

**An evaluation of self-report measures of adult attachment**

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Biology, Medicine and Health

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## **Thesis Abstract**

Paper one presents a systematic review of 40 studies investigating the psychometric properties of self-report measures of adult secure attachment. This paper sought to critically appraise the methodological quality of the studies, evaluate results in line with criteria for good measurement properties, and grade the overall quality of the evidence available. The studies included collectively reported on 24 instruments, none of which were identified as having robust evidence across a range of measurement properties. However, the Attachment Style Questionnaire – Short Form, the Cartes-Modèles Individuels de Relations, Cartes-Modèles Individuels de Relations-Reduced, and the Psychological Treatment Inventory – Attachment Style Scales (PTI-ASS) emerged as having the most promising psychometric evidence. Overall, this review found that the methodological quality of included studies was variable and that existing measures have limited psychometric support.

Paper two aimed to validate the recently revised Psychosis Attachment Measure (PAM-R), which had been extended to include a measure of disorganised adult attachment. A psychosis sample was recruited online, and participants completed a battery of questionnaires which would allow an assessment of the measure's structural validity, test-retest reliability, internal consistency, and construct validity. Confirmatory Factor Analysis indicated a three-factor solution, however the overall model fit was improved through the removal of four items. All subscales of the PAM-R were internally consistent and the measure was found to be reliable across a two-week interval. The disorganised subscale correlated in expected directions with other conceptually related measures, but the magnitude of the relationship with the trauma measure fell below expectations. Overall this study indicated that the PAM-R is a valid and reliable attachment measure, however the limitations of the sample were noted. Further research is needed to replicate the findings within a representative clinical sample and assess other relevant psychometric properties, such as discriminant validity.

Paper three provides a critical evaluation of both research papers. This includes a discussion of theoretical and methodological considerations, alongside the author's reflections on the research process and the implications of this on their own practice.

## **Declaration**

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

## **Copyright statement**

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Thank you all, sincerely.



## **Paper One: Literature Review**

### **Self-report measures of secure attachment in adulthood: A systematic review**

*For submission to Clinical Psychology & Psychotherapy*

The submission guidelines for authors are presented in Appendix A.

Please note – for the purpose of this thesis and ease of reading, all tables have been added to the main body of the text.

Word count excluding abstract, tables, figures, and references: 4880

**Conflict of interest**

Declarations of interest: none.

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**Data availability**

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## **Abstract**

*Background:* Secure attachment in adulthood is associated with many markers of adaptive functioning. Valid and reliable self-report measures of attachment security could provide a practical tool to help advance strengths-based research and clinical work. Previous reviews have not specifically examined the psychometric properties of self-report instruments with respects to secure attachment, or systematically appraised the methodological quality of relevant validation studies.

*Method:* A systematic review was completed in accordance with the COSMIN guidelines for reviews of patient-reported outcome measures. The methodological quality of individual studies was evaluated, and results were rated against criteria for good measurement properties.

*Results:* 40 studies were included in the review, which collectively reported on 24 self-report instruments. The methodological quality of individual studies was variable, and no single instrument was identified as having sufficient evidence of a range of psychometric properties. However, the Attachment Style Questionnaire – Short Form (ASQ-SF), the Cartes-Modèles Individuels de Relations (CAMIR), Cartes-Modèles Individuels de Relations-Reduced (CAMIR-R), and the Psychological Treatment Inventory – Attachment Style Scales (PTI-ASS) had the most robust evidence for the properties assessed.

*Conclusion:* Existing self-report measures assessing adult secure attachment have limited psychometric support. More methodologically robust studies of content validity, reliability, measurement invariance, and construct validity in particular are needed.

## **Key practitioner message**

- Secure attachment is associated with many markers of adaptive functioning in adulthood.
- Valid, reliable, and practical measures of secure attachment can advance strengths-based work.
- This review systematically appraises self-report secure attachment measures in adults.
- Few attachment measures assessing adult secure attachment are psychometrically sound.
- Greater methodological rigour in studies evaluating psychometric properties is needed.

## **Keywords**

Attachment; Secure; Psychometric; Self-report; Adult; Validity

## **Introduction**

### *Secure attachment: theoretical background and developmental trajectory*

One of the central tenets of attachment theory is that an individual's early experiences with caregivers profoundly impact their relationships across the lifespan (Bowlby, 1969). Bowlby argued that these early interpersonal interactions shape a person's understanding of themselves, other people, and relationships in general (Bowlby, 1979). This is known as their "internal working model" – a dynamic interpersonal blueprint which allows people to make predictions about their social world and guide future behaviour within relationships (Bowlby et al., 1989). The nature and quality of early caregiving experiences give rise to individual differences in attachment behaviour, known as attachment styles (Ainsworth, 1979; Main & Solomon, 1986).

Caregivers' sensitivity to distress appears to be an important differentiating factor that impacts attachment styles (McElwain & Booth-Laforce, 2006). Securely attached infants tend to have caregivers who are emotionally attuned and available – the relationship provides them with a "secure base", enabling them to confidently explore the world and regulate their distress (Ainsworth & Bowlby, 1991). This contrasts with insecurely attached infants, who are more likely to experience their caregivers as rejecting, inconsistent, or frightening, thus impacting infants' ability manage stressors and become appropriately independent (Ainsworth, 1979; Main & Solomon, 1986).

Attachment styles remain moderately stable into adulthood (Fraley, 2002; Pincus et al., 2013), where they have been linked with a wide range of biopsychosocial outcomes, such as emotional regulation, mental health, and interpersonal functioning (Mikulincer & Shaver, 2012; Shaver & Mikulincer, 2014). In adults, secure attachment is characterised by comfort within close relationships and interpersonal trust, which is underpinned by a generally positive view of the self and others (Bartholomew & Horowitz, 1990). With this in mind, it follows that research has consistently indicated a relationship between secure attachment and improved resilience (Bender & Ingram, 2018), social competence (DiTommaso et al., 2003), and self-worth (Bylsma et al., 1997), among other markers of adaptive functioning.

### *The measurement of adult attachment styles*

The "gold standard" for the assessment of adult attachment patterns is the Adult Attachment Interview, which assesses current "states of mind" with respects to attachment (AAI; George et al., 1985). This is achieved by analysing the comparative quality, coherence,

and depth of responses to structured interview questions, ultimately resulting in participants being classified as having a secure, or one of three insecure, attachment styles (George et al., 1996). The psychometric properties of the AAI have been well-documented across different populations (see Bakermans-Kranenburg & IJzendoorn, 1993; Besharat, 2011; Sagi et al., 1994). However, the length of administration, transcription, scoring, and the training and preparation required for each interview (George et al., 1996) creates various practical and financial barriers which may make the AAI inaccessible for many researchers and clinicians wishing to assess attachment.

The availability of brief, self-report measures presents an attractive alternative which could address these issues. Indeed, following Hazan and Shaver's (1987) seminal paper, which introduced a three-category self-report measure of adult attachment, there has been a proliferation of questionnaire measures (e.g. The Relationship Questionnaire [RQ], Bartholomew & Horowitz, 1990; Relationship Scales Questionnaire [RSQ], Griffin & Bartholomew, 1994). Such self-report measures assess attachment through targeted questions around people's thoughts, feelings, and behaviours within relationships. Some measures are based on the categorical models of attachment (i.e. the secure vs. insecure typologies), whilst others yield scores across two or more dimensions (Shaver & Mikulincer, 2004). The latter approach measures attachment according to underlying dimensions (such as anxiety and avoidance), which allows for more individual variability to be captured (Ravitz et al., 2010).

#### *The issues with self-report measures and assessing security*

Although self-report measures theoretically represent a time- and cost-effective solution to the assessment of adult attachment, there are concerns with respects to their validity and reliability. Kurdek (2002) noted that the psychometric properties of measures used in attachment research have not been critically examined, and papers which have carried out such evaluations often have significant methodological limitations. Similarly, widely used measures such as the RQ (Bartholomew & Horowitz, 1990) and the Adult Attachment Style Self-Report (AASS; Hazan & Shaver, 1987), which classify participants based on responses to single items, have issues in terms of their ability to evaluate within-group variability and the complexity of the attachment styles being targeted.

Questions have also been raised with respects to some dimensional measures and their capacity to adequately assess adult secure attachment. For instance, the popular Experiences in Close Relationships scale (ECR) is based on two largely uncorrelated dimensions, avoidance and anxiety, with security being inferred from low scores on both dimensions

(Brennan, Clark, & Shaver, 1998). However, researchers such as Bäckström and Holmes (2007) have argued that security cannot be conceptualised as merely an absence of anxiety and avoidance. In line with attachment theory, secure attachment provides an inner resource which allows individuals to adaptively cope with stressors (Bowlby, 1988), process information in a flexible and positively biased manner (Dykas & Cassidy, 2011), and be more in tune with the mental states of the self and others (Fonagy & Target, 2005). As such, security as measured by the ECR likely represents more of a “neutral point” in terms of attachment behaviour, rather than capturing the positive content associated with this attachment style (Bäckström & Holmes, 2007).

### *Rationale for this review*

Lopez et al. (2019) argued that “the assessment of strengths is a neglected competency in psychology”, an assertion which is realised in the adult attachment literature to some degree. Unlike the interview-based assessment methods, Ravitz et al. (2010) highlighted that numerous self-report measures do not specifically measure secure attachment. Given the aforementioned concerns around some dimensional measures and the relatively limited psychometric evidence available, this raises the question – when it comes to self-report measures, are we measuring security at all?

The lack of practical, valid, and reliable instruments presents a significant barrier to advancing strengths-based research and clinical work (Lopez et al., 2019). Although there have been several reviews on adult measures of attachment (Lyddon et al., 1993; Garbarino, 1998; Ravitz et al., 2010), to date there has not been a specific investigation into the psychometric properties of self-report measures of adult secure attachment. In addition, previous reviews have not incorporated a systematic appraisal of the methodological quality of the studies included, which limits the conclusions that can be drawn about the psychometric properties of the instruments assessed.

### *Objectives*

This review aimed to i) identify the self-report measures available which assess adult secure attachment, ii) evaluate the methodological quality of studies investigating the psychometric properties of relevant self-report measures using a standardised assessment tool, iii) classify and grade the quality of the evidence presented in the research papers, iv) summarise the results and make recommendations around which attachment measures have the most robust psychometric properties, to inform future research and/or clinical practice.

## **Method**

This systematic literature review was completed in accordance with the updated PRISMA 2020 guidelines (Page et al., 2021) and COSMIN guidelines for systematic reviews of patient-reported outcome measures (Prinsen et al., 2018; Terwee et al., 2017). See Appendix B for PRISMA checklist. The study was registered with PROSPERO (CRD 42021229466; Appendix C); the approved protocol is publicly available.

### *Eligibility criteria*

Inclusion criteria were: 1) English language; 2) publication in a peer-reviewed journal; 3) average age of the sample is 18 or above; 4) aim of the study is to evaluate the psychometric properties of a self-report measure, which has a specific secure attachment subscale.

Exclusion criteria were: 1) review papers, case studies, book chapters, monographs, dissertations, or conference extracts; 2) studies which solely use the measure to validate another instrument; 3) measures designed for individuals with a learning disability or difficulty; 4) measures or subscales which were not developed to distinctly assess secure attachment. This included measures where the concept of secure attachment was derived from scores across subscales of other attachment styles or features. The ECR and Feeney et al.'s (1994) Attachment Style Questionnaire (ASQ-F) were therefore excluded, due to concerns that their conceptualisation of attachment security was incomplete/imprecise. These concerns were reflected in Bäckström and Holmes' (2007) critique of the ECR, whilst Feeney et al. recognised that the F-ASQ did not evaluate comfort with intimacy – a central characteristic of the secure style.

It is noted that papers describing the development of a new measure, where the factor structure was yet to be assessed, were included if there were specific items designed to capture security and authors had developed their items based on a three- or four-category model of attachment (i.e. security and two or three insecure attachment patterns). The original paper which described the development of the Adult Attachment Scales (AAS; Collins & Read, 1990) was included for this reason. However, subsequent papers which utilised their Depend, Close, and Anxiety scales were not, as these factors included items designed to assess more than one attachment style.

### *Search strategy*

EMBASE, CINAHL, MEDLINE, PsychINFO, and Web of Science databases were searched in June 2021; this was repeated in February 2022. The search limit of “abstract” was

applied to searches across all databases; “peer review” was also applied to CINAHL and PsychInfo, however a corresponding limit was not available for the remaining databases. No language limits were applied so that the authors could be made aware of papers which may have been relevant to the research question but were beyond the scope of this review owing to them not being written in English.

COSMIN guidelines (Prinsen et al., 2018) recommend that search terms are developed across four key elements: 1) construct; 2) population; 3) type of instrument, and 4) measurement properties. The search strategy was devised with this in mind, however the research team opted not to include terms for the population, due to the risk of relevant papers being excluded. It was recognised that psychometric studies may only refer to specific measures at the abstract level, thus the inclusion of a population-based search term would likely be too restrictive. The full search strategy can be found at the PROSPERO protocol registration for this review. In addition to the database searches, the reference lists of eligible studies were also reviewed.

#### *Selection process*

Titles and abstracts were screened by the first author; 10% of these (N=455) were also reviewed by an independent researcher to corroborate the systematic review screening process. Over 99% agreement was achieved across all studies included within this subgroup ( $kappa=.85$ ). Full text articles were all reviewed by the research team members and studies were included when a consensus was reached.

#### *Data extraction*

The COSMIN taxonomy (Table 1) was used to identify the measurement properties assessed in each study and ensure the standardisation of this process (Mokkink, 2018). The COSMIN table templates were used to inform data extraction.



**Table 1.***COSMIN definitions of measurement properties (Mokkink, 2018).*

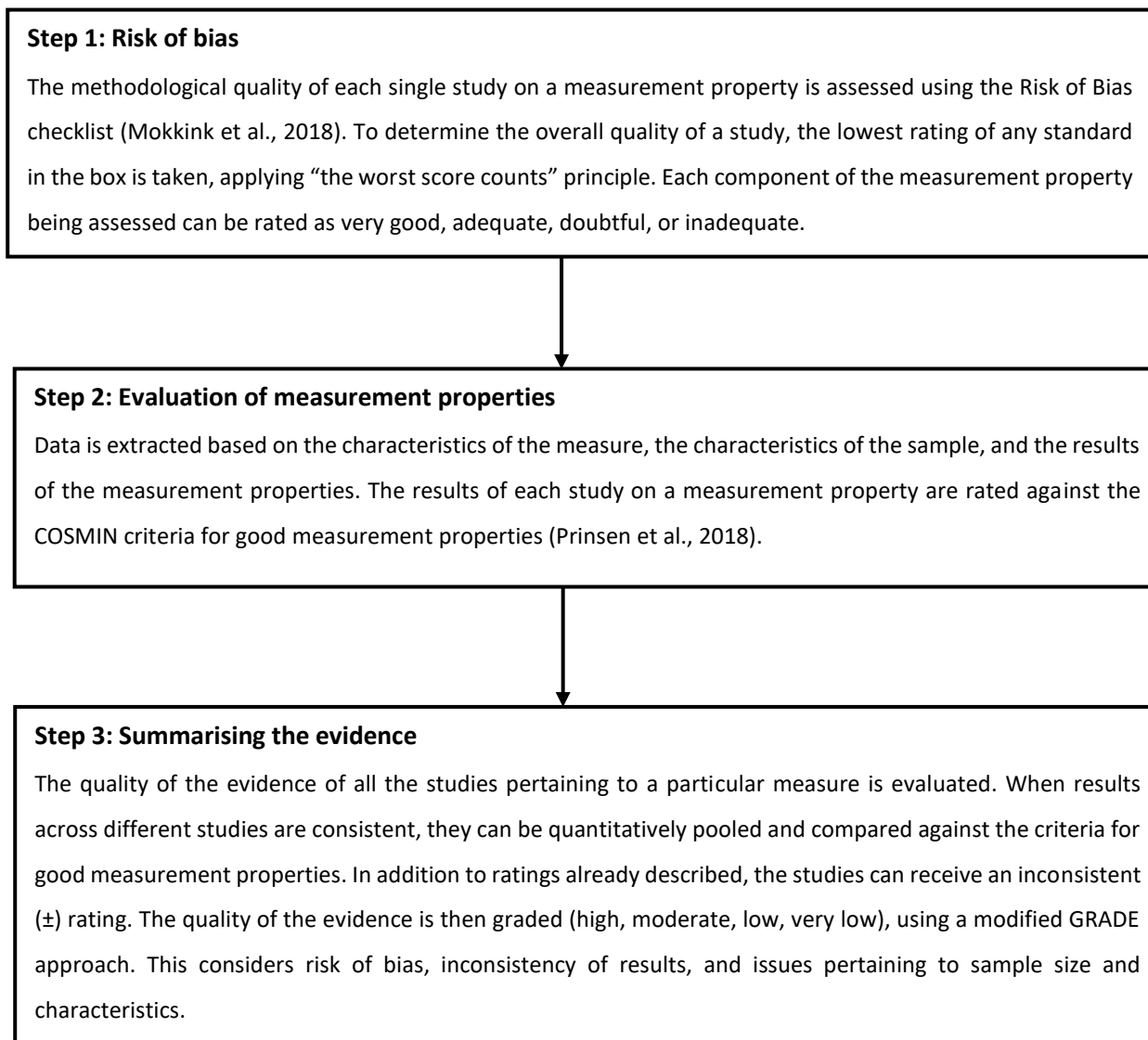
<b>Domain</b>	<b>Measurement property</b>	<b>Definition</b>
<b>Reliability</b>		The degree to which the measurement is free from measurement error
	Internal consistency	The degree of the interrelatedness among the items
	Reliability	The extent to which scores for participants who have not changed are the same for repeated measurement under several conditions (i.e. inter-rater, intra-rater, test-retest)
	Measurement error	The systematic and random error of a participant's score that is not attributed to true changes in the construct to be measured
<b>Validity</b>		The degree to which a PROM measures the construct it purports to measure
	Content validity	The degree to which the content of a PROM is an adequate reflection of the construct to be measured
	Face validity	The degree to which the items of a PROM look as though they are an adequate reflection of the construct to be measured
	Construct validity	The degree to which the scores of a PROM are consistent with hypotheses
	Structural validity	The degree to which the scores of a PROM are an adequate reflection of the dimensionality of the construct to be measured
	Criterion validity	The degree to which the scores of a PROM are an adequate reflection of a "gold standard"

*Assessment of measurement properties*

The assessment of each measurement property followed three sub steps, outlined in Figure 1. The first author and an independent researcher carried out the risk of bias assessment separately for all studies included within this review. Discrepancies were resolved through discussions with the research team.

**Figure 1.**

*COSMIN methodology for the evaluation of measurement properties (Mokkink et al., 2018).*



If reported, the measurement properties of individual studies were evaluated in the following order: content validity, structural validity, internal consistency, cross-cultural validity/measurement invariance, reliability, measurement error, criterion validity, hypothesis testing for construct validity, and responsiveness. It is noted that for construct validity, every comparator instrument included within an article is evaluated separately and classed as an individual study. This also applies when the same measurement property is evaluated within the same article across different samples.

COSMIN criteria for good measurement properties are reported in Table 2. Each property can receive a rating of sufficient (+), insufficient (-), or indeterminate (?).

