with less than 70% females reporting a greater level of anxious attachment ($g=1.416$, CI: .949-1.883) than the four with more than 70% females ($g=.637$, CI: .378-.896). The extent to which subscales correlated with the ECR did not act as a moderator ($Q=1.712$, $p>.05$).

Figure 4. Forest plot of studies which allowed attachment anxiety in a BPD sample to be compared with a control.



Avoidant Attachment Participants with a diagnosis of BPD had a significantly higher level of attachment avoidance than those in the comparison group ($g=.767$, CI: $.594-1.163$, $p<.001$, Figure 5). An inspection of the funnel plot found no evidence of publication bias and the trim and fill method removed no studies from the analysis. Rosenthal's failsafe N indicated that 415 studies with an effect size of zero would be required to nullify the observed effect. Heterogeneity was evident among effect sizes ($Q=27.369$, $p<.05$) with $I^2 = 63\%$.

Figure 5. Forest plot of studies which allowed attachment avoidance in a BPD sample to be compared with a control.



Subgroup analysis revealed that there was a significant difference in effect size by comparison group ($Q=6.431$, $p<.05$). The greatest difference in effect for attachment avoidance was found when the BPD group was compared with non-clinical controls ($g=.961$, CI: $.713-1.208$, $p<.001$). We found an effect size of $.589$ (CI: $.304-.874$) for the Axis I comparison group while the Axis II effect size failed to reach significance ($g=.405$, CI: $-.031-.840$). Neither

gender ($Q=.413$, $p>.05$) nor extent of convergence with the ECR ($Q=.708$, $p>.05$) were significant moderators. Rerunning the main analysis without the ‘fearful’ subscales resulted in an effect size of .643 (CI: .395-.891).

Discussion

The review confirms and extends existing evidence that individuals with a diagnosis of BPD have elevated levels of insecure attachment, particularly unresolved attachment organisation and anxious attachment styles. In studies using a narrative measure of attachment, between 46% and 100% of individuals with BPD were categorised as unresolved, with an overall prevalence of 67.4%. A large effect size was found for rates of unresolved attachment in individuals with a diagnosis of BPD compared to controls. The overall strength of this relationship was not moderated by clinical status of the control group or the gender of participants. A medium effect size was found for the relationship between preoccupied attachment and BPD. While this relationship was not moderated by control group or gender, there was substantial divergence in the distribution of attachment categories in participants with BPD depending on the model of attachment reported. When a three-category model was employed 68.1% of participants were categorised as preoccupied. However, when a four-category model was reported only 14.9% of participants were considered preoccupied, suggesting many individuals with BPD may be categorised as preoccupied/unresolved. Surprisingly, individuals with BPD were not more likely to display a dismissing attachment organisation when compared with either a mixed or non-clinical control. In studies using self-report measures of attachment, individuals with BPD were significantly more likely than controls to display anxious and avoidant attachment styles, with the strongest relationship found for attachment anxiety. This relation was not moderated by gender, control group used or extent of convergence with the ECR.

The current findings offer strong support to work suggesting that unresolved attachment organisation is closely associated with BPD (Agrawal et al., 2004) and to theories that emphasise the role of attachment and interpersonal problems in the aetiology and maintenance of the disorder (Fonagy & Luyten, 2009; Levy et al., 2015; Lorenzini & Fonagy, 2013). Disorganised attachment in childhood, and its adult unresolved analogue, is associated with trauma (Bandelow et al., 2005; Breidenstine, Bailey, Zeanah, & Larrieu, 2011) and, from an attachment perspective, the self-injurious behaviour, binge eating and substance abuse observed in BPD may be thus be partially understood as relating a ‘pathological secure base phenomena’ (Holmes, 2001), in which the individual with disorganised attachment employs a variety of controlling strategies designed to produce the physiological and psychological features associated with the experience of a secure base in the absence of a robust ability to self soothe. Moreover, Holmes (2009) suggests individuals with an unresolved attachment face an approach-avoidance dilemma in close relationships, characterised by a need for validation and closeness conflicting with the activation of the attachment system being experienced as frightening. This may account for the high rates of attachment anxiety and avoidance found among self-report studies of attachment in BPD.

Parental unresolved attachment is associated with child disorganised attachment and a parenting style marked by intrusiveness, emotional withdrawal, role confusion, disorientation and lack of reciprocity in caregiver child exchanges (Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006; Lyons-Ruth & Jacobvitz, 2008; Madigan, Moran, & Pederson, 2006; Verhage et al., 2016). The high rates of unresolved attachment among BPD patients found in this work suggests that unresolved attachment may be a mechanism by which parental BPD status acts as a risk factor for the development of BPD (Zanarini et al., 2004). Future research should explore the utility of family or parenting interventions in preventing disorganised/unresolved attachment from crossing generational boundaries among parents with BPD.

Limitations. The studies included in this analysis were generally of good methodological quality but low statistical power. As such, they are particularly subject to publication bias (Dickersin, 2006), although the meta-analytic procedures we employed were designed to mitigate this bias. While Rosenthal's failsafe N is commonly used, it has been criticised for overly relying on statistical rather than substantive significance and for not allowing for the potential of a smaller number of studies with negative effect to more quickly nullify the observed effect (Borenstein et al., 2011). Similarly, while the trim and fill method can correct for publication bias, its performance is poorer in the presence of substantial between-subject heterogeneity (Peters, Sutton, Jones, Abrams, & Rushton, 2007). In many studies, appropriate precautions were not taken to ensure the control group were did not meet the criteria for BPD and this may have resulted in underestimating the difference between groups. In addition, there was substantial amount of Axis I and Axis II morbidity when measured and reported, and it is likely similar issues affected studies that did not assess this. While this comorbidity reflects that found in epidemiological studies of BPD (Grant et al., 2008), and thus increases the generalisability of results, it reduces our ability to confidently attribute the difference in attachment reported to BPD. In addition, our analysis combined the subscales of a variety of measurements tools which had sufficient correlation, this led to the loss of subscales which were not correlated and to the combining of measures which did not perfectly match.

Conclusion. Unresolved, avoidant, anxious and preoccupied attachment are strongly associated with BPD. The high prevalence of unresolved attachment in BPD indicates that therapists must be mindful of attachment and interpersonal considerations when working with individuals with a diagnosis of BPD. Implications for the therapeutic relationship include restoring a sense of safety and the provision of a secure base in the context of strong anxious and avoidant attachment behaviours and the approach avoidance dilemma that individuals with

disorganised attachment face. Our findings offer support for BPD specific approaches which use attachment and metacognitive frameworks such as dialectical behaviour therapy (DBT) and mentalisation based treatment (MBT).

These conclusions are limited by the low statistical power found in studies examining the relationship between attachment and BPD. Future attachment research should employ larger samples and the most validated tools in order to facilitate meta-analytic procedures, currently these are the ECR and AAI (Ravitz et al., 2010). The latter is particularly true for studies that use narrative measures of attachment, as they are resource intensive, resulting in small samples and a lack statistical power. A true understanding of the development of attachment in BPD requires longitudinal research. Attention should focus on disorganised attachment in childhood as a risk factor for the future development of BPD and the social and environmental factors that moderate this process. In addition, it is important to examine if the findings of this study are replicated among males with a diagnosis of BPD.

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PAPER 2: Empirical paper**

TITLE: A mixed method evaluation of a group only MBT intervention for BPD

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**Written in accordance with author guidelines for publishing in the Journal of Personality Disorders (Appendix A).

ABSTRACT

Objective: To assess change in interpersonal functioning and psychological distress over the course of a group only mentalisation based treatment (MBT) for adults with a diagnosis of Borderline Personality Disorder. To identify potential moderators and the explore the manner in which participants gave meaning to their experiences.

Method: Over the course of four cohorts, 36 adults with a diagnosis of BPD attended the ‘Hub Group’, a 24 week MBT group only intervention. Patients completed measures of psychological distress, attachment related difficulties and interpersonal problems at baseline, over the course of and following the group. Therapists rated patient service engagement at midpoint and end. 10 participants completed semi-structured interviews on their experiences. Quantitative measures were retrospectively analysed and interpretative phenomenological analysis applied to interview data.

Results: A large effect size was found for reduction in interpersonal problems and overall psychological distress. Medium to large effect sizes were found for a reduction in specific areas of symptom burden and interpersonal problems related to affiliating and distancing. Service engagement improved significantly over the course of the intervention. Neither pre-treatment interpersonal problems nor service engagement emerged as significant moderators. Patients found the group to be a challenging but rewarding experiences that necessitated active engagement and resulted in change in self-concept, psychological distress, interpersonal relations and emotional regulation.

Conclusion: This research provides initial support for group only interventions for adults with BPD and explores patients’ understanding of the process of change. Further research is required to assess the durability and generalisability of these findings.

Borderline personality disorder (BPD) is one of the most commonly occurring personality disorders, with a reported prevalence ranging from 0.5% to 5.9% in community samples (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Paris, 2010; Sansone & Sansone, 2011) and between 10% and 26% amongst psychiatric outpatients (Korzekwa, Dell, Links, Thabane, & Webb, 2008; Zimmerman et al., 2005). Many individuals with BPD experience additional mental health problems including depression, anxiety, self-harm, substance dependency and additional axis II disorders (Grant et al., 2008). The course of BPD is long lasting and is associated with a substantial economic and psychosocial burden (Soeteman, Verheul, et al., 2008).