**Table 2.**

*COSMIN criteria for good measurement properties (Mokkink et al., 2018).*

<b>Measurement property</b>	<b>Criteria</b>
<b>Structural validity</b>	<ul style="list-style-type: none"> <li>+ <b>CFA:</b> CFI or TLI or comparable measure <math>&gt;.95</math> OR RMSEA <math>&lt;.06</math> OR SRMR <math>&lt;.08^2</math></li> <li><b>IRT/RASCH:</b> No violation of unidimensionality: CFI or TLI or comparable measure <math>&gt;.95</math> OR RMSEA <math>&lt; 0.20</math> OR Q3's <math>&lt; 0.37</math></li> <li>AND</li> <li>no violation of monotonicity: adequate looking graphs OR item scalability <math>&gt;.30</math></li> <li>AND</li> <li>adequate model fit:</li> <li>IRT: <math>\chi^2 &gt;.01</math></li> <li>Rasch: infit and outfit mean squares <math>\geq 0.5</math> and <math>\leq 1.5</math> OR Z-standardized values <math>&gt; -2</math> and <math>&lt;2</math></li> <li>CTT: Not all information for '+' reported</li> <li>? IRT/Rasch: Model fit not reported</li> <li>- Criteria for '+' not met</li> </ul>
<b>Internal consistency</b>	<ul style="list-style-type: none"> <li>+ At least low evidence for sufficient structural validity AND Cronbach's alphas <math>\geq .7</math> for each unidimensional scale</li> <li>? Criteria for "at least low evidence for sufficient structural validity" not met</li> <li>- At least low evidence for structural validity AND Cronbach's alphas <math>&lt; .7</math> for each unidimensional scale</li> </ul>
<b>Reliability</b>	<ul style="list-style-type: none"> <li>+ ICC or weighted Kappa <math>\geq .7</math></li> <li>? ICC or weighted Kappa not reported</li> <li>- ICC or weighted Kappa <math>&lt; .7</math></li> </ul>
<b>Measurement error</b>	<ul style="list-style-type: none"> <li>+ SDC or LoA <math>&lt; MIC^5</math></li> <li>? MIC not defined</li> <li>- SDC or LoA <math>&gt; &lt; MIC^5</math></li> </ul>
<b>Hypothesis testing for construct validity</b>	<ul style="list-style-type: none"> <li>+ The result is in accordance with the hypothesis</li> <li>? No hypothesis defined (by the review team)</li> </ul>

<b>Cross-cultural validity/measurement invariance</b>	<ul style="list-style-type: none"> <li>- The result is not in accordance with the hypothesis</li> <li>+ No important differences found between group factors (such as age, gender, language) in multiple group factor analysis OR no important DIF for group factors (McFadden's <math>R^2 &lt; .02</math>)</li> <li>? No multiple group factor analysis OR DIF analysis performed</li> <li>- Important differences between group factors OR DIF was found</li> </ul>
<b>Criterion validity</b>	<ul style="list-style-type: none"> <li>+ Correlation with gold standard <math>\geq .7</math> OR AUC <math>\geq .7</math></li> <li>? Not all information for '+' reported</li> <li>- Correlation with gold standard <math>&lt; .7</math> OR AUC <math>&lt; .7</math></li> </ul>

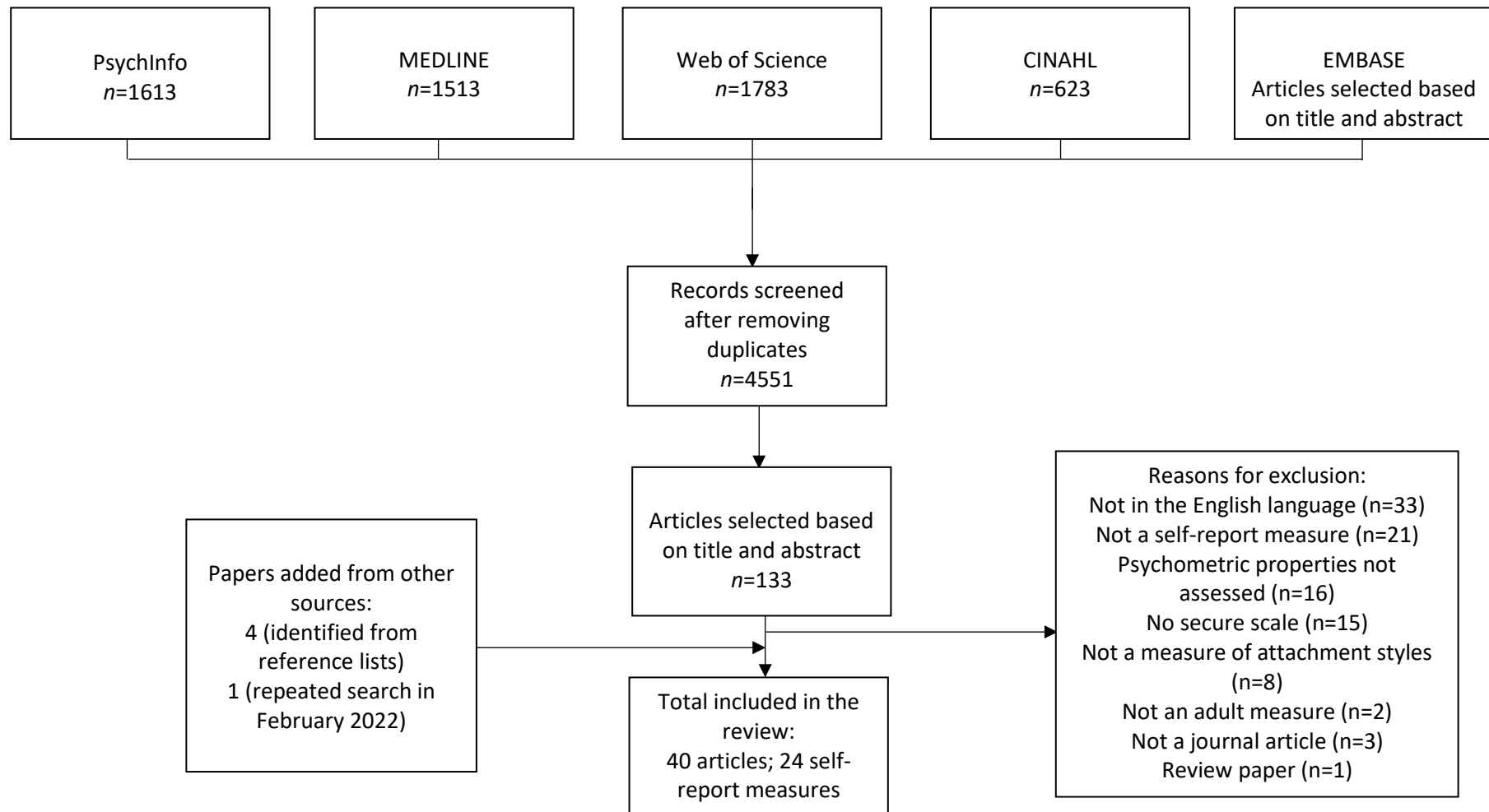
*Note: CFA: Confirmatory factor analysis; CFI: Comparative Fit Index; CTT: Classical Test Theory; ICC: Intra-class Correlation Coefficient; IRT: Item Response Theory; MIC: Minimally Important Change; LoA: Limits of Acceptable Change; RMSEA: Root Mean Square Error of Approximation; SDC: Smallest Detectable Change; SRMR: Standardized Root Mean Squared Residual; TLI: Tucker-Lewis Index;  $\chi^2$ : Chi-Square; +: Sufficient; ?: Indeterminate; -: Insufficient.*

## Results

The database searches resulted in 4551 articles once duplicates had been removed (see Figure 2). Following the screening process, 40 studies were ultimately included within the review. Together, the studies reported on 24 self-report measures which included a measure of secure attachment. Characteristics of the studies and measures are reported in Table 3. Twenty-one measures labelled the relevant scale or subscale as "secure" or "security". The Cartes-Modèles Individuels de Relations (CAMIR) had "autonomous" subscales, which reflects the terminology used by the AAI. The Parental Attachment Scales (PAS) contained an "emotionally responsive" scale which captured the concept of secure attachment. The development study of the AAS was included; the subscales were ultimately named close, depend, and anxiety.

**Figure 2.**

*COSMIN Flow Diagram.*



**Table 3.**

*Study and measure characteristics.*

Author, date and Country	Instrument	Measurement domains	Number of items	Description of Measure	Sample size	Population	Psychometric properties assessed
Allen et al. (2001), USA	RQ	Secure Dismissing Preoccupied Fearful	4 items, 100-point scale	The four attachment styles are each described in a short paragraph. Participants indicate to what extent each description corresponds to their relationship style.	253	<i>Clinical sample:</i> 99 women <i>Community sample:</i> 154 women Mean age=41.5 ( <i>SD</i> = 10.3; range=18-63)	Construct validity
Allen et al. (2005), USA	ANQ	Secure Dismissing Preoccupied	40 attachment items 20 non-attachment items  7 response categories (“mostly untrue” to “mostly true”)	Respondents are asked to assign several randomly presented items in a ranking position in a fixed quasi-normal distribution, for each attachment figure.			Content validity
Andersen et al. (2017), Denmark	RSQ	Secure Dismissing Preoccupied Fearful	30 items, 5-point Likert scale	The RSQ items are derived from three other attachment scales (Bartholomew & Horowitz, 1991; Collins & Read, 1990; Hazan & Shaver, 1987). Participants indicate to what extent each item reflects their general approach within close relationships.	1213	602 GPs (m=316; f=286) Mean age: 52.1 ( <i>SD</i> = 8.6) 611 cancer patients (m=312; f=299) Mean age= 64.4 ( <i>SD</i> = 12.4)	Structural validity Internal consistency Reliability
Backstrom and Holmes (2001)	RQ	<i>See above</i>	4 items, 7-point Likert scale	<i>See above</i>	515	M=214; f=301 Average age=23.9 ( <i>SD</i> =4.7)	Both measures: Structural validity Construct validity RSQ: Internal consistency
	RSQ		<i>See above</i>				

Backstrom and Holmes (2007) Sweden	RQ RSQ	See above	See above	See above	Sample 1: 254  Sample 2: 129  Sample 3: 168	Sample 1 m=115; f=139 Mean age: 20.4 (SD =2.3) Sample 2 m=36; f=93 Mean age= 20 (SD=1.9) Sample 3 84 heterosexual couples Mean age= 20.3 (SD= 2.2)	Both measures: Structural validity Construct validity Internal consistency
Bartholomew and Horowitz (1991), USA	RQ	See above	4 items, 7-point Likert scale	See above	Study 1: 77 Study 2: 69	Study 1 m=37; f=40 Mean age= 19.6 (range= 18-22) Study 2 M=36; f=33 Mean age= 19.5 (range= 17-24)	Structural validity Construct validity
Becker et al. (1997), USA	AS	Secure Preoccupied Dismissing Fearful	Study 1 25 items, 7-point Likert scale and a “don’t know” option Study 2 19 items, 7-point Likert scale and a “don’t know” option	The Attachment Styles measure was developed by combining items from three existing measures (Bartholomew & Horowitz, 1991; Collins & Read, 1990; Hazan & Shaver, 1987), and adding four novel items.	Study 1 1181  Study 2 545	Study 1 m=530; f=651 Median age= 24 (range= 21-60) Study 2 m=237; f=508 Median age= 23, range: 21-59	Structural validity Internal consistency Construct validity
Bouthillier (2002), Canada	AASS	Secure Avoidant Anxious	3 items, forced choice	Each of the attachment styles are described in a brief paragraph. Respondents are required to indicate which paragraph best describes how they feel in relationships.	80	40 cohabiting heterosexual couples Mean age of men= 45.2 (SD=6.29) Mean age of women= 42.7 (SD=4.52)	Construct validity
Bowles (2010), Australia	BAAC	Secure Preoccupied Dismissing Fearful	Study 1 32 items, 14 distractor items 5-point Likert scale Study 2	The BAAC comprises of a list of adjectives designed to describe one of the four attachment styles, alongside 14 distractor items. Respondents indicate to what extent each term describes how they generally relate to important people in their life.	Study 1 174  Study 2 131	Study 1 m=88, mean age=40.57 (SD= 11.77) F=86, mean age=38.99 (SD=11.48)	Structural validity Construct validity

			28 items, 14 distractor items 5-point Likert scale			<i>Study 2</i> m=40, mean age =34.27 ( <i>SD</i> = 13.45) f=91, mean age=30.19 ( <i>SD</i> =13.53)	
Carver (1997) USA	MAQ	Secure Avoidant Ambivalent-worry Ambivalent- merger	14 items 4-point Likert scale	The MAQ consists of items from Simpson's (1990) and Collin and Read's (1990) attachment scales, as well as newly developed items.	807	Undergraduate students m=355; f=452	Structural validity Construct validity
Chui and Leung (2016) China	ASQ-SF	Secure Preoccupied Dismissing Fearful-avoidant	15 items 5-point Likert scale	The ASQ-SF is the abbreviated version of Van Oudenhoven et al.'s (2003) Attachment Style Questionnaire.	385	m=172; f=213 Aged between 18 and 64 years	Structural validity Internal consistency Construct validity
Cicirelli (1995) USA	AAS-EM	Security	16 items 7-point Likert scale	The AAS-EM was developed to assess adult children's attachment to their elderly mothers. Items were designed to reflect the basic aspects of secure attachment: seeking comfort, distress upon separation, joy upon reunion, and feelings of love/closeness)	138	138 women Age range: 38-62	Structural validity Internal consistency Construct validity
Collins and Read (1990)	AAS	Comfort with dependence Comfort with closeness Anxiety	18 items 5-point Likert scale	The AAS was developed based on Hazan and Shaver's (1987) adult attachment descriptions. Respondents rate the degree to which they feel each item is characteristic of them.	406	m=184; f=206 Aged between 17 and 37 (mean=18.8)	Structural validity
Firoozabadi et al., (2014)	ASQ	Secure Preoccupied Dismissing Fearful	24 items 5-point Likert scale	The ASQ was constructed based on the four vignettes described in the RQ (Bartholomew & Horowitz, 1991). Respondents indicate to what extent each item reflects their feelings and behaviour within relationships.	730	M=255; f=475 Mean age=29.5 ( <i>SD</i> =9.74)	Structural validity Internal consistency Reliability Construct validity



Fraley et al. (2000)	RQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	1085	m=403; f=682 Median age=18 (range=16-50)	Structural validity
	SAS	Secure Avoidant Anxious	13 items 7-point Likert scale	Simpson's unnamed attachment scale (SAS; 1990) was derived from Hazan and Shaver's (1987) adult attachment descriptions. Participants rate to what extent the items reflect their general relationship style.			
Frewen et al., (2013) Canada	CARTS	13 scales total, 1 attachment scale: Secure attachment	56 items	The CARTS was designed as a measure of childhood maltreatment. In addition to assessing overt instances of abuse and neglect, the survey also includes items to evaluate how warm and secure familial relationships were. The CARTS is computerised – participants are presented with 56 statements and asked to indicate which family member (including themselves) this best represents, or whether it is “non- applicable”.	375	<i>Student sample</i> m=37; f=185 Mean age=18.4 (range=17-26; SD=1.04) <i>Online sample</i> m=18; f=105 Mean age=37.37 (range =SD=12.49 <i>Outpatient sample</i> m=5; f=25 Mean age=42 (range=18-59; SD=12.66)	Internal consistency Construct validity
Fouladi et al.(2006)	PAS	Emotional responsiveness Rejecting Defensiveness Forgiveness	23 items 6-point Likert scale	Respondents are asked to consider their relationship with their male or female primary caregiver and indicate how much they agree with each item	Study 1: 342	<i>Study 1:</i> M=106; f=236 Mean age=20.9 (range=18-33; SD=1.76) <i>Study 2:</i> M=101; f=236 Mean age=21.4 (range=17-41; SD=3) <i>Study 3:</i> M=47; f=132 Mean age=21.5 (range=18-51; SD=3.43)	Structural validity Construct validity Internal consistency
					Study 2: 337		
					Study 3: 179		
Giannini et al. (2011) Italy	PTI-ASS	Secure Preoccupied Avoidant	22 items 5-point Likert scale	Participants are presented with a series of statements which relate to experiences within romantic relationships and are asked	566	<i>Non-clinical sample</i> M=286; f=235 Mean age=31.9 (SD=10.8) <i>Clinical sample</i>	Structural validity Construct validity Internal consistency

		Unresolved		to rate to what extent they agree with each item.		M=8; f=37 Mean age=26.33 (SD=9.27)	
Iranian et al., (2014) Iran	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	368	All female undergraduate sample – further demographic information not reported	Structural validity
Ahmad et al. (2016) India	MOAS	Secure Avoidant Ambivalent	40 items, reduced to 27 5-point Likert scale	The MOAS was developed due to the lack of attachment scales available in India. Items were generated to reflect the attachment patterns proposed by Ainsworth (1978).	1000	m=500; f=500 Mean age=22.5 (range=15-30)	Structural validity Internal consistency
Kamperman et al. (2020)	ANQ	Secure Dismissing Preoccupied	40 attachment items 20 non-attachment items  7 response categories (“mostly untrue” to “mostly true”)	Respondents are asked to assign several randomly presented items in a ranking position in a fixed quasi-normal distribution, for each attachment figure.	510	<i>English sample:</i> m=220; f=120 Mean age=36 (range=18-61; SD=11) <i>Dutch sample:</i> 96 female psychotherapy patients; 74 women from the general population Mean age=29.5 (range 19-50; SD=7.5)	Structural validity Measurement invariance Construct validity
Kurdek (2002) USA	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	328	33 gay (mean age=49.76), 52 lesbian (mean age=46.19), and 79 heterosexual (mean age=41.82) married couples	Structural validity Construct validity
Leuchter et al. (2021) Germany	CARTS	<i>See above</i>	<i>See above</i>	<i>See above</i>	140	m=25; f=112 Mean age=30.15 (Range= 18-73; SD=11.19)	Internal consistency Construct validity
Lindberg and Thomas (2011)	ACIQ	29 scales total, 12 attachment scales  Avoidant, Codependence-	242 items 4-point Likert scale	The ACIQ was designed to capture attachment styles relating to different attachment figures (mother, father, and partner), elements of interpersonal	Study 1: 1221  Study 2: 67	<i>Study 1:</i> m=389; f=832 64.9% aged 17-35 <i>Study 2:</i> M=20; f=47	Structural validity Internal consistency Reliability

		enmeshed, Secure and Ambivalent scales for mother, father, and partner.		functioning (e.g. mistrust, jealousy) and clinical issues (e.g. anxiety, shame)		89.7% aged 17-21	
Lindberg, et al. (2012)	ACIQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	100	m=41; f=69 90% aged 17-21	Construct validity
Lindberg et al., (2014)	ACIQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	592	61 male offenders (age 18-20) 131 high school students	Construct validity
Lopez and Hsu (2002)	P-AASQ	Secure Dismissing Fearful Preoccupied	4 items, forced choice	The P-AASQ consists of four paragraphs which each describe one of the four attachment styles. Participants must choose which best describes their relationship with a parent/caregiver.	Study 1: 127  Study 2: 207	<i>Study 1:</i> M=36; f=91 Mean age=20 ( <i>SD</i> =1.53)  <i>Study 2:</i> M=83; f=124 Mean age=18 ( <i>SD</i> =.44)	Construct validity
Mallinckrodt et al. (1995)	CATS English	Secure Avoidant-Fearful Preoccupied-Merger	100 items, reduced to 36 items 6-point Likert scale	The CATS is designed to assess therapy client's attachment to their therapists. Items were generated based to reflect three attachment styles: secure, avoidant, and ambivalent.	138	Therapy clients M=15; f=12; 2 did not specify sex Mean age=32.57 (range=18-64; <i>SD</i> =10.86)	Structural validity Internal consistency Reliability
Molina et al., (2018) Italy	CAMIR	Autonomous Preoccupied Dismissing Unresolved Structuration	72 items 5-point Likert scale	The CA-MIR (Pierrehumbert et al., 1996) items were designed to capture three areas of representation: the present, the past, and the respondents' state of mind. Across each of these areas, there are items which represent the different attachment styles	827	M=321; f=506 Mean age=34 years (range=15-81; <i>SD</i> =13)	Structural validity Internal consistency Construct validity
Pace and Bufford (2018) USA	ARQ	Cognition Balanced/secure Affect Mixed cognition and affect	8 items, forced choice	The ARQ questionnaire (Crittenden, 1998) was designed to mirror the DMM-AAI structure and content.	210	Demographic information not reported	Construct validity

Rodriguez and Fernandez (2019) Argentina	CAMIR-R	Security Preoccupation Parental interference Value of parental authority Parental permissiveness Self sufficiency Childhood trauma	32 items 5-point Likert scale	The CAMIR-R is the shortened version of the CAMIR, which contains seven scales that assess dimensions of attachment and family functioning.	473	<i>Non-clinical sample:</i> 435 university students M=110 (mean age=20.33; SD=2.31); f=322 (mean age=19.9; SD=1.94) <i>Clinical sample:</i> 38 female eating disorder patients (mean age=21.9; SD=5.3)	Structural validity Construct validity Internal consistency
Roisman et al., 2007 USA	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	260	Study 1: N=160; Mean age=19.9 (range 18-30; SD=2.5) Study 2: M=50 (average age=22.7; range=19-29; SD=2.7) F=50 (average age 22.2; range 18-30; SD=3.0)	Structural validity Construct validity
Salzman et al. (2014) USA	PASQ	Secure Secure/avoidant Secure/ambivalent Avoidant Ambivalent Disorganised	42 items 7-point Likert scale	Respondents answer the same 42 questions with respect to their experiences with their primary caregiver across two developmental time periods: before and after age 12.	Study 1: 120  Study 2: 167	<i>CFA sample:</i> 441 undergraduate students <i>Reliability sample:</i> m=82; f=81 Mean age=19.15 (SD=2.15) <i>Study 1:</i> M=61; f=56; 3 unknown Mean age=21.6 (SD=6.3) <i>Study 2:</i> M=74; f=91; 2 unknown Mean age=19.1 (SD=2.1)	Structural validity Reliability Construct validity
Scharfe (2016) Canada	T-RSQ	Secure Fearful Preoccupied Dismissing	40 items 7-point Likert scale	The T-RSQ is comprises of 17 items from the original RSQ (Griffin & Bartholomew, 1994) and 23 items generated from participant interviews.	Study 1: 1243  Study 2: 137	Study 1: <i>Postnatal sample</i> m=189 (average age=31.6; range=19-53) f=890 (average age=28.6; range=15-43)	Internal consistency Reliability Construct validity

					Study 3: 343	<i>Student samples</i> m=49; f=114 Av. age=19.6 (range=16-46)	
					Study 4: 861	<i>Study 2:</i> m=23; f=114 Av. age=18.8 (range=17-21) <i>Study 3:</i> m=32; f=29 Av. age=20.3 (range=17-46) <i>Study 4:</i> m=198; f=663 Av. age=20.17 (range=16-53)	
Segal et al. (2009) USA	RSQ MAQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	244	Younger adults: M=48; f=96 Mean age=22.5 ( <i>SD</i> =3.6) Older adults: M=47; f=59 Mean age=68.6 ( <i>SD</i> =8.3)	Construct validity Internal consistency
Siegert and Hudson (1995) New Zealand	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	256	m=77; f=179 Mean age=22 (range=17-47; <i>SD</i> =6)	Structural validity
Simonelli et al., (2017) Italy	CARTS	<i>See above</i>	<i>See above</i>	<i>See above</i>	79	m=10; f=69 Mean age =22.67 ( <i>SD</i> =1.42)	Internal consistency Construct validity
Stein et al., (2002) USA	RQ RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	115	m=29; f=86 Mean age=23.7 ( <i>SD</i> =4.2)	Construct validity
Wongpakaran et al., (2021) Thailand	RQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	168	Clinical sample m=62; f=106 Mean age=31.8 ( <i>SD</i> =14.4)	Construct validity

Yotsidi et al., (2018) Greece	CATS	See above	See above	See above	153	m=37; f=116 37.9% aged 26-35	Structural validity Internal consistency Reliability Construct validity
Zortea, et al. (2019) UK	RSQ	See above	See above	See above	717	M=170; F=540; 7 unknown Mean age=25; (range=18-66; SD=8.46)	Structural validity

*Note. AAS: Adult Attachment Scale; AAS-EM; Adult Attachment Scale – Elderly Mothers; AASS: Adult attachment Style Self-Report; ACIQ: Attachment and Clinical Issues Questionnaire; ANQ: Attachment Network Q-Sort; ARQ: Attachment Relationship Questionnaire; AS: Attachment Style measure; ASQ: Attachment Style Questionnaire; ASQ-SF: Attachment Style Questionnaire – Short Form; Av.: Average; BAAC: Brief Attachment Adjective Checklist; CARTS: Childhood Attachment and Relational Trauma Screen; CATS; Client Attachment to Therapist Scale; CAMIR: Cartes-Modèles Individuels de Relations; CAMIR-R: Cartes-Modèles Individuels de Relations – Reduced; f: Female; m: Male; MAQ: Measure of Attachment Qualities; MOAS; Measure of Attachment Styles; P-AASQ: Parent-Adult Attachment Scale; PAS: Parental Attachment Scales; PASQ: Primary Attachment Style Questionnaire; PTI-ASS: Psychological Treatment Inventory Attachment Styles Scale; RSQ: Relationship Scales Questionnaire; RQ: Relationship Questionnaire; SAS: Simpson’s Attachment Scale; SD: Standard Deviation; T-RSQ: Trent Relationship Scales Questionnaire.*

### *Reporting of results*

The methodological quality and results of individual studies are presented in Table 4, with the exception of content validity and measurement invariance as so few studies reported on these properties. Summary results (i.e. the pooled results of all the individual studies evaluating the measurement properties of the same self-report measure) are also reported here. For construct validity, comparator instruments were evaluated individually, however a single rating is reported when this was the same across all instruments. Although measurement error, criterion validity, and responsiveness are part of the COSMIN checklist, none of the studies identified reported on these properties.

### *Content validity*

The Attachment Network Q-Sort (ANQ; Allen et al., 2005) was the only measure with a specific content validity study. The quality of the evidence was “inadequate” as content validity was only examined with a group of professionals, thus limiting the conclusions that could be drawn about the relevance, comprehensiveness, and comprehensibility of the instrument. As such, the findings were “indeterminate”.

Measure development was also outlined for the following instruments: the AAS, the Attachment and Clinical Issues Questionnaire (ACIQ; Lindberg & Thomas, 2011), Attachment Style measure (AS; Becker et al., 1997), Brief Attachment Adjective Checklist (BAAC; Bowles, 2010), Client Attachment to Therapist Scale (CATS; Mallinckrodt et al., 1995), PAS (Fouladi, Moller, & McCarthy, 2006), Trent Relationship Scales Questionnaire (T-RSQ; Scharfe, 2016). This was not formally evaluated as, whilst relevant in the assessment of content validity, it is not a measurement property in and of itself. However, it was noted that in all cases there was a lack of pilot testing in the development phase, which is a key requirement within the COSMIN framework.

### *Structural validity*

The following four measures met the COSMIN criteria for structural validity, where the studies reviewed were also of “very good” methodological quality: the Attachment Style Questionnaire-Short Form (ASQ-SF; Chui & Leung, 2010), the CAMIR (Pierrehumbert et al., 1996), Cartes-Modèles Individuels de Relations – Reduced (CAMIR-R; Balluerka et al., 2011) and the Psychological Treatment Inventory – Attachment Styles Scale (PTI-ASS; Giannini et al., 2011). Although the BAAC also met the criteria, the quality of the study was “inadequate” due to insufficient sample size for Confirmatory Factor Analysis (CFA). In contrast, the AS, PAS, RSQ and the RQ did not meet the COSMIN criteria, based on studies which were of “very good” methodological quality. The results for the CATS were also insufficient, however the studies

were of “inadequate” quality due to their sample sizes, thus limiting the conclusions that can be drawn.

The findings for the ANQ were inconsistent as a three-factor solution (including a secure factor) was found when fathers were used as the attachment figure, but not for mothers or partners. The methodological quality of the study included (Kamperman et al., 2020) was “very good”. All the remaining measures received “indeterminate” ratings as their findings could not be interpreted within the COSMIN framework. The quality of studies was largely very low due to the statistical methods employed and/or statistics not being reported. Two notable exceptions were the Measure of Attachment Styles (MOAS; Ahmad et al., 2016) and the Adult Attachment Scale – Elderly Mothers (AAS-EM; Cicirelli, 1995) – the evidence reviewed was “adequate” as the use of Exploratory Factor Analysis (EFA) was the only limitation.

#### *Internal consistency*

The methodological quality of all individual studies was “very good” – these were the most consistent risk of bias rating across all the measurement properties assessed within this review. Adequate internal consistency (Cronbach’s alpha  $>.7$  and evidence of sufficient structural validity) was reported for the ASQ-SF, the CAMIR, the CAMIR-R, PTI-ASS. In contrast, as there was very good quality evidence that the structural validity of the RSQ and PAS was insufficient, the internal consistency scores were not interpretable.

The lack of evidence for structural validity for the remaining measures ultimately resulted in their findings being “indeterminate”. It is however noted that Cronbach’s alpha were  $>.7$  for the ACIQ, T-RSQ, Childhood Attachment and Relational Trauma Screen (CARTS; Frewen et al., 2013), Attachment Style Questionnaire (ASQ; Van Oudehoven et al., 2003), Measure of Attachment Qualities (MAQ; Carver, 1997), PASQ (Salzman et al., 2014), AAS-EM, AS, MOAS. Cronbach’s alphas for the CATS were inconsistent.

#### *Measurement invariance*

Data for measurement invariance was only reported for the ANQ. The study by Kamperman et al. (2020) was classified as “inadequate” as there were less than 100 participants for each group, and the three samples differed across more than one characteristic (language and mental health status). The results were sufficient when only mother and father attachment figures were used, but insufficient when the romantic partner attachment figure was also included.



**Table 4.***Study and measure characteristics*

Author, date and Country	Instrument	Measurement domains	Number of items	Description of Measure	Sample size	Population	Psychometric properties assessed
Allen et al. (2001), USA	RQ	Secure Dismissing Preoccupied Fearful	4 items, 100-point scale	The four attachment styles are each described in a short paragraph. Participants indicate to what extent each description corresponds to their relationship style.	253	<i>Clinical sample:</i> 99 women <i>Community sample:</i> 154 women Mean age=41.5 ( <i>SD</i> = 10.3; range=18-63)	Construct validity
Allen et al. (2005), USA	ANQ	Secure Dismissing Preoccupied	40 attachment items 20 non-attachment items  7 response categories (“mostly untrue” to “mostly true”)	Respondents are asked to assign several randomly presented items in a ranking position in a fixed quasi-normal distribution, for each attachment figure.			Content validity
Andersen et al. (2017), Denmark	RSQ	Secure Dismissing Preoccupied Fearful	30 items, 5-point Likert scale	The RSQ items are derived from three other attachment scales (Bartholomew & Horowitz, 1991; Collins & Read, 1990; Hazan & Shaver, 1987). Participants indicate to what extent each item reflects their general approach within close relationships.	1213	602 GPs (m=316; f=286) Mean age: 52.1 ( <i>SD</i> = 8.6) 611 cancer patients (m=312; f=299) Mean age= 64.4 ( <i>SD</i> = 12.4)	Structural validity Internal consistency Reliability
Backstrom and Holmes (2001)	RQ	<i>See above</i>	4 items, 7-point Likert scale	<i>See above</i>	515	M=214; f=301 Average age=23.9 ( <i>SD</i> =4.7)	Both measures: Structural validity Construct validity
	RSQ		<i>See above</i>				RSQ: Internal consistency

Backstrom and Holmes (2007) Sweden	RQ RSQ	See above	See above	See above	Sample 1: 254  Sample 2: 129  Sample 3: 168	Sample 1 m=115; f=139 Mean age: 20.4 (SD =2.3) Sample 2 m=36; f=93 Mean age= 20 (SD=1.9) Sample 3 84 heterosexual couples Mean age= 20.3 (SD= 2.2)	Both measures: Structural validity Construct validity Internal consistency
Bartholomew and Horowitz (1991), USA	RQ	See above	4 items, 7-point Likert scale	See above	Study 1: 77 Study 2: 69	Study 1 m=37; f=40 Mean age= 19.6 (range= 18-22) Study 2 M=36; f=33 Mean age= 19.5 (range= 17-24)	Structural validity Construct validity
Becker et al. (1997), USA	AS	Secure Preoccupied Dismissing Fearful	Study 1 25 items, 7-point Likert scale and a "don't know" option Study 2 19 items, 7-point Likert scale and a "don't know" option	The Attachment Styles measure was developed by combining items from three existing measures (Bartholomew & Horowitz, 1991; Collins & Read, 1990; Hazan & Shaver, 1987), and adding four novel items.	Study 1 1181  Study 2 545	Study 1 m=530; f=651 Median age= 24 (range= 21-60) Study 2 m=237; f=508 Median age= 23, range: 21-59	Structural validity Internal consistency Construct validity
Bouthillier (2002), Canada	AASS	Secure Avoidant Anxious	3 items, forced choice	Each of the attachment styles are described in a brief paragraph. Respondents are required to indicate which paragraph best describes how they feel in relationships.	80	40 cohabiting heterosexual couples Mean age of men= 45.2 (SD=6.29) Mean age of women= 42.7 (SD=4.52)	Construct validity
Bowles (2010), Australia	BAAC	Secure Preoccupied Dismissing Fearful	Study 1 32 items, 14 distractor items 5-point Likert scale Study 2	The BAAC comprises of a list of adjectives designed to describe one of the four attachment styles, alongside 14 distractor items. Respondents indicate to what extent each term describes how they generally relate to important people in their life.	Study 1 174  Study 2 131	Study 1 m=88, mean age=40.57 (SD= 11.77) F=86, mean age=38.99 (SD=11.48)	Structural validity Construct validity

			28 items, 14 distractor items 5-point Likert scale			<i>Study 2</i> m=40, mean age =34.27 ( <i>SD</i> = 13.45) f=91, mean age=30.19 ( <i>SD</i> =13.53)	
Carver (1997) USA	MAQ	Secure Avoidant Ambivalent-worry Ambivalent- merger	14 items 4-point Likert scale	The MAQ consists of items from Simpson's (1990) and Collin and Read's (1990) attachment scales, as well as newly developed items.	807	Undergraduate students m=355; f=452	Structural validity Construct validity
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Collins and Read (1990)	AAS	Comfort with dependence Comfort with closeness Anxiety	18 items 5-point Likert scale	The AAS was developed based on Hazan and Shaver's (1987) adult attachment descriptions. Respondents rate the degree to which they feel each item is characteristic of them.	406	m=184; f=206 Aged between 17 and 37 (mean=18.8)	Structural validity
Firoozabadi et al., (2014)	ASQ	Secure Preoccupied Dismissing Fearful	24 items 5-point Likert scale	The ASQ was constructed based on the four vignettes described in the RQ (Bartholomew & Horowitz, 1991). Respondents indicate to what extent each item reflects their feelings and behaviour within relationships.	730	M=255; f=475 Mean age=29.5 ( <i>SD</i> =9.74)	Structural validity Internal consistency Reliability Construct validity

Fraley et al. (2000)	RQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	1085	m=403; f=682 Median age=18 (range=16-50)	Structural validity
	SAS	Secure Avoidant Anxious	13 items 7-point Likert scale	Simpson's unnamed attachment scale (SAS; 1990) was derived from Hazan and Shaver's (1987) adult attachment descriptions. Participants rate to what extent the items reflect their general relationship style.			
Frewen et al., (2013) Canada	CARTS	13 scales total, 1 attachment scale: Secure attachment	56 items	The CARTS was designed as a measure of childhood maltreatment. In addition to assessing overt instances of abuse and neglect, the survey also includes items to evaluate how warm and secure familial relationships were. The CARTS is computerised – participants are presented with 56 statements and asked to indicate which family member (including themselves) this best represents, or whether it is “non- applicable”.	375	<i>Student sample</i> m=37; f=185 Mean age=18.4 (range=17-26; SD=1.04) <i>Online sample</i> m=18; f=105 Mean age=37.37 (range =SD=12.49 <i>Outpatient sample</i> m=5; f=25 Mean age=42 (range=18-59; SD=12.66)	Internal consistency Construct validity
Fouladi et al.(2006)	PAS	Emotional responsiveness Rejecting Defensiveness Forgiveness	23 items 6-point Likert scale	Respondents are asked to consider their relationship with their male or female primary caregiver and indicate how much they agree with each item	Study 1: 342	<i>Study 1:</i> M=106; f=236 Mean age=20.9 (range=18-33; SD=1.76) <i>Study 2:</i> M=101; f=236 Mean age=21.4 (range=17-41; SD=3) <i>Study 3:</i> M=47; f=132 Mean age=21.5 (range=18-51; SD=3.43)	Structural validity Construct validity Internal consistency
					Study 2: 337		
					Study 3: 179		
Giannini et al. (2011) Italy	PTI-ASS	Secure Preoccupied Avoidant	22 items 5-point Likert scale	Participants are presented with a series of statements which relate to experiences within romantic relationships and are asked	566	<i>Non-clinical sample</i> M=286; f=235 Mean age=31.9 (SD=10.8) <i>Clinical sample</i>	Structural validity Construct validity Internal consistency

		Unresolved		to rate to what extent they agree with each item.		M=8; f=37 Mean age=26.33 (SD=9.27)	
Iranian et al., (2014) Iran	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	368	All female undergraduate sample – further demographic information not reported	Structural validity
Ahmad et al. (2016) India	MOAS	Secure Avoidant Ambivalent	40 items, reduced to 27 5-point Likert scale	The MOAS was developed due to the lack of attachment scales available in India. Items were generated to reflect the attachment patterns proposed by Ainsworth (1978).	1000	m=500; f=500 Mean age=22.5 (range=15-30)	Structural validity Internal consistency
Kamperman et al. (2020)	ANQ	Secure Dismissing Preoccupied	40 attachment items 20 non-attachment items  7 response categories (“mostly untrue” to “mostly true”)	Respondents are asked to assign several randomly presented items in a ranking position in a fixed quasi-normal distribution, for each attachment figure.	510	<i>English sample:</i> m=220; f=120 Mean age=36 (range=18-61; SD=11) <i>Dutch sample:</i> 96 female psychotherapy patients; 74 women from the general population Mean age=29.5 (range 19-50; SD=7.5)	Structural validity Measurement invariance Construct validity
Kurdek (2002) USA	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	328	33 gay (mean age=49.76), 52 lesbian (mean age=46.19), and 79 heterosexual (mean age=41.82) married couples	Structural validity Construct validity
Leuchter et al. (2021) Germany	CARTS	<i>See above</i>	<i>See above</i>	<i>See above</i>	140	m=25; f=112 Mean age=30.15 (Range= 18-73; SD=11.19)	Internal consistency Construct validity
Lindberg and Thomas (2011)	ACIQ	29 scales total, 12 attachment scales  Avoidant, Codependence-	242 items 4-point Likert scale	The ACIQ was designed to capture attachment styles relating to different attachment figures (mother, father, and partner), elements of interpersonal	Study 1: 1221  Study 2: 67	<i>Study 1:</i> m=389; f=832 64.9% aged 17-35 <i>Study 2:</i> M=20; f=47	Structural validity Internal consistency Reliability

		enmeshed, Secure and Ambivalent scales for mother, father, and partner.		functioning (e.g. mistrust, jealousy) and clinical issues (e.g. anxiety, shame)		89.7% aged 17-21	
Lindberg, et al. (2012)	ACIQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	100	m=41; f=69 90% aged 17-21	Construct validity
Lindberg et al., (2014)	ACIQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	592	61 male offenders (age 18-20) 131 high school students	Construct validity
Lopez and Hsu (2002)	P-AASQ	Secure Dismissing Fearful Preoccupied	4 items, forced choice	The P-AASQ consists of four paragraphs which each describe one of the four attachment styles. Participants must choose which best describes their relationship with a parent/caregiver.	Study 1: 127  Study 2: 207	<i>Study 1:</i> M=36; f=91 Mean age=20 ( <i>SD</i> =1.53)  <i>Study 2:</i> M=83; f=124 Mean age=18 ( <i>SD</i> =.44)	Construct validity
Mallinckrodt et al. (1995)	CATS English	Secure Avoidant-Fearful Preoccupied-Merger	100 items, reduced to 36 items 6-point Likert scale	The CATS is designed to assess therapy client's attachment to their therapists. Items were generated based to reflect three attachment styles: secure, avoidant, and ambivalent.	138	Therapy clients M=15; f=12; 2 did not specify sex Mean age=32.57 (range=18-64; <i>SD</i> =10.86)	Structural validity Internal consistency Reliability
Molina et al., (2018) Italy	CAMIR	Autonomous Preoccupied Dismissing Unresolved Structuration	72 items 5-point Likert scale	The CA-MIR (Pierrehumbert et al., 1996) items were designed to capture three areas of representation: the present, the past, and the respondents' state of mind. Across each of these areas, there are items which represent the different attachment styles	827	M=321; f=506 Mean age=34 years (range=15-81; <i>SD</i> =13)	Structural validity Internal consistency Construct validity
Pace and Bufford (2018) USA	ARQ	Cognition Balanced/secure Affect Mixed cognition and affect	8 items, forced choice	The ARQ questionnaire (Crittenden, 1998) was designed to mirror the DMM-AAI structure and content.	210	Demographic information not reported	Construct validity

Rodriguez and Fernandez (2019) Argentina	CAMIR-R	Security Preoccupation Parental interference Value of parental authority Parental permissiveness Self sufficiency Childhood trauma	32 items 5-point Likert scale	The CAMIR-R is the shortened version of the CAMIR, which contains seven scales that assess dimensions of attachment and family functioning.	473	<i>Non-clinical sample:</i> 435 university students M=110 (mean age=20.33; SD=2.31); f=322 (mean age=19.9; SD=1.94) <i>Clinical sample:</i> 38 female eating disorder patients (mean age=21.9; SD=5.3)	Structural validity Construct validity Internal consistency
Roisman et al., 2007 USA	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	260	Study 1: N=160; Mean age=19.9 (range 18-30; SD=2.5) Study 2: M=50 (average age=22.7; range=19-29; SD=2.7) F=50 (average age 22.2; range 18-30; SD=3.0)	Structural validity Construct validity
Salzman et al. (2014) USA	PASQ	Secure Secure/avoidant Secure/ambivalent Avoidant Ambivalent Disorganised	42 items 7-point Likert scale	Respondents answer the same 42 questions with respect to their experiences with their primary caregiver across two developmental time periods: before and after age 12.	Study 1: 120  Study 2: 167	<i>CFA sample:</i> 441 undergraduate students <i>Reliability sample:</i> m=82; f=81 Mean age=19.15 (SD=2.15) <i>Study 1:</i> M=61; f=56; 3 unknown Mean age=21.6 (SD=6.3) <i>Study 2:</i> M=74; f=91; 2 unknown Mean age=19.1 (SD=2.1)	Structural validity Reliability Construct validity
Scharfe (2016) Canada	T-RSQ	Secure Fearful Preoccupied Dismissing	40 items 7-point Likert scale	The T-RSQ is comprises of 17 items from the original RSQ (Griffin & Bartholomew, 1994) and 23 items generated from participant interviews.	Study 1: 1243  Study 2: 137	Study 1: <i>Postnatal sample</i> m=189 (average age=31.6; range=19-53) f=890 (average age=28.6; range=15-43)	Internal consistency Reliability Construct validity

					Study 3: 343	<i>Student samples</i> m=49; f=114 Av. age=19.6 (range=16-46)	
					Study 4: 861	<i>Study 2:</i> m=23; f=114 Av. age=18.8 (range=17-21) <i>Study 3:</i> m=32; f=29 Av. age=20.3 (range=17-46) <i>Study 4:</i> m=198; f=663 Av. age=20.17 (range=16-53)	
Segal et al. (2009) USA	RSQ MAQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	244	Younger adults: M=48; f=96 Mean age=22.5 ( <i>SD</i> =3.6) Older adults: M=47; f=59 Mean age=68.6 ( <i>SD</i> =8.3)	Construct validity Internal consistency
Siegert and Hudson (1995) New Zealand	RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	256	m=77; f=179 Mean age=22 (range=17-47; <i>SD</i> =6)	Structural validity
Simonelli et al., (2017) Italy	CARTS	<i>See above</i>	<i>See above</i>	<i>See above</i>	79	m=10; f=69 Mean age =22.67 ( <i>SD</i> =1.42)	Internal consistency Construct validity
Stein et al., (2002) USA	RQ RSQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	115	m=29; f=86 Mean age=23.7 ( <i>SD</i> =4.2)	Construct validity
Wongpakaran et al., (2021) Thailand	RQ	<i>See above</i>	<i>See above</i>	<i>See above</i>	168	Clinical sample m=62; f=106 Mean age=31.8 ( <i>SD</i> =14.4)	Construct validity
Yotsidi et al., (2018) Greece	CATS	<i>See above</i>	<i>See above</i>	<i>See above</i>	153	m=37; f=116 37.9% aged 26-35	Structural validity Internal consistency Reliability



Zortea, et al. (2019) UK	RSQ	See above	See above	See above	717	M=170; F=540; 7 unknown Mean age=25; (range=18-66; SD=8.46)	Construct validity Structural validity
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*Note. AAS: Adult Attachment Scale; AAS-EM; Adult Attachment Scale – Elderly Mothers; AASS: Adult attachment Style Self-Report; ACIQ: Attachment and Clinical Issues Questionnaire; ANQ: Attachment Network Q-Sort; ARQ: Attachment Relationship Questionnaire; AS: Attachment Style measure; ASQ: Attachment Style Questionnaire; ASQ-SF: Attachment Style Questionnaire – Short Form; Av.: Average; BAAC: Brief Attachment Adjective Checklist; CARTS: Childhood Attachment and Relational Trauma Screen; CATS; Client Attachment to Therapist Scale; CAMIR: Cartes-Modèles Individuels de Relations; CAMIR-R: Cartes-Modèles Individuels de Relations – Reduced; f: Female; m: Male; MAQ: Measure of Attachment Qualities; MOAS; Measure of Attachment Styles; P-AASQ: Parent-Adult Attachment Scale; PAS: Parental Attachment Scales; PASQ: Primary Attachment Style Questionnaire; PTI-ASS: Psychological Treatment Inventory Attachment Styles Scale; RSQ: Relationship Scales Questionnaire; RQ: Relationship Questionnaire; SAS: Simpson’s Attachment Scale; SD: Standard Deviation; T-RSQ: Trent Relationship Scales Questionnaire.*

### *Reliability*

No measures were found to have sufficient evidence of test-retest reliability. With the exception of the RSQ, all measures reviewed (AAS-EM, ACIQ, ASQ, CATS, MAQ, PASQ, T-RSQ, Primary Attachment Style Questionnaire [PASQ; Salzman et al., 2014] and the Parent-Adult Attachment Scale [P-AASQ; Lopez & Hsu]) received an “indeterminate” rating as individual studies did not report an ICC or weighted Kappa. The findings for the RSQ were insufficient as  $ICC=.63$ . However, it is noted that the methodological quality of individual studies was largely “doubtful” due to lengthy time intervals between test-retest periods, and/or correlation coefficients being calculated without evidence that no systematic change had occurred.