The diagnostic criteria for BPD include impulsivity, instability of affect and self-image, and dysfunctional interpersonal relationships (American Psychiatric Association, 2013). While these criteria reflect dysfunction across a number of domains, there is an awareness that dysfunction in interpersonal relationships are central to the disorder and provide the context for self-harming behaviour, impulsivity and affective liability (Lazarus et al., 2014; Levy et al., 2015). In comparison with healthy controls, individuals with a diagnosis of BPD tend to view others more negatively, report more negative expectations for relationships, have difficulty understanding or contextualising the thoughts and emotions of others, display poorer social problem solving skills (Lazarus et al., 2014) and report a fivefold greater level of interpersonal problems (Salzer et al., 2013). These difficulties in interpersonal functioning pose a challenge to the therapeutic relationship and negatively impact on service engagement (Binks et al., 2006).

The concept of mentalisation has been employed to understand and treat BPD (Bateman & Fonagy, 2008; Daubney & Bateman, 2015). Influenced by attachment and psychodynamic theory, mentalisation can be considered as the ‘the capacity to conceive of mental states as explanations of behaviour in oneself and in others’ (Fonagy, 2006, p. 53). Mentalising is

hypothesised to facilitate the management of thoughts, desires, feelings and intentions that may be present in interpersonal interactions, and in doing so is implicated in the ability of individuals to separate their own experiences and affect from that of others. Mentalisation is conceptualised as a multidimensional construct organised around four polarities: cognitive versus affective, automatic versus controlled, externally focused versus internally focused, and self-orientated versus other orientated (Fonagy & Luyten, 2009). These polarities represent interlinked systems where imbalance produces dysfunction. Impaired capacity to mentalise develops in the context of early attachment relationships, marked by attachment trauma or neglect. This results in a partial loss of awareness of the relationship between external and internal reality when the attachment system is activated. The emotional dysregulation and interpersonal lability which characterise BPD can thus be understood as resulting, in part, from the hyperactivation of the attachment system and a concomitant failure in mentalising (Fonagy & Luyten, 2009).

Guided by this understanding, mentalisation based treatment (MBT) aims to strengthen an individual's capacity to mentalise, through techniques focused on stabilising the patient's sense of self, promoting reflection and regulating emotion within a boundaried therapeutic attachment relationship (Allen et al., 2008). MBT has demonstrated efficacy and effectiveness in improving clinically significant outcomes including suicide, hospital admission, interpersonal problems, self-harm and symptom burden (Bales et al., 2015; Bales et al., 2012; Bateman & Fonagy, 1999, 2009; Jorgensen et al., 2013). These MBT based interventions employed, at a minimum, weekly individual and group therapy for 18 months. Uncertainty exists regarding the process of change and recent trials of MBT have failed to consistently demonstrate marked superiority over less intensive generalist approaches to treating BPD (Choi-Kain, Finch, Masland, Jenkins, & Unruh, 2017). Consequently, such intensive interventions may not be warranted for all individuals with BPD.

There is a dearth of research examining the impact of pre-treatment severity of psychiatric symptoms on treatment outcome in MBT. One study reported that only the number of Axis II diagnoses impacted on outcomes in MBT (Bateman & Fonagy, 2013). However, findings from other specialised psychotherapeutic interventions for BPD suggest higher levels BPD symptomology, psychiatric severity affective instability, identity disturbance and fear of abandonment predict treatment response (Black et al., 2009). Despite its centrality in BPD, the potential impact of specific patterns of interpersonal problems on treatment outcome in MBT has not been examined. That said, overall levels of interpersonal problems have been positively associated with post-therapy levels of symptom burden in Transference Focused Psychotherapy for BPD (Dammann et al., 2016) and interpersonal problems related to hostility and friendliness have been shown to impact differently on the therapeutic alliance in psychotherapy (Puschner, Bauer, Horowitz, & Kordy, 2005).

Although the above studies demonstrate the clinical effectiveness of MBT for BPD, there is a lack of information on mechanisms by which clients give meaning to their experience of MBT interventions and understand the process of change. Qualitative studies can help to answer these questions and inform the development of future practice by providing new insights (McLeod, 2011). Two studies to date have explored client's experiences of MBT treatment. O' Lonargáin and colleagues (2016) interviewed seven individuals, recruited from NHS treatment groups, who had experienced between two and fifteen months of combined group and individual MBT. The authors report that participants felt that they gained a new perspective on life and were better able to manage challenging situations following the group. The participants understood individual therapy as most important in facilitating change, and found the group to be a challenging, intense and frightening environment. Dyson and Brown (2016) recruited six individuals online, all identifying as female or queer, who completed at least six months of MBT. They identified a superordinate theme of MBT treatment as

mediating a battle between participants felt sense of self and their BPD identity, with subordinate themes reflecting the manner in which they constructed themselves as much improved following therapy and believed that people must be ready to change to benefit from the intervention. To date, only O' Lonargáin et al. (2016) have focused on participants experience of being in a specific MBT intervention and, as they note, further research is required to explore participants' experiences of MBT interventions with varying structures.

MBT allows for flexibility in the manner in which specific MBT programmes focus on improving the capacity to mentalise (Choi-Kain, Albert, & Gunderson, 2016). Within the UK there is pronounced variability in the availability of specialist personality disorder mental health services (Dale et al., 2017) and in a political and economic climate marked by cost containment and efficiency (Barbour, Morton, & Schang, 2014) services may be unable to provide the intensive and long term interventions outlined above.

Rationale for the current study

“The Hub” programme is an adaptation of standard MBT for adults with BPD. Initial service evaluation data (Perrin, 2015) found that levels of interpersonal sensitivities and paranoid ideation reduced significantly over the course of the program. Moreover, interviews with six participants indicated good group acceptability. No relationship was found between overall level of psychiatric symptoms, or more specific symptoms, and treatment response. Using mixed methods, the aim of the current study is to build upon this work with a primary aim of examining change in interpersonal problems over the course of the group and the potential association between pre-group level of interpersonal problems and the extent of change. A secondary aim is to use interpretative phenomenological analysis (IPA: Smith, Flowers, & Larkin, 2009) to explore participants experience of the group. Our research questions were

- a) do self-reported levels of interpersonal problems reduce over the course of the intervention?
- b) do self-reported levels of symptomatic distress reduce over the course of the intervention?
- c) is clinician-rated level of service engagement related to the extent of change in interpersonal problems or symptomatic distress?
- d) is the severity of pre-group interpersonal problem related to the extent of change in interpersonal problems or symptomatic distress?
- e) how do service users experience the group and what are their reflections on the programme and the process of change?

Methods

Design

This study employed a partially mixed concurrent equal status design (Leech & Onwuegbuzie, 2009). A pragmatic epistemological framework (Tashakkori & Teddlie, 1998) guided study design and both constructionist and post-positivist approaches were used (Mertens, 2014). Specifically, we used a non-experimental pre-test post-test design to provide an initial quantitative evaluation of the group and address research questions a – d. To address research question e, individual semi-structured interviews were qualitatively analysed by applying an interpretative phenomenological framework to gain a deeper understanding of the meaningfulness of participant's experiences. These semi-structured interviews provided an opportunity for participants to reflect upon their experiences, identify areas in which change may have occurred and discuss those aspects of the group that were helpful in facilitating this change. As such, they provide insight into the processes at work in group MBT from the patients' perspective. Thus, we drew upon the principle of complementarity (Morgan, 1998) and employed the strengths of both qualitative and quantitative methods to provide a richer and more comprehensive evaluation than either method alone.

Intervention

The Hub programme is mentalisation based intervention that differs from standard MBT in two ways. Firstly, unlike standard MBT, it is a group only intervention that does not include individual therapy. Secondly, it is delivered one day a week over the course of 24 weeks and, as such, is considerably shorter than the standard MBT intervention. Each day is split into two halves with a focus on psychoeducation in the morning and therapy in the afternoon, with two members of the therapeutic staff delivering each session. In the early weeks of the group, psychoeducation addresses those topics covered by the traditional MBT-I group (Bateman & Fonagy, 2006): attachment, mentalisation, intervention plans, interpersonal skills and mentalisation. In the next stage the group discuss each element of the SCID-II interview. The final stage of psychoeducation focuses on mentalisation skills. The therapy sessions in the afternoons are delivered in accordance with traditional MBT principles and in the manner outlined by Bateman and Fonagy (2006). Four therapists are involved in each Hub programme: two therapists deliver each group session but these therapists alternate over the course of the intervention. Within the local mental health service the Hub programme is part of an integrated treatment pathway for individuals with a diagnosis of BPD.

Participants

Routine clinical data of four cohorts of the Hub group were retrospectively analysed. Suitability for the group was assessed following referral to a specialist adult psychotherapy service in Scotland. Individuals were referred to this service from general adult mental health services due to behaviour and expressed distress consistent with a diagnosis of BPD. Potential group members were screened by clinical interview and administration of the Personality Diagnostic Questionnaire – 4th edition (PDQ-4; Hyler, 1994). Those identified as displaying five or more of the diagnostic criteria for BPD (American Psychiatric Association, 2013), or

displaying prominent BPD type symptoms were offered the opportunity to take part in the Hub group. Forty-five individuals expressed an interest in the group; however, only 36 individuals attended more than one session (N=36). These individuals participated in the group over four cohorts that ran over the course of two years. Of these, 28 individuals (77%) completed the group. Ten individuals from the final two cohorts volunteered to participate in semi structured interviews (Table 1).

Procedure

Ethical approval was received from the North of Scotland Research Ethics Committee and the local health board R&D management committee. For the quantitative component of this study, data collected in routine clinical practice by the project staff were retrospectively analysed. The IIP-32 was completed by service users at weeks one, four, eight, twelve, fifteen, nineteen, twenty-one and twenty-four. The SCL-90 was completed at weeks one and twenty-four. Staff involved in delivery of the treatment programme completed the SES during their group supervision at week 12 and following the end of the programme.

For the qualitative component of this study, participants completed a semi-structured interview with the first author. These interviews were designed to be flexible and were developed in accordance with Smith's (1995) guidelines. The interview schedule (Appendix G) focused on the participant's life before the group, their experience of the group, any changes noticed and their thoughts about the future. These interviews were recorded, transcribed verbatim, pseudo anonymised and qualitatively analysed.

Measures

Psychological Distress. The Symptom Checklist 90 Revised (SCL-90-R: Derogotis, 1983) was used to measure psychological distress. The SCL-90 is a self-report instrument consisting of 90 questions, answered on a five point Likert scale, measuring subjective

symptom burden across nine validated dimensions: interpersonal sensitivity, hostility, phobic anxiety, obsessive-compulsive, paranoid ideation, somatisation, anxiety, psychoticism and depression. In addition, the global severity index (GSI) was calculated as a measure of overall psychological distress. Potential scores on the GSI and each subscale of the SCL-90 range from 0-5, with higher scores indicative of greater symptom burden.

The SCL-90 has been reported to have high internal consistency and convergent validity (Smits, Timmerman, Barelds, & Meijer, 2015) and good reliability (Derogotis, 1983). It has been criticised for findings that suggest only moderate discriminant validity for its subscales and equivocal support for its factor structure (Groth-Marnat, 2009). We choose the SCL-90 as it has been demonstrated to be well suited to measuring change in psychological distress (Holdi, 2003) and as an outcome measure in trials of psychotherapy (Poulsen et al., 2014). Following Schauenburg and Strack (1999), a clinical cut-off of .57 on the GSI was used to distinguish between functional/dysfunctional ranges and a reliable change score of .43 was adopted as a criterion for clinically significant change. The SCL-90 was administered on the group induction day and during the last week of the programme. Internal reliability for overall symptomatic burden was excellent with an alpha of .962 at baseline and .969 following the group. Subscale alphas ranged from an unacceptable .336 for additional items following the group to an excellent .913 for depression at T2. The additional subscale was excluded from subsequent analysis, all other subscales had an alpha greater than .5.

Interpersonal Problems. The Inventory of Interpersonal Problems – Short Circumplex (IIP-32: Horowitz, Alden, Wiggins, & Pincus, 2000) was used as a measure of clients' interpersonal difficulties and attachment related behaviours. The IIP-32 contains 32 questions and assesses eight aspects of interpersonal functioning in addition to providing an overall score of interpersonal problems. Potential scores range from 0-16 for subscales to 0-128 for overall level of interpersonal problems, with higher scores indicating greater interpersonal problems.

Individual items detail behaviours that respondents find difficult (“it’s hard for me to say ‘no’ to other people”) or excessive (“I argue with other people too much”). Following Macbeth et al., (2008), subscales were combined to reflect problems associated with affiliating and distancing interpersonal behavioural patterns. The scale scores for Vindictive/Self-centred, Domineering/Controlling, Cold/Distant and Socially Inhibited behaviours were summed to provide an overall score of interpersonal difficulties related to distancing. An overall score for affiliating interpersonal behaviours was created by summing the scores on the Intrusive/Needy, Non-assertive, Self-sacrificing and Overly Accommodating subscales. The IIP-32 has demonstrated good reliability and validity (Hopwood, Pincus, DeMoor, & Koonce, 2008; Horowitz et al., 2000). In the present study, internal reliability for overall interpersonal problems was acceptable ($\alpha=.757$). The internal reliability of the computed subscales was found to be excellent, $\alpha=.911$ for distancing and $\alpha=.901$ for affiliating.

Service Engagement. Participants levels of service engagement were measured using the Service Engagement Scale (SES: Tait, Birchwood, & Trower, 2002). The SES is a 14-item instrument designed to capture staff perceptions of the extent to which individuals engage with services. It assesses client availability, adherence, collaboration, help seeking and overall level of service engagement, with higher scores reflecting greater difficulty with engagement. As it was originally designed to assess engagement with community mental health services, some modifications were made to the questions e.g. changing ‘medication’ to ‘intervention’. The acceptability for the SES has been demonstrated in populations with complex mental health difficulties (Macbeth, Gumley, Schwannauer, & Fisher, 2013). Internal reliability in the current study ranged from good ($\alpha=.801$) for collaboration to excellent ($\alpha=.923$) for availability.

Statistical Analysis

For quantitative outcomes, an a priori power analysis using G*Power v3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007) indicated a sample size of 34 would be required to detect a

moderate effect size ($d=.5$) with power of 80%. Post-hoc sensitivity analysis demonstrated that with a sample size of 36 there was 80% chance of detecting an effect size of .42. Preliminary analysis was conducted to explore the distribution of missing data, test for normality and generate descriptive statistics. Applying the Kolmogorov-Smirnov test revealed the IIP-32 self-sacrificing subscale was positively skewed. All other scales and subscales were normally distributed. As the t-test is generally robust against non-normality when sample sizes are equal (Wike, 2006), we used parametric tests in subsequent analysis. There was a considerable amount of missing data present, with an overall missing rate of 28.56%. At baseline, 15.82% of data was missing and 30.17% was missing following the group. In regard to the IIP-32, the completion rate at each time point in sequential order was: 75%, 52.8%, 41.7%, 52.8%, 41.7%, 52.8%, 58.3% and 66.7%. Applying Little's MCAR test to the missing data at the subscale level indicated the data was not systematically random ($\chi^2=215.158$, $p=1$) and was thus suitable for listwise deletion or imputation.

An intention to treat analysis was applied to the data using multiple imputation in the treatment of missing data (Rubin, 2008). Multiple imputation improves upon single or mean derived imputation by incorporating the variance of estimations derived across multiple datasets. In doing so it provides unbiased standard errors and a robust method for dealing with a high rate of missing data (Manly & Wells, 2015) and it has been successfully applied in psychotherapy outcome trials (Thimm & Antonsen, 2014). Although Rubin originally suggested five imputations were sufficient for most data sets, more recent work has suggested the number of imputations should be similar to the number of incomplete cases (White, Royston, & Wood, 2011). Consequently, using an imputation model that included participant's responses on the SES, SCL-90 and the IIP-32 we imputed 60 datasets and analyses run on each data set were pooled using SPSS 23. Due to the limitations of current statistical programmes,

pooled standard deviations were calculated manually according to Robin's rules for the pooling of single estimates (Marshall, Altman, Holder, & Royston, 2009).

Multiple imputation was considered the most appropriate manner to address missing data for the reasons outlined above, but limited subsequent analyses. In particular current statistical packages cannot apply a repeated measures ANOVA to multiple imputed data. Multiple paired sample t-tests were used to assess change in psychological distress and interpersonal problems over the course of the intervention increasing the risk of Type 1 errors. The Holm Bonferroni sequential correction (Holm, 1979) was applied to pre-post analysis to reduce the likelihood of multiple comparisons resulting in an inflated Type I error rate. Independent samples t-tests were applied to determine if extent of change differed by gender. The association between baseline levels of interpersonal problems and extent of change in psychological distress or interpersonal problems was examined through correlation. Correlation analysis was also used to explore the relationship between outcome measures, age and service engagement. Cohen's *d* (Cohen, 1988) was selected as a standardised measure of treatment effect adopting the conventions proposed by Cohen. (.2=small, .5=medium, .8=large). Carlson and Schmidt (1999) demonstrated that uncorrected within-subject effect sizes derived from test statistics produce inflated effect size estimates when compared to between-group designs. Consequently, Lakens (2013) argued that principled reporting of within group effect sizes should address this issue to aid in the process of cumulative science. Using Lenard and Lenard's calculator (2016) we applied Dunlap and colleagues (1996) formula for calculating a more comparable and valid effect size from within subject designs. In accordance with best practice when working with multiply imputed data (Manly & Wells, 2015), a second 'completer' analysis was conducted using only data from completed measures and similarity of results to the pooled data is reported.

Qualitative Analysis

Transcripts were analysed following the IPA methodology outlined by Smith, Flowers and Larkin (2009). IPA was chosen due to its idiographic focus, the rigour of its procedures and its concern with meaning making (Smith, 2011). In addition, the emphasis placed in IPA on analysis as a double hermeneutic, with the researcher playing an active part in the construction of meaning, provided a lense through which to evaluate the manner in which the first authors assumptions may have shaped the analysis. Each transcript was read and re-read in detail, while listening to the audio recordings, and topics, potential themes and ideas noted. The transcript was then reread and potential themes were clustered together and subordinate and superordinate themes developed. Superordinate themes were constructed with regard to their relevance to the research question and the depth of the interview data that supported them. As each interview was read its themes were tested against those developed previously, leading to their confirmation or modification (Smith et al., 2009).