### *Construct validity (hypothesis testing)*

The quality of studies examining construct validity varied substantially. The most common issues were that 1) little or no information on the measurement properties of comparator instruments, 2) the only comparator instruments included measured a different construct, and/or 3) there was not enough information to determine whether the statistical methods applied were appropriate.

The pooled findings for the CAMIR-R, CARTS, P-AASQ, PAS, PTI-ASS, RQ, and T-RSQ were sufficient; these results were derived from at least multiple studies of “doubtful” quality. “Very good” ratings were assigned to all studies for the CARTS and P-AASQ. Results were also sufficient for the AAS-EM, ACIQ (convergent validity) ANQ, and ASQ, however there were more significant issues with respects to the methodological quality of the studies reviewed.

The AAS and the CATS had insufficient results, derived from at least one study of “very good” quality. Findings for the ARQ (Pace & Bufford, 2018), AS, BAAC, MAQ, PASQ, and RSQ were also insufficient, however the quality of the evidence available was comparatively lower. Discriminative validity for the ACIQ was indeterminate as the statistical methods employed made it difficult for the research team to create hypotheses which would allow for objective evaluation of the results.

### **Synthesis of results**

A summary of the main findings are presented in Table 5, alongside an overall grade for the quality of the evidence. With respects to internal consistency, the overall grading is dependent on the evidence that is available for structural validity. This is because unidimensionality must be established for internal consistency analyses to be properly interpreted (Mokkink, 2018). As such, the quality of evidence for internal consistency can never be higher than that of structural validity.

**Table 5.***Summary of Findings*

	<b>Description of results</b>	<b>Overall Rating</b>	<b>Quality of evidence</b>
<b>Content validity</b>			
ANQ	Only professional group consulted in validity study	Indeterminate (?)	Very low (one study of inadequate quality)
<b>Structural validity</b>			
AAS	Three factor solution: depend, close, anxiety	Indeterminate (?)	Moderate (one study of adequate quality available)
AAS-EM	Two factors, moderately correlated ( $r=.56$ )	Indeterminate (?)	Moderate (one study of adequate quality available)
ACIQ	8 factors, 68% of the variance explained	Indeterminate (?)	Very low (one study of inadequate quality available)
ANQ	3 factor solution found for father, not for mother or partner	Inconsistent (+/-)	High (one study of very good quality available)
AS	Three factor solution not confirmed (TLI=.87)	Insufficient (-)	High (one study of very good quality)
ASQ	Secure factor found (PCA)	Indeterminate (?)	Very low (one study of inadequate quality)
ASQ-SF	Four-factor solution, including secure factor (CFI=.95)	Sufficient (+)	High (one study of very good quality available)
BAAC	Four factor solution, CFI =.953	Sufficient (+)	Very low (one study of inadequate quality)
CAMIR	13 factor solution, including three autonomous factors, CFI=.96	Sufficient (+)	High (multiple studies of adequate quality)
CAMIR-R	6 factors, including security, CFI=.98	Sufficient (+)	High (one study of very good quality)
CATS	Confirmatory Factor Analysis; CFI=.74	Insufficient (-)	Very low (multiple studies of inadequate quality and risk of imprecision)
MAQ	Four factor solution, including secure factor	Indeterminate (?)	Very low (one study of inadequate quality available)
MOAS	Three factor solution = 68% of the variance	Indeterminate (?)	Moderate (one study of adequate quality available)
PAS	Four factor solution not confirmed for maternal and paternal scales	Insufficient (-)	High (one study of very good quality)
PASQ	9 factor solution, including secure factors	Indeterminate (?)	Very low (one study of inadequate quality)
PTI-ASS	Secure factor confirmed, CFI=.97	Sufficient (+)	High (one study of very good quality)
RSQ	Secure factor not found (CFI=.47-.90)	Insufficient (-)	High (multiple studies very good quality)
RQ	Secure factor not found (based on CFA)	Insufficient (-)	High (multiple studies of very good quality)
SAS	Dominant secure factor found	Indeterminate (?)	Very low (one study of inadequate quality)
T-RSQ	Two factor solution "approach" and "avoidance"	Indeterminate (?)	Very low (one study of inadequate quality)
<b>Internal Consistency</b>			
AAS-EM	$\alpha > .7$ , but low evidence for sufficient SV unavailable	Indeterminate (?)	Moderate (based on SV evidence)
ACIQ	$\alpha > .7$ , but only very low evidence for SV available	Indeterminate (?)	Very low (based on SV evidence)

AS	$\alpha > .7$ , but no evidence for sufficient SV available	Indeterminate	Very low (Insufficient evidence for SV available)
ASQ	Only very low evidence for SV available	Indeterminate	Very low (based on SV evidence)
ASQ-SF	$\alpha = .77$	Sufficient (+)	High (one study of very good quality)
CARTS	KR-20 calculated; No information about the SV available	Indeterminate (?)	Low (No evidence for SV available)
CATS	$\alpha$ s were inconsistent; only very low evidence SV available	Indeterminate (?)	Very low (based on SV evidence)
CAMIR	$\alpha = .72-.8$ for three autonomous scales; sufficient evidence for SV	Sufficient (+)	High (one study of very good quality)
CAMIR-R	$\alpha = .87$ ; sufficient evidence for SV	Sufficient (+)	High (one study of very good quality)
MAQ	$\alpha > .7$ , but only very low evidence SV available	Indeterminate (?)	Very low (based on SV evidence)
MOAS	$\alpha$ s $> .7$ , but low evidence for sufficient SV unavailable	Indeterminate (?)	Moderate (based on SV evidence)
PAS	$\alpha$ s $> .7$ , but low evidence for sufficient SV unavailable	Indeterminate (?)	Very low (Insufficient evidence for SV available)
PASQ	$\alpha > .7$ , but only very low evidence for SV available	Indeterminate (?)	Very low (based on SV evidence)
PTI-ASS	$\alpha = .81$	Sufficient (+)	High (one study of very good quality)
RSQ	$\alpha = .32-.40$ , but low evidence for sufficient SV unavailable	Indeterminate (?)	Very low (Insufficient evidence for SV available)
T-RSQ	75% of $\alpha$ s $> .7$ , but only very low evidence for SV available	Indeterminate (?)	Very low (based on SV evidence)

#### Measurement invariance

ANQ	$\Delta$ CFA $< .01$ (mother and father) $\Delta$ CFA $> .01$ (romantic figure included)	Sufficient (+) Insufficient (-)	Very low (one study of inadequate quality)
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#### Reliability

AAS-EM	$r = .73$	Indeterminate (?)	Very low (only one study of doubtful quality and $n < 100$ )
ACIQ	Mother $r = .88$ ; father $r = .92$ ; partner $r = .64$	Indeterminate (?)	Very low (one study of doubtful quality and $n < 100$ )
ASQ	$r = .625$	Indeterminate (?)	Very low (one study of doubtful quality and $n < 100$ )
CATS	$r = .46$ and $.59$	Indeterminate (?)	Low (one study of doubtful quality available)
MAQ	$r = .8$	Indeterminate (?)	Very low (one study of doubtful quality and $n < 100$ )
P-AASQ	$k = .81$ (father); $k = .87$ (mother)	Indeterminate (?)	Low (one study of doubtful quality available)
PASQ	Assumed $r = .85$ (before 12) and $.86$ (after 12)	Indeterminate (?)	Very low (only one study of inadequate quality)
RSQ	ICC = .63	Insufficient (-)	Very low (one study of doubtful quality and $n < 100$ )
T-RSQ	Assumed $r = .66-.90$	Indeterminate (?)	Low (multiple studies of inadequate quality)

#### Hypothesis testing for construct validity

AAS-EM	2 out of 2 hypotheses confirmed	Sufficient (+)	Very low (only one study of inadequate quality and $n < 100$ )
AASS	0 out of 3 hypotheses confirmed	Insufficient (-)	Moderate ( $n < 100$ )

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ACIQ	3 out of 3 hypotheses confirmed (convergent); 0 out of 2 hypotheses confirmed (discriminative)	Convergent: Sufficient (+) Discriminative: Indeterminate (?)	Convergent: Very low (one inadequate study) Discriminative: Moderate (one adequate study)
ANQ	15 out of 17 hypotheses confirmed	Sufficient (+)	Low (multiple studies of inadequate quality)
AS	2 out of 6 hypotheses confirmed	Insufficient (-)	Low (one study of doubtful quality)
ASQ	5 out of 6 hypotheses confirmed	Sufficient (+)	Low (one study of doubtful quality)
ARQ	0 out of 1 hypothesis confirmed	Insufficient (-)	Low (one study of doubtful quality)
BAAC	0 out of 2 hypotheses confirmed	Insufficient (-)	Low (one study of doubtful quality)
CAMIR-R	4 out of 4 hypotheses confirmed	Sufficient (+)	Moderate (multiple studies of doubtful quality)
CARTS	17 out of 21 hypotheses confirmed	Sufficient (+)	High (multiple studies of very good quality)
CATS	3 out of 7 hypotheses confirmed	Insufficient (-)	Moderate (multiple studies of very good quality; inconsistency)
MAQ	7 of 13 hypotheses confirmed	Insufficient (-)	Low (multiple studies of inadequate quality)
P-AASQ	15 out of 20 hypotheses confirmed	Sufficient (+)	High (multiple studies of very good quality)
PAS	13 out of 14 hypotheses confirmed	Sufficient (+)	High (multiple studies of adequate quality)
PASQ	0 out of 2 hypotheses confirmed	Insufficient (-)	Low (multiple studies of inadequate quality)
PTI-ASS	2 out of 2 hypotheses confirmed	Sufficient (+)	Moderate (multiple studies of doubtful quality)
RSQ	3 out of 5 hypotheses confirmed	Insufficient (-)	Low (one study of doubtful quality)
RQ	2 out of 2 hypotheses confirmed (discriminative); 10 out of 13 hypotheses confirmed (convergent)	Sufficient (+; convergent and discriminative)	Discriminative: Moderate (one study of adequate quality) Convergent: Moderate (multiple studies of doubtful quality)
T-RSQ	20 out of 27 hypotheses confirmed	Sufficient (+)	Moderate (multiple studies of doubtful quality)

*AAS: Adult Attachment Scale; AAS-EM; Adult Attachment Scale – Elderly Mothers; AASS: Adult*

*attachment Style Self-Report; ACIQ: Attachment and Clinical Issues Questionnaire; ANQ: Attachment*

*Network Q-Sort; ARQ: Attachment Relationship Questionnaire; AS: Attachment Style measure; ASQ:*

*Attachment Style Questionnaire; ASQ-SF: Attachment Style Questionnaire – Short Form; BAAC: Brief*

*Attachment Adjective Checklist; CARTS: Childhood Attachment and Relational Trauma Screen; CATS;*

*Client Attachment to Therapist Scale; CAMIR: Cartes-Modèles Individuels de Relations; CAMIR-R: Cartes-*

*Modèles Individuels de Relations – Reduced; CFI: Comparative Fit Index; ICC: Intraclass Correlation*

*Coefficient; k: kappa; KR-20: Kuder-Richardson Formula 20MOAS; Measure of Attachment Styles; MAQ:*

*Measure of Attachment Qualities; P-AASQ: Parent-Adult Attachment Scale; PAS: Parental Attachment*

*Scales; PASQ: Primary Attachment Style Questionnaire; PCA: Principal Components Analysis; PTI-ASS:*

*Psychological Treatment Inventory Attachment Styles Scale; r: Pearson's r; RSQ: Relationship Scales Questionnaire; RQ: Relationship Questionnaire; SAS: Simpson's Attachment Scale; SV: Structural validity; T-RSQ: Trent Relationship Scales Questionnaire; TLI: Tucker Lewis Index.  $\alpha$ : Cronbach's Alpha*

Overall, these findings indicate that there was no single measure of adult secure attachment which provided good psychometric evidence across a range of measurement properties. However, based on the studies included within this review, the ASQ-SF, CAMIR, CAMIR-R, and PTI-ASS emerged as having the soundest evidence for the measurement properties that were assessed. All four measures met the criteria for structural validity and internal consistency, based on high quality evidence. In addition, the CAMIR-R and PTI-ASS exceeded the 75% threshold for hypothesis testing, thus demonstrating sufficient results for construct validity, based on moderate quality evidence. In contrast, the findings for the structural validity of the PAS, RQ, and RSQ were insufficient, based on high quality evidence, suggesting that these measures do not adequately capture secure attachment.

For the remaining instruments, the quality of evidence was largely very low across all the measurement properties assessed, making it difficult to draw firm conclusions about their validity and reliability. Indeterminate findings were also very common across structural validity, internal consistency, and reliability, due to issues around the statistical methods employed. For the ANQ, the results were inconsistent and highlight that this measure may only be suitable for use with certain attachment figures (i.e. fathers) in mind.

## **Discussion**

This review highlighted that there is a lack of self-report measures of adult secure attachment which have evidence of good psychometric properties across a range of criteria. Despite the limitations of the COSMIN methodology, which will be addressed later, it is argued that the findings of this review provide insight into the current landscape of the literature surrounding self-report measures of adult secure attachment, which can be used to inform measure selection and identify areas for future research.

### *Selecting a measure of adult secure attachment*

The overarching aim of this paper was to make recommendations around the measures which have the most robust psychometric properties, to inform the practice of researchers and clinicians. Although there was no single measure which had evidence of broad range of psychometric properties, the ASQ-SF, CAMIR, CAMIR-R, and PTI-ASS had high quality evidence in support of their structural validity and internal consistency, as well as evidence for

construct validity for the latter two measures. These appear to be the most psychometrically sound instruments available at present, however further research is needed to establish their test-retest reliability and other aspects of validity, such as content validity and measurement invariance. It is also highlighted that the studies included validated versions of the measures which were not in English, thus it would be important to replicate their findings within this population.

With respects to the feasibility of these four instruments, the ASQ-SF, CAMIR-R, and PTI-ASS may be the most practical choice within clinical and research settings, given the relative brevity of these instruments compared to the CAMIR (72 items total). However, unlike the other measures, the CAMIR provides an assessment of attachment security which relates to both past and present attachment behaviours/experiences, as well as their “state of mind” with respects to their childhood relationships (Molina et al., 2018). The CAMIR may therefore provide a more comprehensive view of attachment security and be better placed to capture those who have been able to reconcile early relationship difficulties. These considerations may further inform the selection of the most appropriate measure of secure attachment.

It was also notable that there was a clear lack of psychometric support for two of the most well-known and widely used measures included in this review: the RQ (Bartholomew & Horowitz, 1991) and the RSQ (Griffin & Bartholomew, 1994). In both cases, the studies with the highest methodological quality did not find evidence for their reported four-factor structure or a distinct secure factor. Results were largely insufficient for the remaining psychometric properties assessed, although the methodological quality of these studies was variable. As such, researchers hoping to establish construct validity in future studies may wish to avoid using these measures as comparator instruments.

### *Implications and future research*

Given that content validity is considered to be the most important psychometric property (Mokkink, 2018), the lack of studies in this area was striking. Scharfe (2016) recognised that the development of self-report measures tends to be informed by existing measures, published research findings, and attachment theory. This suggests that target populations are largely not involved in the development process, which means that their comprehensibility, comprehensiveness, and comprehensibility cannot be fully assessed. Studies which examine content validity are therefore needed, as these could inform further refinement and iterations of existing tools.

This review also indicated that many studies within this field have significant methodological issues. In the case of structural validity and reliability, the use of suboptimal statistical approaches was common, which has contributed to some substantial gaps in the

literature. This further highlights the need for evidence-based guidelines, such as COSMIN, which can be used to inform study design and reporting.

Although no single instrument was identified as having sufficient evidence of a range of psychometric properties, this review suggests that the ASQ-SF, CAMIR, CAMIR-R, and PTI-ASS in particular show promise as measures of adult secure attachment. Should their psychometric properties be further established in future research, these instruments could be valuable tools within strengths-based research and clinical work, given the association between secure attachment and numerous positive psychology concepts and outcomes, such as self-esteem, resilience, and life satisfaction (Lopez et al., 2019),

There was also encouraging preliminary evidence for the MOAS' structural validity and internal consistency, however a CFA would help to further establish its psychometric properties. This was also the case for the AAS-EM, however due to its narrow attachment focus (i.e. assessing adult children's current attachment to their mother), the utility of this instrument may be limited to very specific research and clinical contexts. Sample size was the primary issue in the assessment of the BAAC's structural validity, thus it would be interesting to see whether these results could be replicated in a larger sample. The inconsistent findings for the ANQ were also intriguing and perhaps point to its use with certain attachment figures (i.e. fathers); the comparative validity of this instrument with different attachment figures would need to be further explored in future studies. Finally, there was high quality evidence in support of the CARTS' and P-AASQ's construct validity, although both would require an investigation of their structural dimensionality.

### *Limitations*

In line with the critique presented by Jewell et al. (2019), it is important that the results of this review are placed within the context of the COSMIN methodology and the limitations of this approach. Although the COSMIN criteria provided an excellent framework for systematically assessing risk of bias and study results, the "worst score counts" principle at times drastically impacted overall ratings for studies which had performed well in all but one subsection of the assessment criteria. This was particularly true in the evaluation of construct validity – numerous studies failed to report on the psychometric properties of comparator instruments, thus were downgraded despite the methodology and statistical methods being appropriate. Similarly, the newest version of the COSMIN guidelines did not provide good measurement criteria for some commonly employed statistical methods (such as EFAs) which led to results receiving an "indeterminate" rating, which arguably understates the evidence provided by these approaches. Similarly, whilst the good measurement criteria are based on some widely accepted statistical "cut-off" points, such as Cronbach's alphas exceeding .7



(Cronbach, 1951), these did not allow for consideration of results which narrowly missed these thresholds. In these instances, results would still be classed as “insufficient” – a rating that seems disproportionate given that the margin of error is unlikely to be of any statistical or clinical significance.

The inclusion criteria applied in this review may have also led to evidence around the psychometric properties of adult secure attachment measures being under-reported. This review excluded psychometric evidence when this was provided as part of the validation of another measure. However, by virtue of this evidence being provided as an adjunct to the main study aim, it is possible that the methodology would be comparatively less detailed and thus of lower quality, according to the stringent COSMIN criteria. It is noted that there were papers included within this review, such as Chui and Leung (2016) and Carver (1997), which provided information about other relevant attachment measures that were therefore not included in the results.

In addition, the risk of publication bias is not taken into account when grading the quality of evidence, as it is argued that the lack of registries for studies on measurement properties make this difficult to reliably assess (Mokkink et al., 2018). As such, this review may over-estimate the psychometric properties of the included measures to some degree, given that studies with positive results are more likely to be published (Callaham et al., 1998; Emerson et al., 2010)

Appraisal of studies which were not written in the English language were also beyond the scope of this review, which may also explain the lack of studies investigating cross-cultural validity. In line with Mokkink et al.'s (2018) recommendations, language restrictions were not applied as part of the search strategy, thus the research team were made aware of several papers (e.g. Garrido et al., 2009; Guédeney et al., 2010; Isanezhad et al., 2016) which were relevant to the present research question. This may be of interest for future research teams with a more diverse linguistic skill set and those wishing to specifically examine the cross-cultural validity of different assessment tools.

### *Conclusion*

This review indicates that there is a lack of self-report measures of adult secure attachment which have sufficient empirical support across a range of psychometric properties. The ASQ-SF, CAMIR, CAMIR-R, and PTI-ASS were identified as having the most robust evidence for the measurement properties assessed, however further research is needed to replicate and extend these findings to capture a wider set of psychometric criteria. The findings also highlight a need for greater methodological rigour in studies which evaluate psychometric properties and the value of universal standards to inform research design and practices. Future

research, which assesses content validity, reliability, measurement invariance, and construct validity using psychometrically sound comparator instruments, would help to address some of the identified gaps in the evidence-base for existing measures of attachment.

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## **Paper Two: Empirical Study**

### **The revised Psychosis Attachment Measure: Further psychometric evidence**

*For submission to Psychological Medicine*

The submission guidelines for authors are presented in Appendix D.  
Please note – for the purpose of this thesis and ease of reading, all tables have been  
presented within the main text.

Word count excluding abstract, tables, and references: 4462

## **Abstract**

### *Background*

The Psychosis Attachment Measure (PAM) was recently revised to include a measure of disorganised attachment. The study aimed to further examine the psychometric properties of the revised questionnaire (the PAM-R) in a psychosis sample.

### *Methods*

A total of 407 participants with self-reported experiences of psychosis completed a battery of questionnaires online, which included the PAM-R and other measures which were conceptually linked to the concept of disorganised attachment. A subset of this sample completed the PAM-R again after two weeks. Confirmatory factor analysis (CFA) was conducted to establish the structural dimensionality of the PAM-R, and Spearman's rank correlations were carried out to examine convergent validity. Internal consistency and test-retest reliability was assessed using Cronbach's alpha and the intra-class correlation coefficient, respectively.

### *Results*

CFA indicated a three-factor solution; fit statistics were improved through the removal of four items. Internal consistency was  $>.7$  and test-retest reliability was  $>.85$  for all subscales. The disorganised subscale correlated in expected directions with other measures of attachment, dissociation, trauma, and psychotic experiences. However, the magnitude of the correlation between the disorganised PAM-R scale and the trauma measure fell somewhat below expectations.

### *Conclusion*

This study provides further evidence indicating that the PAM-R is a valid and reliable measure of attachment, which offers a practical assessment tool for clinicians and researchers alike. Research is needed to establish its psychometric properties within a clinical sample and examine discriminant validity.

## **Introduction**

Psychosis is a serious mental health issue affecting some 20 million people across the globe, and is associated with experiences such as hallucinations, delusions, and paranoia (Global Burden of Disease Collaborators [GBD], 2018). The proposed biological mechanisms underpinning psychosis have historically dominated research efforts. However, there has been a growing body of evidence demonstrating the link between childhood trauma and the nature and severity of psychotic symptoms (Bailey et al., 2018; Bentall et al., 2012; Varese et al., 2012), as well as the prevalence of interpersonal difficulties amongst this group (Meuser et al., 2013). This has highlighted that further exploration of psycho-social processes is a necessary, and promising, line of enquiry to better understand the onset and maintenance of psychosis (Read, Bentall, & Fosse, 2011). Attachment theory has been identified as one psychological model which may help to delineate the relational component of this condition (Berry et al., 2008)

Attachment theory argues that our early relationships lead us to form “internal working models” from infancy, which include dynamic representations of the self, others, and the self within relationships (Bowlby, 1979). This allows individuals to make sense of and interpret interpersonal interactions, informing their own behaviour within relationships and ultimately leading to the development of their attachment style (Bretherton et al., 1990). Infants tend to form a “secure” attachment style when caregivers are emotionally attuned and available (Goldsmith, 2010). Caregivers provide a source of comfort and safety, which enables them to explore and appropriately manage distressing situations (Bowlby, 1988). Where there are protracted difficulties in key relationships, particularly with respects to the caregiver’s sensitivity to infant distress (McElwain & Booth-Laforce, 2006), children are more likely to be insecurely attached, and develop an anxious, avoidant, or disorganised attachment pattern (Ainsworth, 1979; Main & Solomon, 1986).

Attachment styles appear to remain moderately stable from childhood to adulthood (Fraley, 2000; Pinquart et al., 2013), however can be subject to change, especially following significant adverse life events (Waters, Hamilton, & Weinfield, 2000; Waters et al., 2000), or exposure to positive alternative support figures (Saunders et al., 2011). In adulthood, whilst secure attachment has been associated with improved emotional regulation, social competence, and self-esteem (Doinita, 2015; Sroufe, 2005), insecure attachment styles have been linked with poorer mental health outcomes, relationship satisfaction, and resilience in coping with stressors (Bender & Ingram, 2018; Gleeson & Fitzgerald, 2014; Mikulincer & Shaver, 2012).

Childhood trauma (including sexual, physical, and emotional abuse, parental death, neglect, and bullying) inherently threatens the formation of secure bonds. Given the link

between trauma and psychosis, it is perhaps unsurprising that the prevalence of insecure attachment styles has been found to be significantly higher amongst this population compared to non-clinical samples (Carry, Hardy, & Fornells-Ambrojo, 2018; Herstell et al., 2021). As such, it has been argued that attachment insecurity may act as a mediating factor in the relationship between childhood trauma and the onset of psychosis (Berry et al., 2008). Indeed, there is a growing body of evidence in support of this hypothesis, illustrating the mediating role of attachment with respects to a wide range of psychotic phenomena, including paranoia (Lavin et al., 2020) and voice-hearing (Pilton et al., 2016).

More recently, the concept of disorganised attachment has attracted substantial interest within psychosis research. This attachment pattern was first documented by Main and Solomon (1986), who identified a subgroup of infants that appeared disoriented or demonstrated contradictory behaviour upon being reunited with their caregiver. It has been hypothesised that this develops when infants repeatedly experience the paradoxical situation whereby their caregiver is both the person that they turn to in times of distress, and the source of their fear (Liotti, 2004). The infant's "fright without solution" then manifests in simultaneous or sequential attempts to approach and flee the caregiver, freezing, or dissociation (Duschinsky, 2015). In adulthood, the fear of both intimacy and abandonment underpins similar conflictual patterns of behaviour, accompanied by feelings of confusion and mistrust towards others (Paetzold et al., 2015). This attachment pattern appears to predispose individuals to dissociative experiences (Liotti & Gumley, 2008), which is proposed to be a central process that contributes to development of voice-hearing (Berry & Bucci, 2016). Crucially, disorganised attachment has been associated with higher incidents of sexual and physical abuse in people living with psychosis, and more severe hallucinations and delusions, compared to other attachment styles (Bucci et al., 2017).

These findings further highlight the potential for attachment theory to enrich current conceptualisations of psychosis and trauma, and identify areas for intervention. In turn, this requires valid and reliable measures of attachment that can be readily administered in both research and clinical settings. Despite the abundance of self-report measures of attachment, a recent review conducted by Pollard et al. (in preparation) suggests that many do not adequately capture the concept of disorganised attachment, or at least lack a robust evidence base that confirms their psychometric properties. Similarly, many measures (i.e., Adult Disorganised Attachment Scale [ADA] Paetzold et al., 2015; The Psychological Treatment Inventory – Attachment Styles Scale [PTI-ASS], Giannini et al., 2011) are designed with romantic relationships in mind. These items may not be as accessible for individuals with psychosis, who can often struggle to form and maintain close relationships (de Jager et al., 2017).

The Psychosis Attachment Measure (PAM, Berry et al., 2006) was designed with these latter concerns in mind and was recently revised to include a measure of disorganised attachment (The PAM-R, Pollard et al., 2020). This work by Pollard and colleagues provided encouraging preliminary evidence regarding the psychometric properties of the PAM-R; the present study aimed to build upon this to confirm the structural dimensionality, reliability, and validity of the PAM-R in an independent sample.

### **Study hypotheses**

The following study hypotheses were developed in line with the Consensus-based Standards for the selection of health Measurement Instruments' (COSMIN) criteria for good measurement properties (Prinsen et al., 2018).

- 1) Confirmatory Factor Analysis will indicate a three-factor model of the PAM-R, according to multiple fit indices.
- 2) Cronbach's alphas used to determine internal consistency will be  $>.7$  for all subscales.
- 3) Test-retest reliability, as measured by Intraclass Correlation Coefficients (ICCs), will exceed  $.75$  for all subscales.
- 4) There will be a moderate positive association (correlation coefficients  $>.3$ ) between the disorganised subscale and other measures which are conceptually related to this attachment style, including measures of trauma, dissociation, and psychotic experiences.
- 5) A large positive relationship ( $>.5$ ) will be observed between the disorganised factor of the PAM-R and the corresponding subscale of other measures of attachment.

### **Method**

#### **Participants**

Participants were eligible to take part in the study providing that they i) were aged 18 or over, ii) had a self-reported diagnosis of a psychotic disorder or had received treatment for experiences related to psychosis, and iii) were proficient in English. Participants were recruited online between January 2021 and December 2021, and completed all measures online.

This data was combined with an existing data set collected as part of previous doctoral project (Humphrey et al., 2022). The eligibility criteria, measures, and procedures, for this existing dataset, can be assumed to be the same unless otherwise stated in this paper.

#### **Measures**

All measures can be found in Appendices E-K.



### ***Demographic Questionnaire***

This collected information about participants' gender, age, ethnicity, sexual orientation, relationship status, academic qualifications, and employment status. Questions around participants' psychiatric diagnoses and experiences of mental health support relating to symptoms associated with psychosis were also included.

### ***The Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006)***

The BBTS is a 12-item self-report measure designed to assess exposure to trauma in childhood and adulthood. Participants were asked to rate their experience of adverse life events on a 3-point Likert scale (1 - "never"; 2 - "one or two times"; 3 - "more than that"), before and after the age of 18. Freyd et al. (2005) outline that items can also be grouped according to the level of betrayal: "high" (physical, emotional, or sexual abuse by someone close), "medium" (witnessing a traumatic event involving someone close or experiencing abuse perpetrated by someone more relationally distant), or "low" (witnessing a traumatic event involving someone less close, natural disasters, or accidents). Studies have indicated that the BBTS has good test-retest reliability (Goldberg & Freyd, 2006) and construct validity (Martin et al., 2013). Internal consistency within the present sample was  $\alpha=.935$  (before 18) and  $\alpha=.835$  (after age 18).

### ***The Community Assessment Psychic Experiences – 42 (CAPE; Stefanis et al., 2002)***

The CAPE is a 42-item self-report measure assessing positive and negative psychotic symptoms and depressive symptoms. Only the positive symptom subscale (20 items) was included within this study. Participants indicated what percentage of the time they experience the symptoms described in each question (0% - Never; 100% - Always). Good psychometric properties have been established for the CAPE, within both clinical and non-clinical samples (Stefanis et al., 2002; Yung et al., 2009). Internal consistency in this study was  $\alpha=.795$ .

### ***Dissociative Experiences Scale (DES-II; Carlson and Putnam, 1993)***

This is a 28-item self-report measure assessing experiences of amnesia, depersonalisation, derealisation and absorption. Participants were required to rate the extent to which they felt the item applied to their experiences, from 0-100% (0% - Never; 100% - Always). The DES-II is the most widely used measure of dissociative experiences, with numerous studies indicating good reliability and validity in both clinical and nonclinical samples (Patihis & Lynn, 2017). Internal consistency in this sample was excellent ( $\alpha=.944$ ).

***The Psychological Treatment Inventory – Attachment Styles Scale (PTI-ASS; Giannini et al., 2011)***

The PTI-ASS is a 22-item self-report measure of all four adult attachment styles. The “unresolved” subscale provides a measure of disorganised attachment. Participants were required to indicate their level of agreement with each item, using a five-point Likert scale (1 - “not at all”; 2 - “somewhat”; 3 - “moderately”; 4 - “a good deal”; “very much”). Psychometric evaluation of the PTI-ASS provided evidence for its structural validity and internal consistency (Giannini et al., 2011). Internal consistency in the present sample was  $\alpha=.73$ . The PTI-ASS was the only measure that was not administered in Humphrey et al.’s (2022) study.

***The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991)***

The RQ is a self-report measure designed to measure the four adult attachment styles. It consists of four paragraphs and respondents are required to rate to what extent they reflect their general relationship style, using a seven point Likert Scale (1 – Disagree strongly; 7 – Agree strongly). The “fearful” subscale represents disorganised attachment. The RQ is a widely used self-report measure of attachment, and reasonable psychometric properties have been reported (Griffin & Bartholomew, 1994).

***The Revised Psychosis Attachment Measure (PAM-R; Pollard et al., 2020)***

The PAM-R is 23-item self-report measure of anxious, avoidant, and disorganised attachment in psychosis. Participants were asked to rate to what extent each statement reflected how they relate to key people in their life, using a four-point Likert scale (“not at all”; “A little”; “quite a bit”; “very much”). Pollard et al. (2020) reported promising psychometric properties in their initial validation study, including excellent test-retest reliability and preliminary evidence for the measure’s three-factor structure.

**Procedure**

The research proposal (Appendix L) was initially approved by The University of Manchester’s Clinical Psychology Research Subcommittee (Appendix M). All procedures were then approved by The University of Manchester’s University Research Ethics Committee (Ref: 2020-10240-17162; Appendix N), which included permission to utilise the data from Humphrey et al.’s (2022) study. Advertisement materials were developed and were posted on social media platforms (Facebook, Twitter, Reddit, and Instagram). Participants were also recruited via

mental health charities and peer support groups, who disseminated the study information via their social media accounts, website, or email lists where appropriate.

The study link provided information about the study. Once participants provided their consent to participate, they were directed to the demographics form. The subsequent measures were presented in a random order to reduce order effects; however, the BBTS was placed in the middle to minimise participant distress. When the questionnaires were completed, participants were asked whether they could be contacted again in two weeks to complete the PAM-R. This step was not included in Humphrey et al.'s (2022) study. Participants were then presented with a debrief sheet, and were given the option to provide their email if they wanted to receive a summary of research findings and/or be entered into a prize draw. The participants who opted to complete the PAM-R two weeks later also completed this online, following the same format.

### **Data analysis**

Descriptive statistics, and tests of reliability and construct validity were carried out using IBM SPSS Statistics Version 25 (IBM Corp, 2017). The quality and distribution of the combined data was assessed first, which indicated that missing data was very low and that most variables were not normally distributed (Table 2). Accordingly, missing data was pro-rated with the median. BBTS responses were analysed according to age group (before 18 and after 18) and level of betrayal (high, medium, and low) as both factors were considered to be pertinent to the development of attachment styles. For construct validity, Spearman's rank order correlations were carried out as the data was not normally distributed for most measures.

Confirmatory factor analysis (CFA) was conducted using the structural equation modelling module of JASP (version 0.16.00; JASP Team, 2021), which is based on the R-package lavaan (Rosseel, 2012). Diagonally Weighted Least Squares with robust error calculations was chosen as the estimation method, as this approach has been shown to perform well with ordinal data (Li, 2016). Model fit was evaluated using the Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), the Tucker-Lewis Index (TLI), and the Goodness of Fit Index (GFI). Schermelleh-Engel et al. (2003) noted that acceptable model fit is indicated by  $CFI \geq .95$ ,  $RMSEA \leq .08$ ,  $TLI \geq .95$ , and  $GFI \geq .90$ .

The expected three-factor model as described by Pollard et al. (2020) was also compared against single- and two-factor solutions. A full description of the alternative models tested is presented in Appendix O.

## **Results**

The data collected was combined with Humphrey et al.'s (2022) dataset; this was considered appropriate given the inclusion criteria and recruitment methods were the same, and to achieve the sample size required for factor analysis. The results reported are based on the combined dataset unless otherwise stated. A total of 466 participants completed the demographic questionnaire, however 59 individuals did not go on to provide responses for any of the study measures and were therefore excluded from the analysis.

### **Sample characteristics**

Demographic and clinical characteristics are presented in Table 1. There number of men and women was comparable; the majority identified as white and were aged between 18 and 34 years old. Almost all participants reported that they had received a psychiatric diagnosis relating to psychosis, and most had a history of antipsychotic medication and/or mental health support (e.g. through a community mental health team).

Descriptive statistics for the study measures can be found in Table 2. Of the 360 participants who completed the BBTS "Before 18" scale, 81.1% reported having experienced at least one trauma and 70.3% reported a "high" betrayal trauma, whereby they were physically, psychologically, or sexually abused by someone that they considered themselves to be very close to. 74.4% stated that they had experienced a traumatic event after the age of 18, with 63.9% endorsing items that were indicative of "high" betrayal. Mean scores for the DES-II exceeded 30, the threshold that is considered to denote "clinically significant" levels of dissociation (Carlson & Putnam, 1993).

### **Structural validity**

Factor loadings of individual items are presented in Table 3, alongside Pollard et al.'s (2020) EFA results. All items loaded onto the expected factors; all item loadings were  $>.4$  (Matsunaga, 2010).

The three-factor model based on Pollard et al.'s (2020) research met the criteria for the CFI (.955), TLI (.950), and GFI (.956). One and two factor models were also tested as comparisons, however these did not provide a superior fit compared to the three factor solution (see Appendix O for a description of the models and fit statistics). It was noted, however, that the three-factor model did not meet the RMSEA criteria (RMSEA=.107). Individual items were therefore re-evaluated according to the attachment literature, and modification indices, expected parameter change, and the standardised residual covariance matrix were examined for potential sources of misfit. Four items (9, 13, 15, and 22) were identified as potentially

describing features of attachment which were not unique to the target attachment style and may be contributing to misspecification; these items were removed. CFA was conducted on this revised model – RMSEA was adequate (.077), whilst the remaining three indices (CFI=.978; TLI=.975; GFI=.976) indicated a “good” model fit (Schermelleh-Engel et al., 2003).

**Table 1.**

*Combined sample demographic information and clinical characteristics*

<b>Characteristic</b>	<b>N</b>	<b>%</b>
<b>Sex</b>		
Female	187	45.9
Male	170	41.8
Prefer to self-describe	45	11.1
Prefer not to say	5	1.2
<b>Age</b>		
18-24	158	38.8
25-34	137	33.7
35-44	56	13.8
45-54	28	6.9
55-64	15	3.7
65-74	8	2
75+	3	.7
Prefer not to say/did not respond	2	.4
<b>Ethnicity</b>		
White British	164	40.3
White Other	177	43.5
Mixed heritage	22	5.4
Asian	4	1
Black	2	.4
Chinese	8	2
Other ethnic background	26	6.4
Prefer not to say	4	1
<b>Nationality</b>		
British	161	39.6
American	128	31.4
European country	46	11.3
Canadian	22	5.4
Australian	17	4.2
Latin American country	12	3
Other nationality	18	4.4
Did not respond	3	.7
<b>Sexual orientation</b>		
Heterosexual	178	43.7
Gay or Lesbian	51	12.5
Other	45	11.1
Prefer not to say	12	2.9
<b>First language</b>		
English	345	84.7
Other	59	14.5

Prefer not to say/did not respond 3 .7

**Marital status**

Never married and never registered in a civil partnership	313	76.9
Married	61	15.0
Separated, or previously married or in a civil partnership	30	7.4
Prefer not to say	3	.7

**Highest qualification**

Higher qualification (e.g. Degree, teaching, NVQ Level 4)	204	50.2
High school/A-level	99	24.3
Other qualifications	44	10.7
No qualifications	45	11.1
Prefer not to say	15	3.7

**Employment status**

Employed or self-employed	147	36.1
Unemployed/receipt of sickness or disability allowance	122	30
Full-time education	100	24.6
Retired/looking after the family or home/other	36	8.8
Prefer not to say	2	.5

**Self-report psychiatric diagnosis<sup>1</sup>**

Report ever receiving a psychiatric diagnosis	379	93.1
Schizophrenia/paranoid schizophrenia	92	22.6
Schizoaffective	115	28.3
Schizophreniform	9	2.4
Depression with psychotic features	137	33.7
Delusional disorder	12	2.9
Bipolar with psychotic features	106	26
Brief psychotic disorder	46	11.3
Any other disorder which includes psychotic experiences	89	21.9

**Treatment**

History of antipsychotic medication	275	67.6
History of mental health support (e.g. CMHT or EIS)	359	88.2
Previous inpatient experience	266	65.3
Current mental health support (e.g. CMHT or EIS)	133	32.7
Current inpatient	1	.2

Note: <sup>1</sup> Participants could select more than one diagnosis; CMHT = Community Mental Health Team; EIS = Early Intervention Service

**Table 2.**

*Descriptive statistics for study measures*

Measure	N	% missing	Range	Mean (SD)
BBTS Before Age 18	360	.28	12-36	17.84 (4.62)*
BBTS After Age 18	355	.53	12-31	16.37 (3.72)*
CAPE Positive subscale (symptoms)	362	.30	20-75	42.28(11.01)*
CAPE Positive subscale (distress)	362	0	20-70	37.89 (13.07)
DES-II	383	0	0-100	38.85(22.66)*
PAM-R Disorganised scale	364	0	0-3	1.47(.78)
PTI-ASS Unresolved scale	157	0	1-3.5	1.53 (.58)*

Note: \*data positively skewed; Interquartile range (for skewed data): BBTS Before Age 18: 7; BBTS After Age 18: 4; CAPE: 15.7; DES-II: 36.43; PTI-ASS=.83

**Table 3.***PAM-R item factor loadings from the CFA and Pollard et al.'s (2020) EFA*

<b>Factor and item</b>	<b>Factor loading (present study)</b>	<b>Factor loading (Pollard et al., 2020)</b>
<b>Avoidant</b>		
I prefer not to let other people know my “true” thoughts and feelings	.724	.474
I find it easy to depend on other people for support with problems or difficult situations (RS)	.723	.665
I usually discuss my problems and concerns with other people (RS)	.703	.678
I find it difficult to accept help from other people when I have problems or difficulties	.779	.500
It helps to turn to other people when I’m stressed (RS)	.569	.627
I try to cope with stressful situations on my own	.696	.536
<b>Disorganised</b>		
I find close relationships overwhelming	.771	.739
I feel frightened in close relationships	.834	.796
I find people I am in close relationships with to be unpredictable in their actions and behaviours	.453	.439
When I try to get close to someone sometimes I shut down and find it difficult to think or move	.789	.761
Sometimes I am confused by my feelings towards others	.750	.553
I want close relationships, but being close makes me feel frightened	.897	.626
I often freeze when I try to get close to someone	.821	.627
I want to be close to others but I often find myself pulling away when I am	.802	.578
When I form close relationships I lose sense of who I am	.585	.487
<b>Anxious</b>		
I tend to get upset, anxious, or angry if other people are not there when I need them	.575	.740
I worry that key people in my life won’t be around in the future	.629	.519
I ask other people to reassure me that they care about me	.433	.563
If other people disapprove of something I do, I get very upset	.637	.580
I worry that if other people get to know me better, they won’t like me	.925	.509
I worry a lot about my relationships with other people	.796	.561
I worry if I displease other people, they won’t want to know me anymore	.851	.764
I worry about having to cope with problems and difficult situations on my own	.573	.632

*Note.* CFA: Confirmatory Factor Analysis; EFA: Exploratory Factor Analysis; PAM-R: Psychosis Attachment Measure – Revised; RS: Reverse scored.

## **Reliability**

### *Internal consistency*

Cronbach's alpha for the three subscales of the PAM-R were as follows: Avoidant = .804, Anxious = .845, Disorganised = .887. Alphas for each item if deleted exceeded .770 suggesting that all individual items were relevant to their respective scales.