Drawing on recommendation on best practice in qualitative research (Smith, 2011; Tong, Sainsbury, & Craig, 2007; Yardley, 2000) a number of steps were taken to ensure the validity of the analysis. All themes were checked against the original transcripts for coherence and 'plausibility' (Mays & Pope, 1995) by the third author, a researcher and clinician with experience of qualitative analysis, and alternative patterns, themes and coding discussed. To further ensure that themes are sufficiently grounded in the data, the subcategories which make up each subtheme are reported in conjunction with the number of participants that endorsed them. The first author maintained a journal in which they noted and reflected upon their experiences over the course of the research, their expectations, presuppositions, prejudices and attitudes towards the research, people with a diagnosis of BPD, MBT and the Hub group.

Results

Quantitative Results

Service user characteristics. The mean age of group members was 31.08 years (SD=9.81; range 18 to 52). Twenty-nine individuals were female (80.6%) and seven were male (19.4%). Demographic and clinical data are displayed in Table 1. All participants passed the clinical cut-off on the SCL-90 prior to the group commencing. Female participants scored significantly higher than male participants on the SCL-90 subscale score for depression at baseline ($t=-2.158, p<.05$) and this difference was also found to be significant in the completer sample. No other significant difference was found by gender, and age was not significantly associated with psychological distress or interpersonal problems at baseline.

Change in clinical outcomes. There was a statistically significant reduction in overall level of psychological distress ($t= -6.673, p=.000, d= -.983$) and interpersonal problems ($t=4.730, p=.000, d= -.839$) over the course of the intervention. As illustrated in Table 1, a significant reduction was also found on all subscales of the SCL-90 and in regard to affiliating and distancing interpersonal problems.

Figure 1. Change in interpersonal problems on IIP-32 subscales.

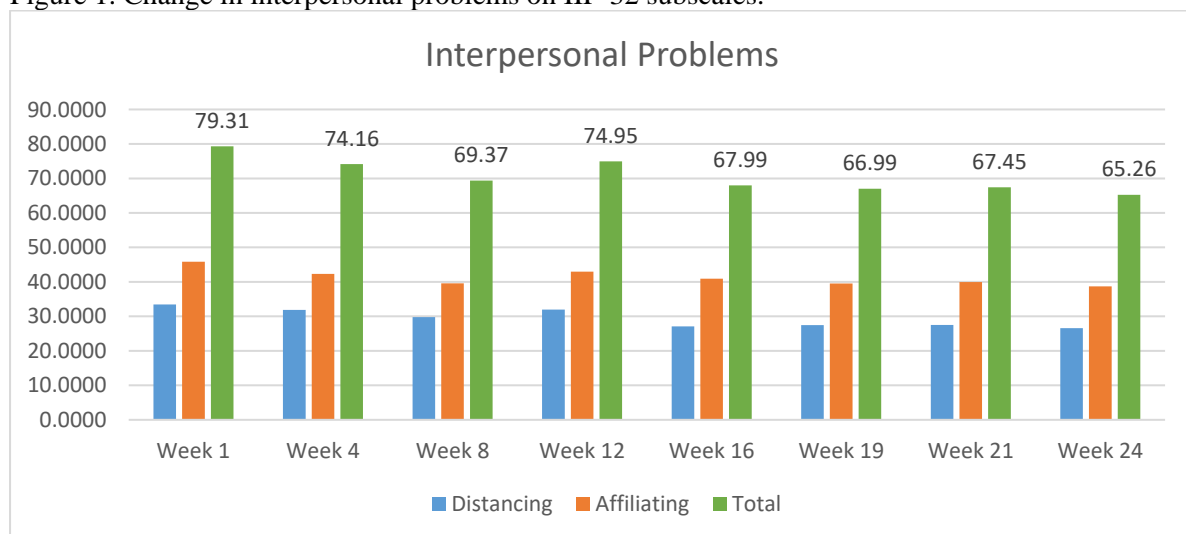


Table 1. Descriptive statistics for sample and results of intention to treat analysis with a Holm-Bonferroni correction

	Baseline Mean	SD	Post Mean	SD	t	d
Age	31.802	9.81				
SCL-90 GSI	2.647	0.531	2.117	0.537	-6.673***†	-0.983
SCL-90 Depression	3.131	0.443	2.757	0.661	-3.626*†	-0.626
SCL-90 Psychoticism	2.157	0.686	1.66	0.697	-4.304***†	-0.672
SCL-90 Hostility	2.477	0.965	1.726	0.879	-3.955***†	-0.785
SCL-90 Phobic Anxiety	2.25	1	1.82	0.912	-2.826***†	-0.422
SCL-90 Somatisation	2.095	0.019	1.679	0.74	-3.302*†	-0.483
SCL-90 Interpersonal Sensitivity	3.003	0.485	2.416	0.637	-5.895***†	-0.946
SCL-90 Obsessive Compulsive	3.033	0.599	2.341	0.669	-6.943***†	-1.005
SCL-90 Paranoid Ideation	2.81	0.752	2.11	0.754	-4.843***†	-0.873
SCL-90 Anxiety	2.576	0.831	2.09	0.734	-3.937***†	-0.594
IIP-32 Total	79.319	13.659	65.261	18.244	-4.730*†	-0.839
IIP-32 Distancing	33.452	8.501	26.572	11.059	-3.740*†	-0.667
IIP-32 Affiliating	45.866	8.289	38.688	11.264	-3.604*†	-0.702
SES Total	14.03	10.479	9.836	9.368	-2.313*	-0.419
SES Availability	2.315	2.722	1.703	1.935	-1.363	-0.248
SES Collaboration	3.385	2.763	3.385	2.766	-1.676	-0.303
SES Help-Seeking	5.34	4.357	5.34	3.237	-2.346*†	-0.487
SES Adherence	2.988	3.277	2.157	2.767	-1.365	-0.269

Notes: * Statistically significant change in the intention to treat sample ($p < .05$); **Statistically and clinically significant in the intention to treat sample ($p < .05$); † Statically significant change in the intention to treat and completer samples ($p < .05$). Baseline Mean = mean score at the first point of measurement, SD = standard deviation, Post Mean = mean of subscales at final point of measurement, t = t-score, d = Cohen's d.

The largest effect sizes were found for GSI ($d = -.983$), Obsessive Compulsive ($d = -1.005$), and Interpersonal Sensitivity ($d = -.946$). Fifty-eight percent of the pooled sample and 62.5% of the completer sample reported a clinically significant change in overall level of

psychological distress but no participants moved from the clinical to healthy range. Change in levels in interpersonal problems over the course of the intervention is illustrated in Figure 1.

Table 2. Bivariate correlation analysis of score at baseline and extent of change (r).

Extent of change ¹	Score at Baseline						
	IIP-32 Total	IIP-32 Distancing	IIP-32 Affiliating	SCL-90 GSI	SCL-90 Interpersonal Sensitivity	SCL-90 Paranoid Ideation	SCL-90 Hostility
SCL-90 GSI	0.13	-0.025	0.239	.434*	0.295	0.173	.466**
SCL-90 Depression	-0.092	-0.15	0.003	0.115	-0.047	-0.123	0.292
SCL-90 Psychoticism	0.127	0.034	0.173	0.302	0.29	0.187	0.303
SCL-90 Hostility	0.02	-0.088	0.123	0.235	0.091	0.208	.647*
SCL-90 Phobic Anxiety	0.2	0.048	0.28	.513**	0.368	0.223	.368*
SCL-90 Somatisation	0.294	0.114	.367*	.460*	.360*	0.065	0.134
SCL-90 Interpersonal Sensitivity	0.047	-0.076	0.156	0.255	0.261	0.092	0.208
SCL-90 Obsessive Compulsive	0.077	-0.016	0.144	0.11	0.061	0.064	0.324
SCL-90 Paranoid Ideation	0.18	0.139	0.155	0.329	0.348	0.541	.439**
SCL-90 Anxiety	-0.1	-0.243	0.083	.366*	0.213	-0.043	0.209
IIP-32 Total	0.332	0.316	0.224	-0.256	-0.195	-0.112	-0.142
IIP-32 Distancing	0.171	.354*	-0.08	-0.233	-0.161	-0.145	-0.23
IIP-32 Affiliating	0.339	0.148	.406*	-0.169	-0.142	-0.033	-0.002

Notes. *Statistically significant in the intention to treat analysis (p<.05). **Statistically significant in the intention to treat analysis and the completer analysis (p<.05). Extent of change=extent of change over the course of the group (pre-post change).

Moderators of change. Age, gender, service engagement and baseline level of interpersonal problems and psychological distress were examined as potential moderators of change. No association was found between age and extent of change in psychological distress

or interpersonal problems. Women showed a significantly greater reduction in phobic anxiety than men ($t=2.319$, $p=.02$) in the intention to treat analysis but not the completer analysis.

No relationship was found between gender and extent of change in interpersonal problems. Participants who were rated as more available at week 12 showed a greater reduction in symptoms related to depression ($r=-.363$, $p=.037$), hostility ($r=-.426$, $p=.012$) and phobic anxiety ($r=-.350$, $p=.05$) but only the relationship between availability and change in hostility reached significance in the completer sample.

No relationship was found between service engagement and change in interpersonal problems. Severity of total interpersonal problems at baseline was not associated with extent of change in interpersonal problems or any measure of psychological distress. A higher level of distancing problems at baseline line was associated with greater change in in distancing problems ($r=.354$, $p=.038$). Higher levels of affiliating problems at baseline were positively associated with change in somatising ($r=.367$, $p=.039$) and problems related to affiliating ($r=.406$, $p=.017$). The relationship between baseline level of interpersonal problems and aspects of psychological distress to extent of change is outlined in Table 2.