### *Test-retest reliability*

Fifty-nine participants from this study provided responses to the PAM-R at Time 1 and Time 2. ICCs (absolute agreement, 2-way mixed effects model) with 95% Confidence Intervals: Avoidant = .863 (.770-.918), Anxious = .957 (.927-.974), Disorganised = .910 (.839-.948).

## **Construct validity**

Correlations and significance values are presented in Table 4 and 5. The disorganised subscale had a large positive correlation with the fearful subscale of the RQ, and a moderate positive correlation with the unresolved scale of the PTI-ASS. Moderate positive correlations were also observed between the disorganised subscale and the frequency of positive symptoms, and the level of distress associated with these symptoms, as measured by the CAPE-42 Positive Symptoms subscale. Similarly, the PAM-R disorganised factor was moderately positively correlated with the DES-II, which captured dissociative experiences.

Responses on the BBTS were grouped according to the level of betrayal (high, medium, and low) and whether the traumatic experience happened before or after 18 (Table 5). There was a small, but highly significant, positive correlation between the disorganised subscale and all BBTS groups with the exception of the "low betrayal" group after aged 18. Traumatic experiences within each betrayal group had stronger associations with the disorganised subscale if they occurred before the age of 18. "High betrayal" items before aged 18 were most strongly associated with the disorganised subscale ( $r=.282$ ) – the observed correlations were progressively weaker across the lower betrayal group. This pattern of correlations was also observed in the "after 18" groups. Compared to the other PAM-R subscales, the strongest correlations within each group were found for the disorganised scale.



**Table 4.**

*Correlations between the PAM-R disorganised factor and the CAPE-42, DES-II, PTI-ASS Unresolved scale, and the RQ Fearful factor.*

<b>Measure</b>	<b>Correlation</b>
CAPE Positive Symptoms (frequency)	.457**
CAPE Positive Symptoms (distress)	.386**
DES-II Total	.430**
PTI-ASS Unresolved	.388**
RQ Fearful	.512**

*Note: Correlations are Spearman’s Rank-order; \*\*  $p < .001$ . All correlations are derived from the CAPE: Community Assessment of Psychic Experiences; DES-II: Dissociative Experiences Scale; PTI-ASS: Psychological Treatment Inventory – Attachment Style Scale; RQ: Relationship Questionnaire.*

**Table 5.**

*Correlations between the PAM-R disorganised subscale and BBTS (grouped by age and level of betrayal)*

<b>PAM-R subscale</b>	<b>BBTS Scale and Grouping</b>					
	HB Before 18	HB After 18	MB Before 18	MB After 18	LB Before 18	LB After 18
Disorganised	.275**	.180**	2.13**	1.47**	.169**	.086
Anxious	.180**	1.64**	1.70**	0.78	0.76	0.25
Avoidant	1.70**	0.69	1.67**	0.36	1.48**	0.60

*Note: Correlations are Spearman’s Rank-order; \*\*  $p < .001$ .*

*BBTS: Brief Betray Trauma Survey; HB: high betrayal; LB: low betrayal; MB: medium betrayal; PAM-R: Psychosis Attachment Measure – Revised.*

## **Discussion**

### **Main findings**

The CFA provided evidence for a 3-factor model of the PAM-R (hypothesis 1), which included avoidant, anxious, and disorganised factors. Replication of Pollard et al.’s (2020) suggested factor structure resulted in an adequate-good fit across three out of the four fit indices. Further refinement of this model was achieved through removal of four items, which led to a “good” fit according to the CFI, TLI and GFI, and “adequate” fit according to the RMSEA. Both three-factor solutions provided a superior fit compared to single- and two-factor models. Hypotheses 2 and 3 were also met – internal consistency and test-retest reliability exceeded the

critical cut-offs for all three subscales. Notably, the disorganised subscale demonstrated “excellent” test-retest reliability across the two-week timescale. This was in line with Pollard et al.’s. (2020) findings; in their study ICCs exceeded .823 and Cronbach’s alphas were greater than .791 across for all scales.

The Disorganised subscale correlated in the expected directions with other related measures (hypotheses 4 and 5). However, a moderate correlation was found between the disorganised factor and the unresolved subscale of the PTI-ASS, whilst a large positive relationship was observed with the fearful subscale of the RQ. These findings suggest that whilst the PAM-R is related to existing attachment measures, which is expected given their theoretical underpinnings, the PAM-R captures some additional or different attachment-related concepts. With respects to the RQ, this is perhaps expected as the RQ describes disorganised attachment in a single paragraph based on two dimensions: dependence and avoidance of intimacy (Bartholomew & Horowitz, 1991). Although these are core features of the disorganised PAM-R scale, the PAM-R also includes items relating to confusion, disorientation, and freezing – experiences which are characteristic of this attachment style according to both the child and adult literature (Duschinsky, 2015; Paetzold et al., 2015). Similarly, the moderate correlation with the PTI-ASS may be explained by the fact that the PTI-ASS was designed with romantic, intimate relationships in mind (Giannini et al., 2011), and may be less accessible to the target population given that these individuals are at greater risk of being socially isolated (Meuser et al., 2013). In addition, PTI-ASS’ unresolved items predominantly targets aggression and mistreatment within relationships, as opposed to the emotional experience of the individual, which is a central focus of the PAM-R.

A moderate, highly significant, association was observed between the Disorganised PAM-R scale and measures of dissociative experiences and positive psychotic symptoms. This supports previous studies which have reported associations between these constructs and the disorganised attachment style (Bucci et al., 2017; Liotti & Gumley, 2008). A small, positive relationship was established between with disorganised factor and the measure of trauma (BBTS); the magnitude of this correlation fell somewhat below expectations and Pollard et al.’s (2020) findings ( $r > .3$  for both age groups). This may in part be explained by the fact that the data for the BBTS was positively skewed, indicating that most participants had experienced one or more traumatic events “once or twice”. As this study did not collect information about potential protective factors, such as close relationships, supportive communities, and positive coping strategies (Banyard et al., 2003), it is possible that impact of infrequent traumatic events was offset by significant positive and/or reparative experiences. However, it is noted that more significant abuse histories (as denoted by the “high” and “medium” betrayal groups of the BBTS)

were more strongly associated with the disorganised factor, compared to the anxious or avoidant subscales. This is in line with previous research (e.g., Bucci et al., 2017), which indicates that disorganised attachment is associated with higher proportions of interpersonal trauma.

### **Strengths and limitations**

The COSMIN criteria for good measurement properties (Prinsen et al., 2018) informed the development of study hypotheses and the statistical methods employed. As such, the results were evaluated against globally recognised standards that indicate whether a measure is “good enough” to be used in research or clinical settings. With respects to the sample, men and women were both well represented, as were varied self-reported psychiatric diagnoses. Despite the research team being based in the UK, almost 60% of participants were not British, which highlights the potential for the PAM-R to be used beyond its country of origin.

It was noted that over 53% of the sample identified as LGBTQ+. This far exceeds general population estimates in the US and UK, which are less than 10% (Gallup, 2018; ONS, 2019). As the LGBTQ+ community is both underserved within research, and reportedly at heightened risk of developing severe mental health issues (Kidd et al., 2016), it is asserted that there is value in the relative over-representation of this group in the present sample. However, the authors recognise there may be some developmental and interpersonal experiences which are relatively unique to and/or ubiquitous within the LGBTQ+ community which may impact upon attachment behaviour (Tharinger & Wells, 2000), thus limiting the generalisability of this study.

A further limitation of this study was that the majority of the sample (>83%) identified as white. Although this was broadly in line with data from the UK and US censuses (ONS, 2011; US Census Bureau, 2021), the absolute number of participants from other ethnic groups, particularly the black community, was very low. As several studies have indicated that the weighted prevalence of psychosis is much higher amongst the black population (e.g. Morgan et al., 2006; Qassem et al., 2015) compared to white communities in the UK, it would be important for this limitation to be addressed in future research to ensure that the PAM-R is accessible and appropriate for a range of ethnic groups.

This study also relied on self-reported experiences of psychosis. Whilst a substantial majority (>65%) described previous inpatient experience and clinically significant levels of dissociation, the risk that these findings may not generalise to a clinical setting is noted. In addition, the online methodology and merged data set created a risk of participants completing the questionnaires more than once. However, as the projects were advertised via independent social media accounts, led by different researchers, and had recruitment windows that were approximately two years apart, it is argued that their respective reach and networks would have

likely been sufficiently different so that risk of repeat responders was not significant. Finally, in terms of the psychometric properties assessed within this study, discriminant validity was one key area which was not explored.

### **Implications and future research**

This study provided further validation of the PAM-R and evidence of its psychometric properties. The PAM-R demonstrated a theoretically relevant factor structure, and all subscales were found to be internally consistent and stable over a two-week period. The new disorganised scale correlated in expected directions with other conceptually relevant measures, providing evidence for its concurrent and convergent validity. Together, these findings suggest that the PAM-R has good psychometric properties, giving researchers and clinicians alike access to a time- and cost-effective measure of attachment for individuals with experiences of psychosis. They also further contribute to the research base which indicates a relationship between disorganised attachment and positive psychotic symptoms, dissociation, and trauma. The authors tentatively suggest that the PAM-R may be further improved through the removal of four items, however this assertion would need to be confirmed within a representative sample.

Future research may usefully focus on validating the PAM-R in clinical settings. Kvrjic and colleagues (2011) conducted a similar study with the German version of the original PAM; their findings could be extended through the inclusion of the disorganised subscale in an English-speaking population. The inclusion of a non-clinical population for comparison would also allow for the discriminant validity of the PAM-R to be examined. Separately, one of the key motivations for developing the PAM was the lack of valid attachment measures which did not focus on intimate or romantic relationships, as these were argued to be less accessible and less relevant for individuals with psychosis who are more at risk of experiencing interpersonal difficulties (Meuser et al., 2013). It is noted that individuals who are neurodivergent or experience other significant mental health issues (e.g. people diagnosed with personality or bipolar disorders) can have similar difficulties in maintaining social connections, thus there is scope for future studies to investigate the application of the PAM-R in other potentially socially isolated groups.

### **Conclusion**

This study suggests that the PAM-R is a reliable and valid measure of attachment in psychosis. The findings provide further evidence of its structural dimensionality, internal consistency, test-retest reliability, and convergent validity. A three-factor solution was demonstrated by CFA; however, the authors tentatively propose that the measure could be

further refined through the removal of four items. Future research is needed to replicate these findings within a representative clinical population and to establish discriminant validity.

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**Conflicts of interest**

None.

**Ethical standards**

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

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## **Paper Three: Critical Reflection**

Word count excluding references: 4274

## 1. Overview

This paper aims to critically appraise the research undertaken as part of this doctoral thesis. The literature review and empirical paper are presented in turn, with theoretical and methodological considerations being discussed, alongside the author's personal reflections around the research process and decision-making.

## 2. Paper one – literature review

### 2.1 *Focus on secure attachment*

Attachment security has been associated with varied indicators of adaptive functioning and has been viewed as the “relational scaffolding” of positive psychology (Lopez, 2009). As such, the focus of the paper was thought to be of considerable value, as it would provide insight into the current landscape of psychometric evidence for self-report measures of secure attachment and identify the most robust tools that are currently available. This would be an important step towards ensuring that researchers and clinicians have access to valid and practical measures of secure attachment – a prerequisite for balanced psychological assessments that look beyond the areas of difficulties.

The absence of reviews which specifically explored the psychometric properties of self-report measures of secure attachment in adults was noted. In line with the arguments presented by Lopez et al. (2019), the trainee reflected that this topic may not have been addressed in the literature thus far due to the bias within psychology to identify and understand psychopathology, as opposed to strengths. This is exemplified by the fact that the two major classification systems which inform the assessment of psychological distress, the DSM-5 (American Psychiatric Association, 2013) and ICD-11 (World Health Organisation, 1992), conceptualise mental health issues in terms of dysfunction, deficits, and limitations (Deacon, 2016; Lopez, 2019), without promoting an examination of assets and resources. This imbalance within psychology likely impedes a comprehensive understanding of mental *health*, i.e. how human strengths can protect against significant psychological issues even in the face of adversity, or be leveraged to alleviate distress (Lopez, 2019). As such, the review was considered to address some of these issues in its efforts to focus on a concept which is associated with inherent resilience (Bucci et al., 2017).

### 2.2 *Why self-report measures?*

Although the Adult Attachment Interview (AAI; George et al., 1985) is considered to be the “gold standard” for assessing attachment, there were several factors which motivated the exclusion of the AAI and other similar interview-based methods, such as the Marital

Attachment Interview (MAI; Dickstein et al., 2001). Based on her own clinical practice, the trainee acknowledged that interview approaches would be unfeasible in most scenarios due to the extensive administration time and training required. As such, it was considered that an investigation of self-report measures was likely more clinically useful, and cognisant of the significant pressures within mental health services, in terms of time, cost, and resources. It is recognised that self-report measures are unlikely to collect the same richness and breadth of information as interview-based approaches (Jacobvitz et al., 2002). However, self-report measures still have significant utility in terms of their ability to identify attachment difficulties, discriminate between secure and insecure typologies, and measure change (Shaver & Mikulincer, 2004) which could contribute to more attachment-informed clinical work.

Through initial scoping searches, the trainee also became aware of other clinician-reported measures, such as the Attachment Prototype Questionnaire (Westen & Nakash, 2005) and the Adult Attachment Projective Picture System (George & West, 2001), which circumvented some of the issues presented by the interview-based methods. However, given the plethora of self-report measures available, it was thought that this topic necessitated a separate investigation. In addition, the trainee noted that there were other features of clinician-reported tools which perhaps limited their practical utility within services. For instance, many relied on the clinician already having substantial insight into the client's typical attachment behaviour, which may present an obstacle when clients are relatively new to the service and do not have any long-standing relationships with professionals.

### *2.3 Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) guidelines*

A limitation of previous reviews of attachment measures (e.g. Garbarino, 1998; Ravitz et al., 2010) has been the lack of a quality assessment tool which evaluates the methodology of included studies. To address this, the COSMIN guidelines for patient-reported outcome measures (Prinsen et al., 2018; Terwee et al., 2017) were selected as they include a systematic appraisal of risk of bias. This enabled the researcher to grade the overall quality of the evidence available, so that recommendations are not based on the reported results of the studies alone.

Although the standardised criteria promoted greater levels of consistency in the evaluation of different studies, a degree of subjective judgement was still needed. For instance, it was often left to the rater's discretion to decide what constituted a minor or major methodological flaw, or whether hypotheses (which were not always clearly stated within the paper) had been confirmed. To address this, the trainee made a priori standards for common issues that were applied across the papers. This included effect size cut-off points for

hypothesis testing (i.e. a correlation between .3 and .5 for instruments measuring related, but dissimilar, constructs such as self-esteem). Similarly, if the rotation method in an exploratory factor analysis was not reported, this was considered a minor, rather than a major, methodological flaw. Whilst these standards were developed with support of the wider research team and thus reflected their collective research expertise, the trainee recognised that these were still subjective and could be contested.

The methodology for the creation of the COSMIN guidelines was also considered. The standards and criteria were developed through an online Delphi study which included 159 professionals with different areas of expertise (Terwee et al., 2018). This methodology has been critiqued by McKenna and Heaney (2021), who argued that the checklist is therefore limited to the experience of the panellists involved. As such, McKenna and Heaney have indicated that the COSMIN framework fails to promote the use of modern methodologies, such as Item Response Theory (IRT), and downplays the advantages of these approaches with respects to Classical Test Theory (CTT). With this in mind, the application of COSMIN may have led to the quality of the studies included in paper one being over-estimated to some extent. As such, although the COSMIN guidelines were specifically developed because of the lack of empirical evidence to guide the reviews of patient-reported outcome measures (Mokkink et al., 2019), it is recognised that this approach still has some important limitations, and the findings of COSMIN reviews must be presented within this context.

#### *2.4 Research implications*

The review highlighted the lack of psychometrically-sound self-report measures of adult secure attachment. This was in line with the findings of Pollard et al. (in press) and Jewell et al. (2019) who examined measures of disorganised attachment, and attachment measures in middle childhood and adolescence, respectively. These two reviews are highlighted in particular as both utilised the COSMIN framework, and thus interrogated the methodology of included studies as opposed to simply considering their results. Together, this points to a lack of evidence for adequate measurement properties across most attachment measures from middle childhood. As such, this review contributes to the research base which calls for greater methodological rigour in the field, and more robust measures of a construct which appears to be inextricably linked to so many biopsychosocial outcomes (Ravitz et al., 2010).

Also consistent with Pollard et al.'s (in press) review was the notable lack of studies that properly examined content validity, through piloting, expert panels, and focus groups with both professionals and the target population. This was striking, as content validity has been argued to be the most important measurement property (Mokkink et al., 2018). The trainee considered the implications of this finding and noted that the lack of valid measurement tools

in adulthood may in part be explained by the general tendency to bypass these initial steps during the measurement development phase. As such, one of the broader learning points from the review is around the importance of gaining input from both experts and target groups. Although the challenges of achieving this (both in terms of the time and resources available within a research setting) are recognised, seeking this insight would likely have positive ramifications for the relevance, comprehensibility, and comprehensiveness of measures moving forwards.

### **3. Paper two**

#### *3.1 Impact of the COVID-19 pandemic*

Initially, the research team had planned to validate the measure within a clinical sample, by nesting the project within the Talk, Understand, Listen for In-Patient Settings (TULIPS) trial – a National Institute of Health Research (NIHR)-funded clinical trial based in in-patient settings (TULIPS, 2022). This design was to address a limitation of Pollard et al.'s (2020) study, which had developed the revised psychosis attachment measure (PAM-R) with a sample of individuals with self-reported experiences of psychosis. Unfortunately, the first national lockdown due to the COVID-19 pandemic was announced in March 2020, which resulted in many non-COVID-19 trials, including TULIPS, being temporarily paused (Mitchell et al., 2020). This pause coincided with the preparation of the research proposal, which would subsequently be reviewed and approved by the Clinical Psychology department's research subcommittee. As it was unclear when normal activity for clinical trials would resume, the aim to recruit within acute settings was ultimately abandoned, as it presented too great a risk to recruitment given the timescales for the doctoral project.

The trainee had also started to make arrangements to meet with the Community Liaison Group (CLG), a group of experts by experience who consult on research projects for the Clinical Psychology programme at the University of Manchester. The lockdown resulted in these meetings being cancelled, which meant that it was not possible to gain their feedback on the empirical study prior to the research proposal being submitted. The trainee was able to review feedback that was provided to previous projects, which were similar in their design and/or population of interest, such as Pollard (2019) and Degnan (2020). Relevant suggestions were incorporated into the research methodology, such as the recommendation to place the Brief Betray Trauma Survey (BBTS; Goldberg & Freyd, 2006), a measure designed to assess exposure to interpersonal trauma, in the middle of the questionnaire battery to minimise participant distress. Similarly, on the basis of previous feedback, the study poster (Appendix P) clearly communicated that some questions could be distressing and touch on sensitive issues,

so that people were better able to make an informed decision about their participation. Despite the opportunity to review past suggestions, the lack of service-user involvement was regrettable, as such input can promote research that is more sensitive to participants, fosters greater engagement, and is better informed by the needs of the target population (Beresford, 2007).

### *3.2 Selection and appraisal of attachment measures*

The inclusion of other self-report measures was necessary to examine the PAM-R's convergent validity. However, this presented a challenge as the extension of the original psychosis attachment measure (PAM) to include a disorganised subscales was driven, in part, by the fact that existing self-report measures did not adequately capture the concept of disorganised attachment (Berry et al., 2017; Pollard et al., in press). Similarly, it was recognised that papers assessing the psychometric properties of attachment measures often have significant methodological issues (Kurdek, 2002), which limits the conclusions that can be drawn about their validity and reliability.

With these concerns in mind, the trainee reviewed Pollard et al.'s (in press) review of measures of disorganised attachment. The Psychological Treatment Inventory – Attachment Style Scale (PTI-ASS; Giannini et al., 2011) was identified as having comparatively good psychometric properties based on methodologically robust research. This PTI-ASS was therefore selected, however the limitations of this measure are acknowledged. For instance, its conceptualisation of disorganised attachment is relatively narrow – focusing largely on antagonism and violence within intimate relationships. Although research has indicated that disorganisation is an important predictor for externalising behaviours such as hostility and aggression, which in turn increases the risk of conflictual relationships (Rholes et al., 2016), this is only one, arguably more peripheral, characteristic of this attachment style. Key features of disorganisation such as confusion, uncertainty, or contradictory behaviours (Paetzold et al., 2015) are not assessed by the PTI-ASS, suggesting that this measure may focus on capturing a specific type of disorganised presentation.

The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) was selected as it is one of the most widely used self-report measures of attachment and is often incorporated into other validation studies. The measure was also used in Humphrey et al.'s (2022) study (the additional data set incorporated into the empirical paper), thus there was an argument for including the RQ to allow for analyses across the entire pool of participants. The trainee was mindful however, that the RQ had more psychometric limitations (Pollard et al., in press) in comparison to the PTI-ASS. Some researchers have also contested that the fearful category, as measured by the RQ, represents a somewhat different construct to disorganisation (Rholes et



al., 2016). The fearful category represents a mixture of anxious and avoidant behaviours, thus drawing from two organised strategies for engaging with attachment figures. By contrast, Rholes et al. (2016) argue that disorganisation is driven by an inability to adopt any organised strategy, due to a fear of the attachment figure, which is not a feature of either anxious or avoidant attachment.

Together, this critique of the attachment measures included highlights the difficulties in establishing convergent validity when existing tools have psychometric limitations. However, it is argued that this limitation was somewhat balanced through the inclusion of psychometrically-sound instruments which assessed constructs that were theoretically related to disorganised attachment, such as the Community Assessment of Psychic Experiences (Stefanis et al., 2002), Dissociative Experiences Scale (Carlson & Putnam, 1993), and Brief Betrayal Trauma Survey (Goldberg & Freyd, 2006). In addition, this challenge further underscored the need for a robust measure of disorganised attachment and the important contribution of paper two towards this aim.