Qualitative Analysis

Ten individuals from the final two cohorts volunteered to complete semi-structured interviews about their experiences. Eight participants were female and two were male. Sixty percent of participants were aged between 20 and 30, 20% were aged between 30 and 40 and 20% were aged between 45 and 50. The age ranges and pseudonyms of participants are illustrated in Table 3. Three superordinate themes, encompassing 13 subordinate themes, were identified in the data (Table 4). The number of participants who endorsed each subcategory is provided as a measure of fidelity to the data and as a gauge of the strength of each theme.

Table 3. Semi-structured interview participants.

Name	Gender	Age
Hugh	Male	35-40
Mary	Female	45-50
Liz	Female	20-25
Selina	Female	25-30
Hazel	Female	25-30
Jenny	Female	20-21
Lorna	Female	25-30
Katie	Female	20-25
Joe	Male	30-35
Sarah	Female	45-50

Steps along the road. This superordinate theme captures the manner in which participants made sense of their process through therapy, including challenges and reflections. Its title was selected to capture participants sense that that the Hub was part of a larger journey, but one that required the active engagement implied by ‘steps’.

All participants advanced a construction of the self as broken or defective prior to the group and in need of fixing. Mary captured this this feeling “*I took like a breakdown and I was self-harming and I was just really in a mess. I didn’t know who I was, I didn’t know what I was doing*”. A majority of participants had mixed (6/10) expectations of the Hub, seeing it as frightening or unappealing but necessary, as Kate said “*I kinda knew myself I needed help [...] I didn’t really want to go but it was kind of the last resort really*”. Frustration and anger was identified in others accounts (2/10), due to a belief that their arrival at the Hub was the result of professional pressure or a pathway that was unresponsive to their wishes “*So everywhere I turned, it was just Hub, Hub, Hub all the time and I just didn’t want to do it [...] But you know, as they say, they know best don’t they?*” (Lorna).

Many of the participants reported a difficulty in trusting others with their feelings and said the group aspect of the programme had been a source of fear prior to commencement (7/10). Some participants spoke of the struggle to express oneself in the group as closely related

to their sense of self and the challenge of viewing their own feelings as worthy “*Even when I was young I never gave anyone my feelings... I’m not that important for people to be needing to know [...] you just zip up*” (Sarah).

Table 4. Compositional structure of IPA themes.

Superordinate themes	Subordinate themes	Subcategories	Weight
Steps along the road	Motivation and expectations	I’m broken/defective	9/10
		Something needs to change	10/10
		Frightening but necessary	6/10
		No other option	2/10
	Working with others	A frightening idea	7/10
		Lowering defences takes time	6/10
		It’s a struggle to express oneself	8/10
	Engagement is hard	You need to be ready	4/10
		You need to push yourself	7/10
	Reflections on the group	A positive experience	8/10
		A negative experience	2/10
	Pieces of the jigsaw	I’m not the only one	Normalising
Social support			6/10
The group – a safe space		A validating experience	7/10
		<i>In vivo</i> experiments	6/10
Mentalising		Letting in the grey	9/10
		New perspectives	7/10
The role of the therapists		Challenging	6/10
		Modelling mentalising	5/10
Missing Pieces		Not long enough	6/10
		Too many people	5/10
Reflecting on change	A new perspective on the self and past	That’s why I’m....	6/10
		A changed sense of self	7/10
	Changes in emotion and behaviour	Improved mood	7/10
		Better able to regulate emotions	5/10
		Behaving differently	6/10
	Interpersonal change	Relating to others	7/10
		Making connections	5/10
	Not quite there yet	Part of a larger journey	9/10
		Not 'cured'	10/10
		Disappointed	4/10
		I know where I'm going now	6/10

Others spoke of the challenge of lowering defences and making oneself vulnerable, “*I can have a really tough exterior... I come across as though it doesn’t hurt, but I am just absolutely screaming and crying and broken and in bits inside. And I just put on the mask and try and swallow the tears and “don’t let them come up don’t let them come up”* (Liz). For

participants (7/10) the struggle to express oneself could be understood as a process of continuous negotiation “*I haven’t brought everything to the group*” (Joe), but one which became easier over time, “*I think the start, we were just getting to know each other so it was a bit, everyone was a bit weary and then the middle was difficult because that’s when you really spoke about things and now that we’re at the end I think everyone’s just scared but everyone’s I think we’re all really comfortable with each other*” (Jenny).

Due to these challenges, the Hub programme and the process of change was understood by participants as something which required active engagement on their part (7/10). Participants appeared to view the Hub as something one had to be ready for (4/10), “*I don’t think she was ready to start this treatment when she did*” (Selina) and willing to work at (7/10), “*sometimes you just need to push yourself and it is beneficial. You do feel the benefits of coming along*” (Hugh). This view contributed to self-recrimination and regret in a minority of participants (3/10) who believed they failed to work hard enough at the programme.

Pieces of the jigsaw. This superordinate theme explores participants’ reflections on particular aspects of the Hub. Its name was chosen to reflect participants’ belief that numerous parts helped and contributed to the larger whole. For most participant (8/10), chief among these was the normalising experience of working with others who were understood to have difficulties similar to their own, “*Sitting in a room with 12 other people who had been diagnosed with the same thing was just... I left here feeling brilliant, thinking it’s not just me*” (Hugh). This sense of shared difficulties was constructed as important in facilitating engagement and learning, “[you’d think] *my god I’m not the only one. I’m not the only one with these traits or condition whatever you’d call it and I found comfort in that. I did. And I think that because of that you open up more [...] I felt it was easy cause we were all like damaged goods* (Sarah).

The group was also described as providing individuals, often for the first time, with experiences of validation, support, safety and positive regard (7/10) “*the feeling of the support, the way other people were looking at me, you got the feeling that everybody wanted to hug each other and you know bring each other up, there was support with the patients towards each other and the major support from the workers*”. These experiences were described as facilitating engagement, and providing a safe space to practice *in vivo* the skills learnt in psychoeducation (6/10). In this way, the group can be understood as catalyst for psychological development and, through internalisation of the group experience, provided a defence against non-mentalising behaviours during the period between therapy sessions, “*normally I would just sit back and just let her just take advantage basically but the thing that popped into my head was I’m going to come here on Tuesday and speak about it and the group are going to think ‘Oh what did you do to stop that’ So, I actually did something about it*” (Jenny).

Mentalising was implicated in the majority of accounts (9/10) as central to the programme. Mentalising was understood by all participants as involving stopping and thinking before acting, “*To think about things, to think about how other folk might think. Think about it before you do it*” (Mary). It was seen as an important factor in developing a new perspective on the self, interpersonal relationships and the past; as Katie stated, “*instead of seeing things in black and white, like you see things from different angles and a bit of grey in between, instead of things being crazy one way or crazy the other*”. The experience of hearing different perspectives, contributing to the discussion (5/10) and observing failures in mentalising in others (3/10) was understood as helpful in developing this elusive ability, “*we’d be having a discussion and em I would be like ‘oh actually no maybe you know they did that because of this or because of that’ and then you’d realise ‘oh, this is what mentalising is’*” (Selina).

While the majority of participants (6/10) reported a situation in which they were challenged by the therapists, this was often seen as beneficial in promoting alternative

perspectives; as Liz said, describing her reaction to what was experienced as a direct challenge, *“I’m like, ‘you’re a dick’. At the same time, I’m like ‘God, that man’s right.”* The group structure, with two therapists, was understood as playing a similar role in promoting mentalising through the proffering of different perspectives, *“I quite liked it, because they’ve got different opinions, different ways of thinking [...] one will agree one disagree, you can kinda see both points, and [...] it helps with the mentalisation”*. Some participants (3/10) expressed unease or distress regarding the manner in which the therapists changed over the course of the programme. They experienced these changes as frightening and as contributing to a lack of security, *“And then they flipped the whole scenario on its head again, get in another person, swap therapists or whatever and then bang, it’s a game changer, you are right back there going “what the fuck”? Do you know what I mean? And then you’ve got somebody new to try and feel ok with in the room.”*

All participants spoke about aspects of the group that they would improve. These ‘missing pieces’ included extending the length group (6/10), making the afternoon session longer (3/10), decreasing the group size (5/10), increasing the number of males (2/10) and managing conversations to more effectively ensure everyone had an opportunity to speak (7/10).

Reflecting on change. All participants reflected upon the psychological, emotional and interpersonal changes (9/10), or lack thereof (1/10), that they noticed over the course of the Hub. Participants spoke of the manner in which they came to develop a new perspective on past events, which in turn facilitated a greater understanding of their present difficulties (6/10) *“My mum, all my life, bullied me, aye really, I just went along with what she said until I didn’t have a mind of my own, I did not realise it”* (Mary). Coupled with the positive experience of group belonging, this new perspective on the past, appeared to contribute to what participants understood as greater self-knowledge and a changed relationship to the self (7/10) *“before I*

didn't know who I was at all, I was so confused, and now I, I'm still like not fixed but it has made me more aware of the fact that... I'm important, which is a big deal” (Hazel).

Participants (7/10) spoke about noticing an improvement in their mood over the course of the Hub programme and a greater ability to regulate negative emotions (5/10), *“I used to go home and just be the nastiest person, and at the start I was still hitting things and stuff like that but now... I still get angry by I haven't hit things in ages [...] It's learning that you don't need to do something bad”* (Katie). They remarked on feeling happier (6/10), more confident (4/10) and of being more considerate of their own wants and needs (6/10). Many spoke proudly, with a sense of accomplishment, of engaging in activities they were unable to do prior to the group (6/10). Sarah captured this experience, contrasting *“I had my breakdown and went all to pot and I wouldn't come out of the house”* to *“I said, ‘I'm going to the craft shop’. I came out of here and I was actually in Central Square. I couldn't believe it, that I'd actually done it and I'm parking in Central Square and I'm like, hey look at me. No-one was interested like. I was so proud, I felt like I should get a sticker.”*

Most participants noticed a change in the manner in which they related to others (7/10). This was understood as an improved ability to challenge abusive interaction, express their needs in relationships and, through mentalisation, to interpret interpersonal interactions differently, *“Like if someone said something to you, you'd automatically think the bad of it, but you need to think what the other person is feeling”* (Katie). These developments led participants to re-evaluate relationships now believed to be negative, and re-establish dormant friendships. Mary spoke of the experience of visiting an old friends house *“And once I was there, I really really enjoyed myself. I came home full of the joys of heaven. Really, and I've had her out to my house and that's the first time I've had visitors in my house for 14 years. I've had family all the time but never pals ... for 14 years”*.

Despite these improvements participants constructed these changes as being only the start of a longer process of change (9/10). Joe spoke of his experience being around some old friends *“I seem to enjoy their company more and I'm slowly getting the feeling that they're enjoying my company whereas before it was like 'here's him again', or 'when's he leaving', sorta negative thoughts you know, and I'm still like that but there's a kind of new element involved, it's like I don't need to think that way”*. This complex experience of noticing positive change and feeling an increased sense of control, while at the same time being aware of difficulties and the power of old patterns of behaviour to reassert themselves was echoed in many participants accounts (6/10). Moreover, evident in some narratives (4/10), was an awareness of the difficulties of making change in circumstances marked by social isolation, negative familial relationships and a lack of resources. While some participants expressed disappointment there hadn't been greater change (4/10), others viewed the Hub as equipping them with the necessary skills to continue to make change in their own lives (6/10), *“I now have the tools, I now have to work with them. I know what to do, it's just doing it and getting the confidence and the courage to do it”* (Mary). However, imbedded within most participants' narratives (7/10) was a tension between a more optimistic view of the future and a fear that old patterns would reassert themselves *“I know it's never going to be completely...straight A normal. But, I know I can hopefully just keep on progressing. Hopefully.”*

The majority of participants expressed very positive attitudes toward the programme (8/10), *“I think it was an absolutely amazing opportunity and I know that it's not run nationwide and I know that like, I don't think I'd be here and feeling like I've got a smidgen of a future if, I didn't have it, it's awesome.”* (Hazel). Others found the Hub a negative experience (2/10), primarily due to an expressed understanding that they did not fit into the group, and advanced a strong belief there should more recognition that group formats are not appropriate all people *“It's going to work for some people but it's not going to work for every person that*

walks through that door and they've got to understand that. It's not, because if it was all the fucking same, why are there so many different therapies?"

Discussion

The current study is the first to examine the relationship between degree of interpersonal problems at baseline and extent of change in MBT for BPD within a routine delivery of MBT and provides provisional support for the utility of less intensive MBT interventions. Moreover, it enriches the growing evidence base on the clinical effectiveness of MBT (Choi-Kain et al., 2017) by exploring the manner in which service users give meaning to their experiences and understand the process of change.

A statistically significant reduction was found for overall psychological distress and all areas of symptom burden. These changes reached clinical significance in regard to psychoticism, hostility, phobic anxiety, paranoid ideation, anxiety, interpersonal sensitivity, overall distress and obsessive compulsive traits, with large effect size found for the latter three. The effect size of change in psychiatric symptoms found in the present study ($d = -.983$) is similar to the within group effect size reported by Bales and colleagues' (2015) evaluation of an 18 month MBT intervention ($d = -1.06$) despite service users in current study reporting greater levels of symptom severity at baseline. Moreover, results compare favourably to more intensive MBT interventions (Bateman & Fonagy, 2009; Jorgensen et al., 2013). A large effect was also found for reduction in overall level of interpersonal problems, and a moderate effect size for problems related to distancing and affiliating interpersonal behaviours. Consistent with this, a significant increase was found in levels of help seeking behaviour and overall level of service engagement, although only the former reached significance in the completer sample, suggesting that group members may become more likely to seek help from therapeutic staff as interpersonal problems related to distancing decrease

Contrary to hypotheses, there was no robust relationship found between baseline levels of interpersonal problems and extent of change post-treatment. This may be a function of the overall high level of interpersonal problems reported by participants at baseline, but also suggests that group based MBT may be appropriate for individuals with severe interpersonal problems. This was surprising, but may be attributable to past research (Dammann et al., 2016) only considering the relationship between interpersonal problems at baseline and level at outcome, not treatment gains. Of note in the current study is the similarity in reduction in affiliating and distancing behaviours, suggesting that MBT is equally effective in reducing both. Examination of the pattern of interpersonal problems over the course of the intervention reveals a rise in interpersonal problems between week eight and week twelve. This may be related the threat evoked by the change in therapeutic staff and a move to discussing the various elements of the SCID-II during this period. Additionally, as the group came to form closer relationships, the attachment system may have been activated resulting in an increase in non-mentalising behaviours. Surprisingly, no relationship was found between level of service engagement at either time point and extent of change in outcome variables. The SES was designed to measure treatment compliance in outpatients with psychosis and as a result may not be sensitive to engagement issues within psychological therapies, or in BPD treatment pathways.

Participant narratives reflected these changes and provided a contextualised and expanded understanding of process related factors. Most participants reported a more stable sense of self, an improvement in mood and increased engagement in behaviours which they deemed positive. They noted an increased confidence in interpersonal interactions and an ability to form more satisfactory relationships. For some this manifested in a greater ability to challenge negative relational dynamics while for others it was an ability to form more genuine relationships with others. This was accounted for in a number of ways. Central among these

was an ability to take the perspective of others, to think before acting and a greater sense of self awareness, confidence and security. These findings concur with the hypothesis that mentalisation is crucial for a robust sense of self, personal security, mutuality in relationships and constructive social interactions (Fonagy, Luyten, & Bateman, 2015). Moreover, it supports targeting mentalising ability as a therapeutic goal for individuals with BPD.

The BPD-specific nature of the group was identified as important in providing a sense of shared experiences, safety and understanding. Overcoming initial fears to develop a sense of belonging to the group emerged as critical in participants accounts of their process of change. This reinforces the importance of group work in BPD (Bateman & Fonagy, 2008) and echoes the utility of group therapy as a treatment component in interventions for BPD (Omar, Tejerina-Arreal, & Crawford, 2014). However, group work was initially anxiety-provoking to most participants, and the process of building trust and reducing defences was a slow process. Successfully navigating this process was linked by participants with validation, social support and a normalising experience. Consistent with the principles of MBT group work (Bateman & Fonagy, 2010), they also provided individuals with a space to practice mentalising and emotional regulation in affect laden interpersonal interactions. While many participants adjusted to changes in the therapeutic staff, this was viewed as a frightening experience and our findings suggest it is important for staff to carefully monitor the therapeutic relationship prior to such changes. Similarly, a delicate balance must be struck between challenging service user perspectives and maintaining the therapeutic relationship. Although, participants found such challenges as difficult to cope with, all but one found them a valuable learning experience that provided access to new perspectives.

Despite the gains outlined above, in the current study no service user moved below the clinical cut-off on any measure of psychiatric symptom burden and levels of interpersonal problems remained high. The reduction in interpersonal problems reported in the current study

was smaller than that reported by Bateman and Fonagy (2009) in an 18-month outpatient MBT intervention. Considering the centrality of the group in participants accounts, it may be hypothesised that the longer intervention provided service users with increased group experiences resulting in improved mentalisation and a concomitant greater impact on levels of interpersonal functioning. The continuing difficulties faced by service users was reflected in their narratives. They recognised that there continued experience significant psychosocial distress in their lives and none considered themselves ‘cured’. Consistent with a view of mentalisation as a “dynamic capacity influenced by stress and arousal” (Fonagy, Bateman, & Luyten, 2012, p. 19) they spoke of the ‘struggle’ to mentalise, particularly in attachment relationships, of experiencing low mood, anxiety and of the difficulties of making change in lives blighted by social isolation, poverty, abusive relationships and experiences of trauma. Despite this, most participants expressed very positive views toward the intervention and reported feeling hopeful toward the future. This understanding of the Hub as a necessary, but not sufficient, step on the road to improved wellbeing, chimes with the literature on the role of specialist services within complex care delivery models for BPD (National Collaborating Centre for Mental Health, 2009) and is consistent with the conceptualisation of the Hub as one component of a longer BPD care pathway.

Study findings should be considered in the light of a number of limitations. The study used a non-experimental, non-randomised design and thus was subject to a number of threats to external and internal validity including selection bias, environmental effects, confounding influences and statistical regression. However, the study was embedded within routine clinical practice, thus giving face validity. The study was under-powered to detect small effect sizes and thus was prone to Type II errors. The purported mechanism of change in MBT, greater mentalising ability was not assessed quantitatively and the SES is not a validated measure of the therapeutic relationship in group therapy. Given the sensitive nature of the questions asked

during the semi-structured interviews, it is possible that participants may have withheld information or shaped their answers in particular directions. The first authors professional role and exposure to previous theory likely influenced the manner in which semi structured interviews were conducted and analysed.