### *3.3 Online study design*

Participants were recruited online, largely via social media platforms, and completed all study questionnaires online. This approach was invaluable, as it facilitated the recruitment of a psychosis sample during a global pandemic. However, the trainee recognised that this introduced an element of selection bias, as it precluded potential participants who do not engage with social media or those who are less technology literate from being recruited. This appears to be reflected in the sample characteristics as the majority were aged between 18 and 35, and 50% had a higher qualification (e.g. a degree).

Similarly, the online methodology did not allow for the trainee to ascertain the participant's level of comprehension or attention, which could have influenced the validity of the results. Berry et al. (2019) discussed the limitations of online survey research, drawing attention to the frequency of inattentive responding even amongst willing volunteers. The trainee also noted that given the opportunity to enter a prize draw, the empirical study may have attracted participants who were motivated by the reward, perhaps increasing the risk of inattentive responding. In line with the recommendations presented in Berry et al.'s paper, the trainee reflected that the study design might have been improved through the inclusion of brief measure of inattentive responding. This could have allowed inattentive/random responding to be identified, and such data to be excluded.

### 3.4 Methodological evaluation of the empirical paper using COSMIN guidelines

The COSMIN guidelines for systematic reviews of patient reported outcome measures (Prinsen et al., 2018; Terwee et al., 2017) utilised in paper one, were used by the trainee to critically appraise the empirical paper. The risk of bias rating for each measurement property is presented in Table 1., alongside a brief rationale.

**Table 1**

*COSMIN risk of bias ratings for the empirical paper*

<b>Measurement property</b>	<b>Rating</b>	<b>Rationale</b>
Structural validity	Very good	+ CFA conducted + Sample size > 100 and seven times greater than number of items
Internal consistency	Very good	+ Cronbach's alpha calculated for each subscale
Reliability	Adequate	+ Time interval appropriate + Evidence provided that test conditions were similar + ICC calculated - Assumable that participant were stable
Hypothesis testing (PTI-ASS)	Adequate	+ Constructs measured clearly described + Sufficient measurement properties + Appropriate statistical methods - Unclear if measurement properties would apply to the study population
Hypothesis testing (RQ)	Doubtful	+ Constructs measured clearly described + Appropriate statistical methods - Some evidence of measurement properties - Unclear if measurement properties would apply to the study population
Hypothesis testing (BBTS; CAPE; DES-II)	Very good	+ Constructs measured clearly described + Sufficient measurement properties demonstrated in similar population to study + Appropriate statistical methods

*Note.* BBTS: Brief Betrayal Trauma Survey; CAPE: Community Assessment of Psychic Experiences; CFA: Confirmatory Factor Analysis; DES-II: Dissociative Experiences Scale; ICC: Intraclass Correlation Coefficient; PTI-ASS: Psychological Treatment Inventory – Attachment Style Scales; +: positives; -: critiques.

Structural validity, internal consistency, and some aspects of hypothesis testing were rated as “very good”, indicating that there were no significant methodological or reporting issues. The statistical methods employed across all three measurement properties were appropriate. An appropriate sample size for CFA was also achieved, and three of the comparator instruments (the BBTS, CAPE, and DES-II) had sufficient measurement properties within a comparable population to the present study.

With respects to reliability, the minimum two-week time interval was considered suitable to balance the risk of memory effects and the possibility of life changes which could impact participant responses. Although attachment style is thought to be relatively stable, which has led some researchers to argue that longer time intervals (> six months) are appropriate (e.g. Andersen et al., 2017), the trainee did not agree with this rationale. Studies have indicated that attachment styles can be impacted by significant adverse life events (Waters et al., 2000) as well as the formation of positive relationships (Saunders et al., 2011), the ramifications of which could arguably unfold within a period of several months. Similarly, it was considered that this sample would likely have experienced greater adversity during childhood, which in itself is a risk factor for exposure to more frequent stressors during the lifespan (Pearlin et al., 2005). The trainee considered that the methodology could have been improved with an overt assessment of stability within this time period, as the participant group were at increased risk of significant mental health fluctuations which could have impacted their responses.

The differential ratings for hypothesis testing were largely due to the psychometric properties of the comparator instruments – an issue which has been discussed in section 3.2 of this paper. In addition to this commentary, it is noted that the inclusion of the PTI-ASS and RQ was further critiqued as these measures have not been validated in a psychosis sample. As the development of the PAM was in part motivated by the fact that other attachment measures may not be accessible given their focus on experiences within intimate relationships, it was unclear whether the measurement properties of these instruments would apply to this group.

### *3.5 Future research*

At present, the PAM-R does not include a specific measure of secure attachment; this could be a valuable area for future research. In a large psychosis cohort, Bucci et al. (2017)

found that secure attachment was the most common attachment style (37% of the sample), which they argued highlights the inherent resilience of a significant proportion of individuals who experience psychosis. Their research found that overall, the securely attached participants were comparatively less symptomatic, however it was not possible to make causal inferences about the relationship between these two variables. As such, the availability of secure attachment measure appropriate for this sample may help to further delineate the mechanisms underpinning these findings, and to what extent secure attachment may act as a protective factor.

A review by McGonagle et al. (2019) also suggests that securely attached people with psychosis tend to demonstrate a better level of engagement with services. This indicates that attachment style may be an important area for intervention to promote improved relationships between clients and clinicians, as well as greater treatment adherence and more positive outcomes. The extension of the PAM-R to include a secure scale could therefore be utilised within this context, to better capture the relative strengths and difficulties of the individual from an attachment perspective and track change over time. This in turn could be used to further support mental health services to become more attachment-informed and be able to calibrate interventions based on individual needs.

Mikulincer and Shaver (2012) argue that attachment insecurity can be understood as a creating a general vulnerability to mental health issues. Indeed, in an earlier review (Mikulincer & Shaver, 2007) found that insecure attachment was common amongst people with a range of different mental health difficulties including depression, post-traumatic stress, and personality disorders. As social isolation and interpersonal issues can often be a feature in problems other than psychosis, for instance amongst people who have received a personality disorder diagnosis (Williams & Simms, 2016), the PAM-R could also prove to be a more accessible tool for assessing attachment within other mental health conditions too. Future research could therefore focus on validating the measure within other groups where attachment issues and difficulties in relationships are a core feature.

#### **4. Personal reflections**

The trainee did not have significant research experience prior to beginning the doctoral programme, and the literature review presented in paper one was the first review that she had ever undertaken. The learning curve was steep, particularly as both papers required a relatively broad understanding of research design and statistics. However, the trainee found that the project allowed her to apply a lot of the learnings gained from the taught research and statistics modules of the doctoral programme, which reinforced their knowledge and confidence in research methods.

The trainee initially felt somewhat apprehensive about the recruitment target (minimum N=100) for the empirical paper, as they were aware that attracting people to psychosis research could be challenging. Despite these reservations, the recruitment process was relatively smooth, which the trainee considered was in large part due to the use of social media. Although people with psychosis experience more interpersonal difficulties and are more likely to be socially isolated (Meuser et al., 2013), the trainee reflected that social media seemed to act as a powerful tool which connected such individuals based on their shared experiences. Indeed, the trainee encountered several individuals with a substantial social media following, who had been able to build a community of people from all over the world who had similar struggles and insights. The trainee was grateful to be welcomed into these spaces and noted there was often a strong commitment to advancing psychosis-based research.

The literature review in particular highlighted the need to always critically appraise research methodology and identify any risk of bias, before accepting the conclusions of a study. The trainee was somewhat surprised by the ubiquity of methodological issues in the papers included for review, particularly as these were all published in peer-reviewed journals, which would suggest that their methodology had been subjected to some level of scrutiny. The identified psychometric issues of measures such as the RQ (Bartholomew & Horowitz, 1991) and the Relationship Scales Questionnaire (Griffin & Bartholomew, 1994), also emphasised that the wide use of an assessment tool is not necessarily indicative of its validity. As assessment is one of the core competencies of clinical psychology (British Psychological Society, 2019), which includes the use of psychometric measures, this is a learning point that will inform the trainee's future practice.

The opportunity to focus on attachment in both the empirical and review papers further reinforced the idea that early life experiences and relationships are crucial to understand an individual's psychological strengths and areas of difficulty. The trainee reflected that Cognitive Behavioural Therapy (CBT) is often the first line of psychological treatment recommended for many common mental health issues (NICE, 2011), which does not inherently have a relational focus. Although it is likely that a significant proportion of the trainee's clinical work will be in line with CBT, the research project has encouraged the trainee to ensure that discussions around attachment behaviour are a routine aspect of their work, irrespective of the modality being adhered to. Indeed, it was recognised that approaches like CBT which have a greater focus on the here-and-now (Beck, 1979) may still be enhanced, and complemented, by an understanding of a client's attachment needs, as exemplified by Gumley et al.'s (2008) cognitive interpersonal approach for psychosis.

Similarly, the investigation into secure attachment specifically allowed the trainee to reconnect with the importance of promoting a strengths-based approach, and how this is facilitated through access to robust measurement tools. The trainee noted that within clinical psychology, the focus is often largely on understanding psychological distress. This at times can create assessments and interventions which are out of balance, and do not promote appropriately leverage and individual's assets and resources. As such, this research has fostered a greater emphasis on strengths in the trainee's clinical work, which they consider may help to make the therapeutic process feel more hopeful.

## **5. Dissemination**

Both papers will be submitted to high impact journals; paper one will be submitted to *Clinical Psychology and Psychotherapy* and paper two will be submitted to *Psychological Medicine*. The journals were selected as they both attract a readership comprised of varied disciplines and interests, thus the research findings could be disseminated to a wider audience than could likely be achieved through publication in a specialty journal. A lay summary will also be prepared for participants who have registered their interest, to share the results of the empirical paper. This will also be disseminated via the study-specific social media recruitment pages. Organisations and groups who have supported with recruitment will also be contacted with the summary of results, which could be shared across their respective networks and digital platforms if desired.

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## **Appendices**

## Appendix A – Submission guidelines for Clinical Psychology & Psychotherapy

### MANUSCRIPT CATEGORIES AND REQUIREMENTS

**Research Article:** Substantial articles making a significant theoretical or empirical contribution (submissions should be limited to a maximum of 5,500 words excluding captions and references).

**Comprehensive Review:** Articles providing comprehensive reviews or meta-analyses with an emphasis on clinically relevant studies (review submissions have no word limit).

**Measures Article:** Articles reporting useful information and data about new or existing measures (assessment submissions should be limited to a maximum of 3,500 words).

**Clinical Report:** Shorter articles (a maximum of 2,000 words excluding captions and references) that typically contain interesting clinical material. These should use (validated) quantitative measures and add substantially to the literature (i.e. be innovative).

### PREPARING THE SUBMISSION

#### Parts of the Manuscript

The manuscript should be submitted in separate files: main text file; figures.

#### File types

Submissions via the new Research Exchange portal can be uploaded either as a single document (containing the main text, tables and figures), or with figures and tables provided as separate files. Should your manuscript reach revision stage, figures and tables must be provided as separate files. The main manuscript file can be submitted in Microsoft Word (.doc or .docx) or LaTeX (.tex) formats.

If submitting your manuscript file in LaTeX format via Research Exchange, select the file designation “Main Document – LaTeX .tex File” on upload. When submitting a Latex Main Document, you must also provide a PDF version of the manuscript for Peer Review. Please upload this file as “Main Document - LaTeX PDF.” All supporting files that are referred to in the Latex Main Document should be uploaded as a “LaTeX Supplementary File.”

Cover Letters and Conflict of Interest statements may be provided as separate files, included in the manuscript, or provided as free text in the submission system. A statement of funding (including grant numbers, if applicable) should be included in the “Acknowledgements” section of your manuscript.

The text file should be presented in the following order:

1. A short informative title containing the major key words. The title should not contain abbreviations (see Wiley's [best practice SEO tips](#));
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5. Conflict of Interest statement;
6. Acknowledgments;
7. Data Availability Statement
8. Abstract, Key Practitioner Message and 5-6 keywords;
9. Main text;
10. References;
11. Tables (each table complete with title and footnotes);
12. Figure legends;

Figures and appendices and other supporting information should be supplied as separate files.

### **Authorship**

On initial submission, the submitting author will be prompted to provide the email address and country for all contributing authors.

Please refer to the journal's **Authorship** policy in the Editorial Policies and Ethical Considerations section below for details on author listing eligibility.

### **Acknowledgments**

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and material support should also be mentioned, including the name(s) of any sponsor(s) of the research contained in the paper, along with grant number(s). Thanks to anonymous reviewers are not appropriate.

### **Conflict of Interest Statement**

Authors will be asked to provide a conflict of interest statement during the submission process. For details on what to include in this section, see the **Conflict of Interest** section in the Editorial Policies and Ethical Considerations section below. Submitting authors should ensure they liaise with all co-authors to confirm agreement with the final statement.

### **Abstract**

Enter an abstract of no more than 250 words containing the major keywords. An abstract is a concise summary of the whole paper, not just the conclusions, and is understandable without reference to the rest of the paper. It should contain no citation to other published work.

### **Key Practitioner Message**

All articles should include a Key Practitioner Message of 3-5 bullet points summarizing the relevance of the article to practice.

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Please provide five-six keywords (see **Wiley's best practice SEO tips**).

### **Main Text**

1. The journal uses US spelling; however, authors may submit using either US or UK English, as spelling of accepted papers is converted during the production process.
2. Footnotes to the text are not allowed and any such material should be incorporated into the text as parenthetical matter.

### **References**

References should be prepared according to the *Publication Manual of the American Psychological Association* (6th edition). This means in-text citations should follow the author-date method whereby the author's last name and the year of publication for the source should appear in the text, for example, (Jones, 1998). The complete reference list should appear alphabetically by name at the end of the paper. Please note that for journal articles, issue numbers are not included unless each issue in the volume begins with page 1, and a DOI should be provided for all references where available.

For more information about APA referencing style, please refer to the **APA FAQ**.

Reference examples follow:

#### *Journal article*

Beers, S. R. , & De Bellis, M. D. (2002). Neuropsychological function in children with maltreatment-related posttraumatic stress disorder. *The American Journal of Psychiatry*, 159, 483–486.  
doi: [10.1176/appi.ajp.159.3.483](https://doi.org/10.1176/appi.ajp.159.3.483)

#### *Book*

Bradley-Johnson, S. (1994). *Psychoeducational assessment of students who are visually impaired or blind: Infancy through high school* (2nd ed.). Austin, TX: Pro-ed.

#### *Internet Document*

Norton, R. (2006, November 4). How to train a cat to operate a light switch [Video file]. Retrieved from <http://www.youtube.com/watch?v=Vja83KLQXZs>

### **Endnotes**

Endnotes should be placed as a list at the end of the paper only, not at the foot of each page. They should be numbered in the list and referred to in the text with consecutive, superscript Arabic numerals. Keep endnotes brief; they should contain only short comments tangential to the main argument of the paper.

### **Tables**

Tables should be self-contained and complement, not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and \*, \*\*, \*\*\* should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

### **Figure Legends**

Legends should be concise but comprehensive – the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

### **Figures**

Although authors are encouraged to send the highest-quality figures possible, for peer-review purposes, a wide variety of formats, sizes, and resolutions are accepted. Click [here](#) for the basic figure requirements for figures submitted with manuscripts for initial peer review, as well as the more detailed post-acceptance figure requirements.

**Figures submitted in color** may be reproduced in color online free of charge. Please note, however, that it is preferable that line figures (e.g. graphs and charts) are supplied in black and white so that they are legible if printed by a reader in black and white. The cost of printing color illustrations in the journal will be charged to the author. The cost is £150 for the first figure and £50 for each figure thereafter. If color illustrations are supplied electronically in either TIFF or EPS format, they may be used in the PDF of the article at no cost to the author, even if this illustration was printed in black and white in the journal. The PDF will appear on the Wiley Online Library site.

### **Additional Files**

#### **Appendices**

Appendices will be published after the references. For submission they should be supplied as separate files but referred to in the text.

### **General Style Points**

The following points provide general advice on formatting and style.

1. **Abbreviations:** In general, terms should not be abbreviated unless they are used repeatedly and the abbreviation is helpful to the reader. Initially, use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only.
2. **Units of measurement:** Measurements should be given in SI or SI-derived units. Visit the [Bureau International des Poids et Mesures \(BIPM\) website](#) for more information about SI units.
3. **Numbers:** numbers under 10 are spelled out, except for: measurements with a unit (8mmol/l); age (6 weeks old), or lists with other numbers (11 dogs, 9 cats, 4 gerbils).
4. **Trade Names:** Chemical substances should be referred to by the generic name only. Trade names should not be used. Drugs should be referred to by their generic names. If proprietary drugs have been used in the study, refer to these by their generic name, mentioning the proprietary name and the name and location of the manufacturer in parentheses.

### **Wiley Author Resources**

**Manuscript Preparation Tips:** Wiley has a range of resources for authors preparing manuscripts for submission available [here](#). In particular, authors may benefit from referring to Wiley's best practice tips on [Writing for Search Engine Optimization](#).

### **Article Preparation Support**

[Wiley Editing Services](#) offers expert help with English Language Editing, as well as translation, manuscript formatting, figure illustration, figure formatting, and graphical abstract design – so you can submit your manuscript with confidence.

Also, check out our resources for [Preparing Your Article](#) for general guidance about writing and preparing your manuscript.

**Video Abstracts** A video abstract can be a quick way to make the message of your research accessible to a much larger audience. Wiley and its partner Research Square offer a service of professionally produced video abstracts, available to authors of articles accepted in this journal. You can learn more about it by [clicking here](#). If you have any questions, please direct them to [videoabstracts@wiley.com](mailto:videoabstracts@wiley.com).

## EDITORIAL POLICIES AND ETHICAL CONSIDERATIONS

### Peer Review and Acceptance

The acceptance criteria for all papers are the quality and originality of the research and its significance to journal readership. Except where otherwise stated, manuscripts are single-blind peer reviewed. Papers will only be sent to review if the Editor-in-Chief determines that the paper meets the appropriate quality and relevance requirements.

Wiley's policy on the confidentiality of the review process is available [here](#).

### Data Sharing and Data Accessibility

This journal expects data sharing. Review [Wiley's Data Sharing policy](#) where you will be able to see and select the data availability statement that is right for your submission.

### Human Studies and Subjects

For manuscripts reporting clinical studies that involve human participants, a statement identifying the ethics committee that approved the study and confirmation that the study conforms to recognized standards is required, for example: [Declaration of Helsinki](#); [US Federal Policy for the Protection of Human Subjects](#); or [European Medicines Agency Guidelines for Good Clinical Practice](#). It should also state clearly in the text that all persons gave their informed consent prior to their inclusion in the study.

Patient anonymity should be preserved. Photographs need to be cropped sufficiently to prevent human subjects being recognized (or an eye bar should be used). Images and information from individual participants will only be published where the authors have obtained the individual's free prior informed consent. Authors do not need to provide a copy of the consent form to the publisher; however, in signing the author license to publish, authors are required to confirm that consent has been obtained. Wiley has a [standard patient consent form](#) available for use.

### Clinical Trial Registration

The journal requires that clinical trials are prospectively registered in a publicly accessible database and clinical trial registration numbers should be included in all papers that report their results. Authors are asked to include the name of the trial register and the clinical trial registration number at the end of the abstract. If the trial is not registered, or was registered retrospectively, the reasons for this should be explained.

### Conflict of Interest

The journal requires that all authors disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include, but are not limited to: patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company. The existence of a conflict of interest does not preclude publication. **If the authors have no conflict of interest to declare, they must also state this at submission.** It is the responsibility of the corresponding author to review this policy with all authors and collectively to disclose with the submission ALL pertinent commercial and other relationships.



### **Funding**

Authors should list all funding sources in the Acknowledgments section. Authors are responsible for the accuracy of their funder designation. If in doubt, please check the Open Funder Registry for the correct nomenclature: <https://www.crossref.org/services/funder-registry/>

### **Authorship**

The list of authors should accurately illustrate who contributed to the work and how. All those listed as authors should qualify for authorship according to the following criteria:

1. Have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data;
2. Been involved in drafting the manuscript or revising it critically for important intellectual content;
3. Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; and
4. Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in the Acknowledgements statement (e.g., to recognize contributions from people who provided technical help, collation of data, writing assistance, acquisition of funding, or a department chairperson who provided general support). Prior to submitting the article all authors should agree on the order in which their names will be listed in the manuscript.

**Additional Authorship Options.** Joint first or senior authorship: In the case of joint first authorship, a footnote should be added to the author listing, e.g. 'X and Y should be considered joint first author' or 'X and Y should be considered joint senior author.'

## Appendix B – PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
<b>TITLE</b>			
Title	1	Identify the report as a systematic review.	
<b>ABSTRACT</b>			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
<b>METHODS</b>			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	

Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
<b>Section and Topic</b>	<b>Item #</b>	<b>Checklist item</b>	<b>Location where item is reported</b>
<b>RESULTS</b>			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	

	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
<b>DISCUSSION</b>			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
<b>OTHER INFORMATION</b>			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

## Appendix C – PROSPERO form

UNIVERSITY *of York*  
Centre for Reviews and Dissemination

### Systematic review

A list of fields that can be edited in an update can be found [here](#)

#### 1. \* Review title.

Give the title of the review in English

Self-report measures of adult secure attachment: a systematic review

#### 2. Original language title.

For reviews in languages other than English, give the title in the original language. This will be displayed with the English language title.

#### 3. \* Anticipated or actual start date.

Give the date the systematic review started or is expected to start.

01/03/2021

#### 4. \* Anticipated completion date.

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

30/04/2022

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

**This field uses answers to initial screening questions. It cannot be edited until after registration.**

Tick the boxes to show which review tasks have been started and which have been completed.

Update this field each time any amendments are made to a published record.

The review has not yet started: Yes

Provide any other relevant information about the stage of the review here.

Review stage	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

## 6. \* Named contact.

The named contact is the guarantor for the accuracy of the information in the register record. This may be any member of the review team.