Conclusion

The change in interpersonal problems and symptom burden reported by participants offers further, if tentative, support to this group only intervention. Our results suggest that a short, modified version of MBT has utility in reducing distress and interpersonal problems among adults with a diagnosis of BPD. Participant accounts indicate that the group nature of the intervention was challenging but important in facilitating validating interpersonal interactions and an opportunity to practice mentalising skills. Consistent with MBT, participants linked an increased ability to reflect upon their own cognitive states and the cognitive states of states of others with an improvement in interpersonal relations and emotional wellbeing. A future controlled study, of sufficient power, is required to develop upon these findings and examine the durability of gains. This study should include a measure of reflective functioning and examine its predicted role as a mechanism of change. It is important for future research to identify those variables determining which individuals would benefit from shorter, less intensive MBT interventions and which require most intensive treatment.

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Appendix A: Instructions to authors

Journal of Personality Disorders

Instructions to Authors

Types of Articles

Regular Articles: Reports of original work should not normally exceed 30 pages (typed, double-lined spaces, and with standard margins, including tables, figures, and references). Occasionally, an author may feel that he or she needs to exceed this length (e.g., a report of a series of studies, or a report that would benefit from more extensive technical detail). In these circumstances, an author may submit a lengthier manuscript, but the author should describe the rationale for a submission exceeding 30 pages in the cover letter accompanying the submission. This rationale will be taken into account by the Editors, as part of the review process, in determining if the increased length is justified.

Invited Essays and Special Articles: These articles provide an overview of broad-ranging areas of research and conceptual formulations dealing with substantive theoretical issues. Reports of large-scale definitive empirical studies may also be submitted. Articles should not exceed 40 pages including tables, figures, and references. Authors contemplating such an article are advised to contact the editor in advance to see whether the topic is appropriate and whether other articles in this topic are planned.

Brief Reports: Short descriptions of empirical studies not exceeding 20 pages in length including tables, figures, and references.

Web-Based Submissions: Manuscripts must be produced electronically using word processing software, double spaced, and submitted along with a cover letter to <http://jpd.msubmit.net>. Authors may choose blind or non-blind review. Please specify which option you are choosing in your cover letter. If you choose blind review, please prepare the manuscript accordingly (e.g., remove identifying information from the first page of the manuscript, etc.). All articles should be prepared in accordance with the *Publication Manual of the American Psychological Association*. They must be preceded by a brief abstract and adhere to APA referencing format.

Tables should be submitted in Excel. Tables formatted in Microsoft Word's Table function are also acceptable. (Tables should not be submitted using tabs, returns, or spaces as formatting tools.)

Figures must be submitted separately as graphic files (in order of preference: tif, eps, jpg, bmp, gif; note that PowerPoint is not acceptable) in the highest possible resolution. Figure caption text should be included in the article's Microsoft Word file. All figures must be readable in black and white.

Permissions: Contributors are responsible for obtaining permission from copyright owners if they use an illustration, table, or lengthy quote (100+ words) that has been

published elsewhere. Contributors should write both the publisher and author of such material, requesting nonexclusive world rights in all languages for use in the article and in all future editions of it.

References: Authors should consult the publication manual of the American Psychological Association for rules on format and style. All research papers submitted to the *Journal of Personality Disorders* must conform to the ethical standards of the American Psychological Association. Articles should be written in nonsexist language. **Any manuscripts with references that are incorrectly formatted will be returned by the publisher for revision.**

Sample References:

Davis, C. G., & McKearney, J. M. (2003). How do people grow from their experience with trauma or loss? *Journal of Social & Clinical Psychology, 22*(5), 477-492.

Dweck, C., & Wortman, C. (1982). Learned helplessness, anxiety and achievement. In H. Kron & L. Laux (Eds.), *Achievement, stress, and anxiety* (pp. 93-125). Washington, DC: Hemisphere Publishing Group.

Roelofs, J., Meesters, C., Ter Huurne, M., Bamelis, L., & Muris, P. (2006). On the links between attachment style, parental rearing behaviors, and internalizing and externalizing problems in nonclinical children. *Journal of Child and Family Studies, 15*, 331-344.

Appendix B: Example of search strategy

Pub Med

1: (((Borderline Personality Disorder[Title/Abstract]) OR Borderline Traits[Title/Abstract]) OR BPD[Title/Abstract]) OR "borderline personality disorder"[MeSH Major Topic]

2: attachment[Title/Abstract]

3: ((((((Borderline Personality Disorder[Title/Abstract]) OR Borderline Traits[Title/Abstract]) OR BPD[Title/Abstract]) OR "borderline personality disorder"[MeSH Major Topic])) AND attachment[Title/Abstract])

MEDLINE

- 1 exp Object Attachment/ or exp Mother-Child Relations/
- 2 attachment.ab. or attachment.ti.
- 3 1 or 2
- 4 exp Borderline Personality Disorder/
- 5 (Borderline Personality Disorder or BPD or Borderline Traits).ab.
- 6 (Borderline Personality Disorder or Borderline Traits or BPD).ti.
- 7 4 or 3 or 6
- 8 3 and 7

CINAHL

S5 AND S6

- | | |
|----|--|
| S6 | S3 OR S4 |
| S5 | S1 OR S2 |
| S4 | AB borderline personality disorder OR AB borderline traits OR AB bpd OR TI borderline personality disorder OR TI borderline traits OR TI bpd |
| S3 | (MH "Borderline Personality Disorder") |
| S2 | AB attachment OR AB attachment OR TI attachment OR TI attachment |
| S1 | (MH "Attachment Behavior+") |

Appendix C: Coding form (narrative measure of attachment)

Basic Study Information	
Title	
Author	
Reference	
Year	
Study Ref	
Aim of study	
Study Design	
Country of origin	
Publication Status	

Recruitment	
Recruitment Procedure	
Comments on Recruitment	
Inclusion	
Exclusion	

Participant Characteristics				
Comparison Population (s)				
BPD Population				
	BPD	Control 1	Control 2	
Age				
Percentage of Females				
Sample Size				
Comment				

Attachment Measurement	
Attachment Tool	
Measurement Procedure	
Attachment Categorisation	
Attachment to whom	
Comment	
BPD Measurement	
Method of BPD Diagnosis	

Name of Assessment	
Type of Assessment	
Comment	

Results				
Stats				
	Secure	Preoccupied	Fearful	Dismissing
BPD				
Control 1				
Control 2				

Other comments or reflections				
Stats				
	Secure	Preoccupied	Fearful	Dismissing
BPD				
Control 1				
Control 2				

Appendix D: Risk of bias assessment form.

Risk of Bias Assessment: Modified from SIGN checklist for case control studies and the AHRQ.

Study identification.

Reviewer:

Section 1: Internal validity

In a well conducted case control study: *Does this study do it?*

1.1	The study addresses an appropriate and clearly focused question. ¹	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	

SELECTION OF SUBJECTS

1.2	Comparison is made between participants and non-participants to establish their similarities or differences.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	

1.3	Selection minimises baseline differences.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	

1.4	Cases are clearly defined and differentiated from controls.	Cases:	Controls:
-----	---	--------	-----------

1.5	It is clearly established that controls are non-cases.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	

ASSESSMENT

1.6	Measure have been taken to prevent knowledge of BPD diagnosis influencing attachment categorisation (narrative studies only).	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	Does not apply <input type="checkbox"/>

1.7	BPD status is measured in a standard, valid and reliable way.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	

1,8	Attachment organisation is measured in a standard, valid and reliable way.		
-----	--	--	--

CONFOUNDING			
1.9	Are there likely confounders?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	
STATISTICAL ANALYSIS			
1.10	Is the analytic method used appropriate?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	
1.11	Is the study sufficiently powered?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	
SECTION 2: OVERALL ASSESSMENT OF THE STUDY			
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, do you think there is clear evidence of an association between BPD and attachment?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Can't say <input type="checkbox"/>	
2.3	Can this study be best categorised as Excellent, Good, Poor or Unacceptable?		
2.4	Notes. Summarise the authors conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.		

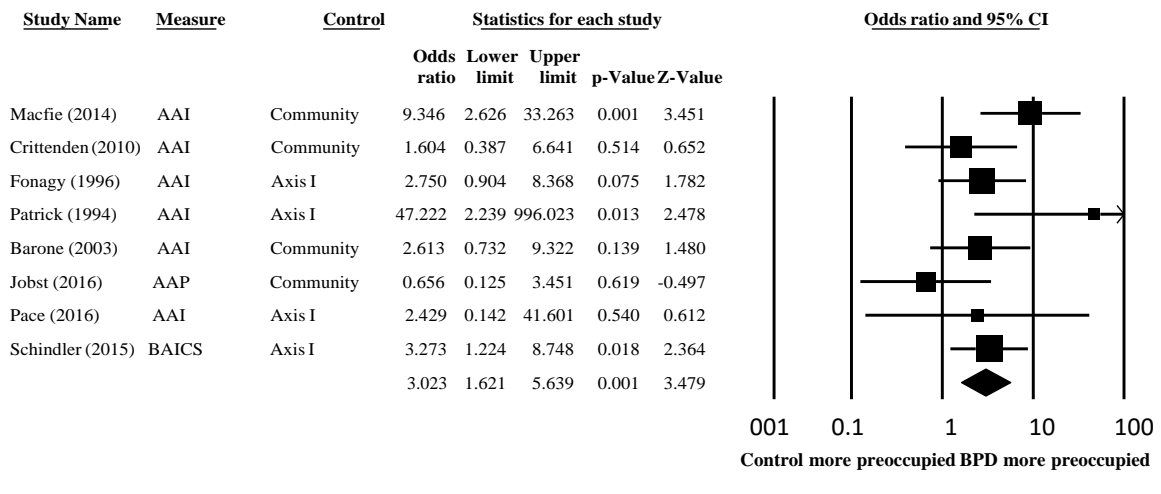
Appendix E: Scales correlated with ECR avoidance and anxiety

Appendix 5. Scales correlated with ECR avoidance and attachment			
Measure	Scale	Avoidance (r)	Anxiety (r)
ASQ	Self Confidence	-.69	

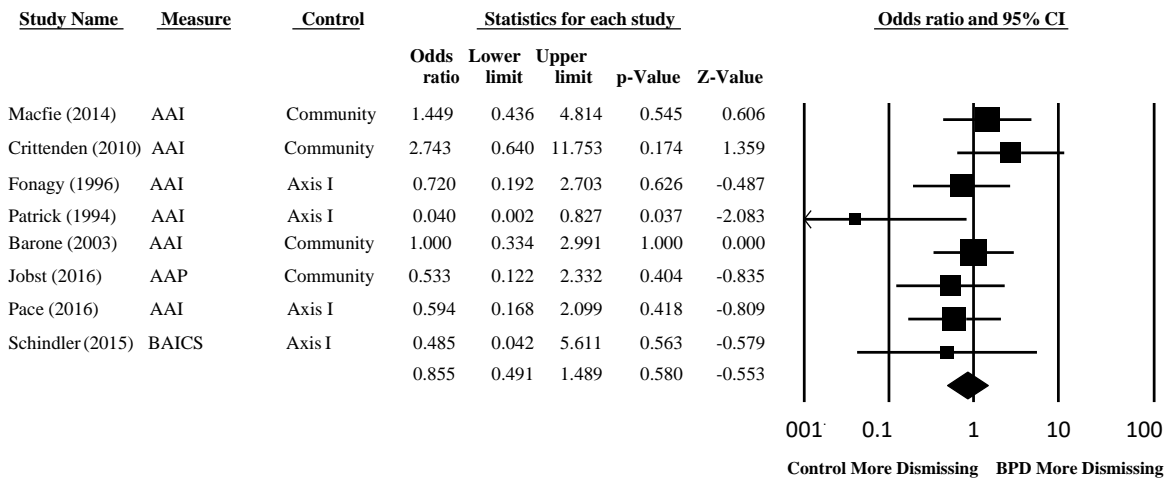
	Discomfort Closeness	.88	
	Relationship Sec	.56	
	Need Approval		.63
	Preoccupation		.88
RAQ	Availability Partner	-.61	
	Comp Self Reliance	.88	
	Partner Secure Base	-.78	
	Angry Withdrawal		.67
	Feared Loss of Partner		.69
RQ	Fearful	.51	.66
RSQ	Fearfulness	.81	
	Security	-.70	
	Preoccupation		.73

Appendix F: Forest plots for dismissing and preoccupied attachment

Forest plot of studies in which preoccupied attachment in a BPD sample can be compared to a control



Forest plot of studies in which dismissing attachment in a BPD sample can be compared to a control



Appendix G: Semi-structured interview schedule

Semi-Structured Interview Schedule

Consistent with the ethos of Interpretative Phenomenological Analysis this schedule provides a guide to the areas I wish to explore and a platform from which participants can shape the direction of the interview, rather than a prescriptive formula.

Personal

Can you tell me a little about what your life was like before you started the Hub Program?

If I met you before you started the Hub Program what would you have been like?

- Prompt: How would you have described yourself?
- Prompt: What sort of things did you struggle with?
- Prompt: What was your mood like before the program?

The Hub Program

Why did you decide to come to the Hub Program?

What did you expect before you came along?

What was your experience of the Hub program like?

Did you find the Hub program helpful?

- Prompt: In what ways was it helpful/unhelpful?
- Prompt: Was there anything about it that you found helpful/unhelpful.

Potential Changes

Individual

Have you noticed any changes in yourself over the course of the program?

- Prompt: Could you talk about any changes you noticed in your mood over the course of the Hub?
- Could you talk about any changes in the way you behave?

What do you think helped bringing about these changes/Why do you think there was no change?

Interpersonal Relationships

Could you talk a little bit about your relationships with other people?

- Prompt: Who are the important people in your life?
- Prompt: Could you talk a little about what your relationships were like before the hub?
- Prompt: What are your relationships like with other people now?

What do you think helped bringing about these changes/why do you think there was no change?

Hub Structure

What do you think of the way the program was structured?

- Prompt: What was it like to work in a group?
- Prompt: What was it like to have 2 co therapists.

If you ever had therapy before was there anything different about the Hub?

Do you have any other thoughts about the programme?

Ending

How do you see your future after the Hub finishes?

- Prompt: Has this changed at all over the course of the Hub?

Is there anything else you would like to share?

Appendix H: Letter confirming ethical approval (REC)

North of Scotland Research Ethics Committee

Summerfield House
2 Eday Road
Aberdeen
AB15 6RE

Telephone: 01224 558458
Facsimile: 01224 558609
Email: nosres@nhs.net



14 April 2016

Mr John Flood
Young People's Department
Royal Cornhill Hospital
ABERDEEN
AB25 2ZH

Dear Mr Flood

Study title: A pilot evaluation of the HUB program: a mentalization based therapy for Borderline Personality Disorder
REC reference: 13/NS/0158
Amendment number: AM01
Amendment date: 11 March 2016
Amendment Summary: Change of Chief Investigator
Modify Semi-Structured Interview is conducted
IRAS project ID: 139224

The above amendment was reviewed at the meeting of the Sub-Committee held in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Covering letter on headed paper - Email		06 April 2016
Interview schedules or topic guides for participants Phase 2	1	09 March 2016
Notice of Substantial Amendment (non-CTIMP)	AM01	11 March 2016
Details of proposed amendments		09 March 2016
IRAS REC Application Form	139224/955049/1/30	06 April 2016
Participant consent form - Phase 2	1	08 February 2016

Document	Version	Date
Participant information sheet - Phase 2	1	08 February 2016
Research protocol or project proposal	2	09 February 2016
Research protocol or project proposal - Original	1	12 September 2013
Summary CV for Chief Investigator - John Flood		09 March 2016

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

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.

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

13/NS/0158:	Please quote this number on all correspondence
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Yours sincerely



Pp'd on behalf
Mr Gary Cooper
Chair

Enclosures: List of names and professions of members who took part in the review

Copy to: NHSG R&D Department
Prof Charlotte Clarke

North of Scotland Research Ethics Committee 2

Attendance at Sub-Committee of the REC meeting by correspondence

Committee Members:

<i>Name</i>	<i>Profession</i>	<i>Present</i>	<i>Notes</i>
Mr Gary Cooper	Lay Member - Chair and Quality Assurance Manager	Yes	
Professor Nigel Webster	Professor of Anaesthesia and Intensive Care Medicine	Yes	

Also in attendance:

<i>Name</i>	<i>Position (or reason for attending)</i>
Miss Karen Gauld	Ethics Administrator

Appendix I: Caldicott approval

FLOOD, John (NHS GRAMPIAN)

From: Caldicott NHSG (NHS GRAMPIAN)
Sent: 07 July 2016 13:54
To: Flood John (NHS GRAMPIAN)
Subject: RE: Caldicott Application

Hi John

Thanks for confirming. It does appear a bit excessive but if that is university policy then will go with that.

Regards

Chris

Chris Morrice
Information Governance Manager
NHS Grampian
Rosehill House, ARI, Foresterhill Site, Cornhill Road, Aberdeen, AB25 2ZG
Tel. 01224 551054 Fax. 01224 661574 Email: christopher.morrice@nhs.net

From: Flood John (NHS GRAMPIAN)
Sent: 06 July 2016 09:53
To: Caldicott NHSG (NHS GRAMPIAN)
Subject: RE: Caldicott Application

Dear Chris,

It's good to hear from you. That's no trouble re the delay, I appreciate it takes a while to work through the backlog.

I'm happy to confirm that patient identifiable data will be held securely in a locked cabinet. The 10 year number was on the advice of my supervisor and is in line with university guidance. If this is an issue however I can broach it with my supervisor.

Kind Regards,
John

From: Caldicott NHSG (NHS GRAMPIAN)
Sent: 05 July 2016 14:52
To: Cassie Lyndsay (NHS GRAMPIAN); Flood John (NHS GRAMPIAN)
Cc: Morrice Christopher (NHS GRAMPIAN)
Subject: RE: Caldicott Application

Dear John

My sincere apologies for the delay due to a backlog of applications and our staffing shortage.

I am happy to recommend Caldicott approval on condition that patient identifiable data will be held securely in a locked cabinet. Do you require signed proof or will my email suffice? The one question I had was the length of time personal data will be stored i.e. 10 years. I take it there is a reason for that time?

Regards

Chris