Miranda Justo-Nunez

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

Ms Justo-Nunez

## 7. \* Named contact email.

Give the electronic email address of the named contact.

miranda.justo-nunez@postgrad.manchester.ac.uk

## 8. Named contact address

Give the full institutional/organisational postal address for the named contact.

The University of Manchester, 2.01, 2nd Floor Zochonis Building, Brunswick Street, Manchester M13

9PL

## 9. Named contact phone number.

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

+44 (0)161 306 0400

## 10. \* Organisational affiliation of the review.

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

University of Manchester **Organisation web address:**

<https://www.manchester.ac.uk/>

## 11. \* Review team members and their organisational affiliations.

Give the personal details and the organisational affiliations of each member of the review team.

Affiliation refers to groups or organisations to which review team members belong. **NOTE: email and country now MUST be entered for each person, unless you are amending a published record.**

Ms Miranda Justo-Nunez. University of Manchester

Professor Katherine Berry. University of Manchester

Dr Lydia Morris. University of Manchester

## 12. \* Funding sources/sponsors.

Details of the individuals, organizations, groups, companies or other legal entities who have funded or sponsored the review.

No funding

## Grant number(s)

State the funder, grant or award number and the date of award

### 13. \* Conflicts of interest.

List actual or perceived conflicts of interest (financial or academic).

None

### 14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members. **NOTE: email and country must be completed for each person, unless you are amending a published record.**

### 15. Review question.

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

What self-report measures are available to researchers and clinicians wishing to assess adult secure

attachment styles? Are these measures valid and/or reliable? How do these measures compare in terms of their psychometric properties?

### 16. \* Searches.

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

The sources that will be searched are MEDLINE, CINAHL, EMBASE, PsycINFO, and Web of Science. Where possible, the restrictions will be applied to the search which will limit the papers to those that are written in the English language and are peer-reviewed articles. The search strategy has been developed in line with recommendations set out by COSMIN. Three blocks of search terms will be used to identify relevant articles: 1) attachment; 2) terms relevant to types of instruments; 3) terms relevant to measurement properties.

Databases will be searched for outcomes containing these items in the title, abstract or keywords. Search terms included in each block will be as follows:

Block 1 - "attachment"

Block 2 - "measure" OR "instrument" OR "interview" OR "assessment\*" OR "questionnaire"

Block 3 - "psychometric\*" OR "valid\*" OR "reliab\*" OR "factor analy\*"

Additional search strategy information can be found in the attached PDF document (link provided below).

### 17. URL to search strategy.

Upload a file with your search strategy, or an example of a search strategy for a specific database, (including the keywords) in pdf or word format. In doing so you are consenting to the file being made publicly accessible. Or provide a URL or link to the strategy. Do NOT provide links to your search **results**.

[https://www.crd.york.ac.uk/PROSPEROFILES/229466\\_STRATEGY\\_20210927.pdf](https://www.crd.york.ac.uk/PROSPEROFILES/229466_STRATEGY_20210927.pdf)

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

### 18. \* Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied in your systematic review.

The domain being studied is adult secure attachment. This is defined as individuals who a) perceive others as generally responsive and trustworthy and b) have a sense of “worthiness” (i.e. a sense that they are worthy of love and being treated well by others). This systematic review seeks to identify self-report measures which assess adult secure attachment evaluate their psychometric properties.

### 19. \* Participants/population.

Specify the participants or populations being studied in the review. The preferred format includes details of both inclusion and exclusion criteria.

The review aims to evaluate self-report measures of attachment which were designed for adults. As such, studies will be included if the average age of the participant group is 18 or above. Studies which have sought to recruit people with learning disabilities will be excluded.

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

Give full and clear descriptions or definitions of the interventions or the exposures to be reviewed. The preferred format includes details of both inclusion and exclusion criteria.

Not applicable (this is a review of self-report measures of adult secure attachment).

### 21. \* Comparator(s)/control.

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

Not applicable as this is a review of measures.

### 22. \* Types of study to be included.

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

Eligibility criteria:

- 1) Publication in a peer reviewed journal;
- 2) Written in the English language;
- 3) The average age of the sample is 18 or above;
- 4) Study aim is to a) develop a self-report measure, and/or b) evaluate the psychometric properties of a self-report measure, which has a specific secure attachment subscale

Exclusion criteria are studies which:

- 1) Are review papers;
- 2) Are case studies;
- 3) Are book chapters, monographs, dissertations, or were presented as a conference extract;
- 4) Use the measure to validate another instrument;
- 5) Include a measure or subscale which was designed for individuals with a learning disability or difficulty;



6) Include a measure or subscale that was not developed to distinctly assess secure attachment.

### 23. Context.

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

### 24. \* Main outcome(s).

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

The aim of this review is to a) systematically evaluate the psychometric properties of the measures identified, b) evaluate the methodology utilised in these studies, and c) classify and grade the quality of the evidence presented in the studies. The systematic review will be carried out according to the COSMIN (Consensusbased Standards for the selection of health Measurement Instruments) best practice guidelines (Mokkink, 2020).

The methodological quality of the included studies will be evaluated using the Risk of Bias checklist will be used (Mokkink, 2018). The criteria for good measurement properties (Prinsen et al., 2017) will be used to evaluate each measurement property within individual studies.

Results of all available studies for a particular measure will be qualitatively summarised to determine whether the overall relevance, comprehensiveness, comprehensibility, and content validity, is sufficient, insufficient, or indeterminate.

A GRADE approach will then be utilised to summarise and grade the quality of the evidence, which results in studies receiving an overall rating of “high”, “moderate”, “low”, or “very low”.

### 25. \* Additional outcome(s).

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

### Measures of effect

Please specify the effect measure(s) for you additional outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

### 26. \* Data extraction (selection and coding).

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

The principal investigator will conduct database searches and perform an initial eligibility screen based on titles and abstracts. These will then be reviewed and discussed with the other members of the research team. In order to be included, the researchers must unanimously agree that the study meets the inclusion criteria. The reliability of this process will be corroborated by an independent researcher (outside of the research team), who will review 10% of the studies at random against the eligibility criteria.

A data extraction form taken from the COSMIN tool will be utilised. The following data will be extracted from each article: authors, year of publication, country, sample size and sample demographics. Data relating to the specific measure will also be extracted, include the name of measure, subscale of the measure, the number of items, rating scale (if relevant), psychometric properties, and the results of their analysis.

## 27. \* Risk of bias (quality) assessment.

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

The COSMIN Risk of Bias tool will be used to rate each of the relevant measurement properties assessed within the studies. This contains ten boxes, with standards for measure development and for nine measurement properties (content validity, structural validity, internal consistency, cross-cultural validity, reliability, measurement error, criterion validity, hypotheses testing for construct validity, and responsiveness).

The COSMIN four-point rating system will be used to rate the methodological quality utilised to determine psychometric properties; this will result in a rating of “very good”, “adequate”, “doubtful” or “inadequate”. The overall rating of the quality of each study is determined by taking the lowest rating of any standard within each of the ten boxes contained within the tool. Results of all available studies for a particular measure will be qualitatively summarised to determine the overall relevance, comprehensiveness, comprehensibility, and content validity, is sufficient, insufficient, or indeterminate. A GRADE approach will then be utilised to summarise and grade the quality of the evidence, which results in studies receiving an overall rating of “high”, “moderate”, “low”, or “very low”.

## 28. \* Strategy for data synthesis.

Describe the methods you plan to use to synthesise data. This **must not be generic text** but should be **specific to your review** and describe how the proposed approach will be applied to your data. If metaanalysis is planned, describe the models to be used, methods to explore statistical heterogeneity, and software package to be used.

The systematic review will follow the steps outlined in the risk of bias and quality assessment section. The measurement properties and their ratings of methodological quality will be presented in tables. Results of measurement properties will be summarised providing a quantitative result (e.g. intraclass correlation coefficient = 0.5 - 0.6). The review will also present findings in a narrative synthesis, presented by measurement property.

A table will present the overall strength of evidence across studies for each individual measure. This will be used to inform conclusions around which self-report measures of adult secure attachment are the most psychometrically sound.

### 29. \* Analysis of subgroups or subsets.

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

None planned.

### 30. \* Type and method of review.

Select the type of review, review method and health area from the lists below.

#### Type of review

Systematic review

Yes

#### Health area of the review

Mental health and behavioural conditions

Yes

### 31. Language.

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

English

There is not an English language summary

### 32. \* Country.

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

### 33. Other registration details.

Name any other organisation where the systematic review title or protocol is registered (e.g. Campbell, or The Joanna Briggs Institute) together with any unique identification number assigned by them. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

### 34. Reference and/or URL for published protocol.

If the protocol for this review is published provide details (authors, title and journal details, preferably in Vancouver format)

Add web link to the published protocol.

Or, upload your published protocol here in pdf format. Note that the upload will be publicly accessible.

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

### 35. Dissemination plans.

Do you intend to publish the review on completion?

Yes

Give brief details of plans for communicating review findings.?

The principal investigator (PI) will submit the review for publication. The review will also form part of the PI's doctoral thesis and will therefore be made available to access via the University's library.

### 36. Keywords.

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

Attachment; Measurement; Psychometric; Self-report; Adult; Secure; Validity

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

If you are registering an update of an existing review give details of the earlier versions and include a full bibliographic reference, if available.

### 38. \* Current review status.

Update review status when the review is completed and when it is published .New registrations must be ongoing so this field is not editable for initial submission. Please provide anticipated publication date

Review\_Ongoing

### 39. Any additional information.

Provide any other information relevant to the registration of this review.

### 40. Details of final report/publication(s) or preprints if available.

Leave empty until publication details are available OR you have a link to a preprint (NOTE: this field is not editable for initial submission). List authors, title and journal details preferably in Vancouver format.

Give the link to the published review or preprint.

## Appendix D – Author guidelines for Psychological Medicine

Manuscripts should be submitted online via our manuscript submission and tracking site, <http://www.editorialmanager.com/psm/>. Full instructions for electronic submission are available directly from this site. To facilitate rapid reviewing, communications for peer review will be electronic and authors will need to supply a current e-mail address when registering to use the system.

Papers for publication from Europe, (except those on genetic topics, irrespective of country), and all papers on imaging topics, should be submitted to the UK Office.

Papers from the Americas, Asia, Africa, Australasia and the Middle East, (except those dealing with imaging topics), and all papers dealing with genetic topics, irrespective of country, should be sent to US Office.

Please see the below table for the types of papers accepted:

Article Type	Usual Max Word count*	Abstract	References	Tables/figures**	Supplementary material online only
Original article	4500	250 words, structured, using Background, Methods, Results, Conclusions	APA style – see elsewhere in this document for full details	Usually up to 5 total	Yes
Review article	4500	250 words, not structured	APA style	Usually up to 5 total	Yes
Editorial	3500	No	APA style	Usually up to 5 total	Yes
Correspondence***	1500	No	max 20 APA style	Max 1	No
Commentary	2000 By invitation of editor	No	max 20 APA style	Not usually	Yes

\* Editors may request shortening or permit additional length at their discretion in individual cases

\*\* May be adjusted in individual cases at Editors' discretion

\*\*\* Please note, Correspondence papers must be in response to content published in *PSM*

NOTE:

1. Figures should be submitted as discrete files, not embedded in the text of the main document.
2. Supplementary material for online only should be submitted as discrete files, not as part of the main text.

Generally papers should not have text more than 4500 words in length (excluding abstract, tables/figures and references) and should not have more than a combined total of 5 tables and/or figures. Papers shorter than these limits are encouraged. For papers of unusual importance the editors may waive these requirements. Articles require a structured abstract of no more than 250 words including the headings: Background; Methods; Results; Conclusions. Review Articles require an unstructured abstract of no more than 250 words. The name of an author to whom correspondence should be sent must be indicated and a full postal address given in the footnote. Any acknowledgements should be placed at the end of the text (before the References section).

Contributors should also note the following:

1. 1. S.I. units should be used throughout in text, figures and tables.
2. 2. Authors should spell out in full any abbreviations used in their manuscripts.
3. 3. Foreign quotations and phrases should be followed by a translation.
4. 4. If necessary, guidelines for statistical presentation may be found in: **Altman DG., Gore SM, Gardner, MJ. Pocock SJ.** (1983). Statistical guidelines for contributors to medical journals. *British Medical Journal* **286**, 1489-1493.

#### *Required Statements*

#### **Acknowledgements**

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#### **Financial support**

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**Appendix E – Demographic Questionnaire**

<b>About You</b>	
Gender	<p style="text-align: center;">Male                  Female                  Other</p>
Age	<ul style="list-style-type: none"> <li><input type="radio"/> 18-24 years old</li> <li><input type="radio"/> 25-34 years old</li> <li><input type="radio"/> 35-44 years old</li> <li><input type="radio"/> 45-54 years old</li> <li><input type="radio"/> 55-64 years old</li> <li><input type="radio"/> 65-74 years old</li> <li><input type="radio"/> 75 years or older</li> <li><input type="radio"/> Prefer not to say</li> </ul>
Nationality:	
Ethnicity:	<p>White</p> <ol style="list-style-type: none"> <li>1. White – British</li> <li>2. White – Irish</li> <li>3. Any other white background</li> </ol> <p>Mixed:</p> <ol style="list-style-type: none"> <li>4. Mixed - White and Black Caribbean</li> <li>5. Mixed - White and Black African</li> <li>6. Mixed - White and Asian</li> <li>7. Any other mixed background</li> </ol> <p>Asian or Asian British:</p> <ol style="list-style-type: none"> <li>8. Asian or Asian British – Indian</li> <li>9. Asian or Asian British – Pakistani</li> <li>10. Asian or Asian British – Bangladeshi</li> <li>11. Any other Asian/Asian British background</li> </ol> <p>Black or Black British:</p> <ol style="list-style-type: none"> <li>12. Black or Black British – Caribbean</li> <li>13. Black or Black British – African</li> <li>14. Any other Black/Black British background</li> </ol> <p>Chinese or other ethnic group:</p> <ol style="list-style-type: none"> <li>15. Chinese</li> <li>16. Any other (please describe)</li> <li>17. Prefer not to say</li> </ol> <p style="text-align: right;">(APMS, 2007)</p>
Sexual orientation	<p>Which of the options best describes how you think of yourself?:</p> <ol style="list-style-type: none"> <li>1. Heterosexual or Straight,</li> <li>2. Gay or Lesbian,</li> </ol>



	<p>3. Bisexual, 4. Other 5. Prefer not to say</p> <p>(Office for National Statistics, 2009)</p>
First Language:	<p>English Other: Prefer not to say</p>
What is your legal marital or same-sex civil partnership status?	<p>1. Never married and never registered a same-sex civil partnership 2. Married 3. Separated, but still legally married 4. Divorced 5. Widowed 6. In a registered same-sex civil partnership 7. Separated, but still legally in a same-sex civil partnership 8. Formerly in a same-sex civil partnership which is now legally dissolved 9. Surviving partner from a same-sex civil partnership 10. Prefer not to say</p> <p>(Office for National Statistics, 2011)</p>
How far did you get in school?	<p>1. Degree level qualification 2. Teaching qualification or HNC/HND, BEC/TEC Higher, BTEC Higher or NVQ level 4 3. 'A'Levels/SCE Higher or ONC/OND/BEC/TEC not higher or City &amp; Guilds Advanced Final Level NVQ level 3 4. 'O'Level passes (Grade A-C if after 1975) or City &amp; Guilds Craft/Ord level or GCSE (Grades A-C) or NVQ level 2 5. CSE Grades 2-5 GCE 'O'level (Grades D &amp; E if after 1975) GCSE (Grades D, E, F, G) or NVQ level 1 6. CSE ungraded 7. Other qualifications (specify) 8. No qualifications 9. Prefer not to say</p> <p>(APMS, 2007)</p>
Which of these activities best describes what you are doing at present? (please select one only)	<p>1. Employee 2. Self Employed 3. Unemployed 4. Full-time education at school, college or university 5. Looking after family/home 6. Receipt of sickness or disability benefits 7. Retired 8. Other Inactive 9. Prefer not to say</p> <p>(Office for National Statistics, 2015)</p>
Have you ever received a psychiatric diagnosis?	<p>1. Yes 2. No 3. Prefer not to say</p>

<p>Have you ever received any of the following diagnosis [select as many as apply]?</p>	<ul style="list-style-type: none"> <li>• No</li> <li>• Schizophrenia (or “Paranoid Schizophrenia”)</li> <li>• Schizoaffective Disorder</li> <li>• Schizophreniform</li> <li>• Depression with psychotic features (depression with unusual experiences like hallucinations and delusions)</li> <li>• Delusional Disorder</li> <li>• Bipolar Disorder with psychotic experiences</li> <li>• Brief Psychotic Disorder</li> <li>• Any other disorder which included psychotic experiences</li> <li>• Other, Please state:</li> </ul>
<p>Have you ever received antipsychotic medication for any of the following? [Select as many as apply]</p>	<ul style="list-style-type: none"> <li>• No</li> <li>• Hallucinations (hearing voices, visions)</li> <li>• Delusions (unusual and sometimes bizarre beliefs)</li> <li>• Paranoia (excessive or irrational suspiciousness and distrustfulness of others)</li> <li>• Unusual beliefs</li> </ul>
<p>Have you ever received mental health support or treatment for any of the following [select as many as apply]?</p>	<ul style="list-style-type: none"> <li>• No</li> <li>• Hallucinations (hearing voices, visions)</li> <li>• Delusions (unusual and sometimes bizarre beliefs)</li> <li>• Paranoia (excessive or irrational suspiciousness and distrustfulness of others)</li> <li>• Unusual beliefs</li> </ul>
<p>Have you ever been a patient in hospital for mental health difficulties?</p> <p>IF YES: How many times?</p> <p>Are you currently in hospital for mental health difficulties?</p>	<p>1 Yes 2 No 3. Prefer not to say</p> <p>1.Yes 2.No 3. Prefer not to say</p>
<p>Have you received input from a community mental health team or early intervention service?</p> <p>Are you currently receiving input from a community mental health team or early intervention service?</p>	<p>1 Yes 2 No 3 Prefer not to say</p> <p>1.Yes 2.No 3. Prefer not to say</p>

## Appendix F – The Brief Betrayal Trauma Survey (BBTS)

We hope that you can trust us to keep your responses in complete confidence and privacy.

For each item please mark one response in the columns under 'Before Age 18' AND one mark in the columns 'Age 18 or older'. Have each of these events happened to you, and if so, how often?

	Before Age 18			Age 18 or older		
	Never	One or two times	More than that	Never	One or two times	More than that
Been in a major earthquake, fire, flood, hurricane, or tornado that resulted in significant loss of personal property, serious injury to yourself or a significant other, the death of a significant other, or the fear of your own death.						
Been in a major automobile, boat, motorcycle, plane, train, or industrial accident that resulted in similar consequences.						
Witnessed someone with whom you were very close (such as a parent, brother or sister, caretaker, or intimate partner) committing suicide, being killed, or being injured by another person so severely as to result in marks, bruises, burns, blood, or broken bones. This might include a close friend in combat.						
Witnessed someone with whom you were not so close undergoing a similar kind of traumatic event.						
Witnessed someone with whom you were very close deliberately attack another family member so severely as to result in marks, bruises, blood, broken bones, or broken teeth.						
You were deliberately attacked that severely by someone with whom you were very close.						
You were deliberately attacked that severely by someone with whom you were not close.						
You were made to have some form of sexual contact, such as touching or penetration, by someone with whom you were very close (such as a parent or lover).						
You were made to have such sexual contact by someone with whom you were not close						
You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were very close (such as a parent or lover).						
Experienced the death of one of your own children.						
Experienced a seriously traumatic event not already covered in any of these questions.						

## Appendix G – The Dissociative Experiences Scale - Revised (DES-II)

This questionnaire asks about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. There are 28 questions.

To answer these questions, please determine to what degree each experience described in the question applies to you, and circle and the number to show what percentage of the time you have the experience:

For example: 0% (Never) 10 20 30 40 50 60 70 80 90 100% (Always)

\_\_\_ 1. Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip.

\_\_\_ 2. Some people find sometimes that they are listening to someone talk and they suddenly realize that they did not hear part or all of what has just been said.

\_\_\_ 3. Some people have the experience of finding themselves in a place and they have no idea how they got there.

\_\_\_ 4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on.

\_\_\_ 5. Some people have the experience of finding new things among their belongings that they do not remember buying.

\_\_\_ 6. Some people sometimes find that they are approached by people that they do not know who call them by name or insist that they have met before

\_\_\_ 7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person.

\_\_\_ 8. Some people are told that they sometimes do not recognize friends or family members.

\_\_\_ 9. Some people find that they have no memory for some important events in their lives, for example a wedding or graduation

\_\_\_ 10. Some people had the experience of being accused of lying when they do not think that they have lied.

\_\_\_ 11. Some people have the experience of looking in a mirror and not recognizing themselves.

\_\_\_ 12. Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real.

\_\_\_ 13. Some people sometimes have the experience of feeling that their body does not seem to belong to them.

\_\_\_ 14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event.

- \_\_\_ 15. Some people have the experience of not being sure if things that they remember happening really did happen or whether they just dreamed them
- \_\_\_ 16. Some people have the experience of being in a familiar place and finding it strange and unfamiliar.
- \_\_\_ 17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them.
- \_\_\_ 18. Some people find that they become so involved in fantasy or daydream that it feels as though it were really happening to them.
- \_\_\_ 19. Some people find that they are sometimes able to ignore pain.
- \_\_\_ 20. Some people find that they sometimes sit staring off into space thinking of another event and are not aware of the passage of time.
- \_\_\_ 21. Some people sometimes find that when they are alone they sometimes talk out loud to themselves.
- \_\_\_ 22. Some people find that in one situation they may act so differently compared to another situation that they feel almost as if they were two different people.
- \_\_\_ 23. Some people sometimes feel that in some situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them, for example, sports or social situations, etc.
- \_\_\_ 24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that things, for example, whether they have just mailed a letter or just thought about mailing it.
- \_\_\_ 25. Some people sometimes find evidence that they have done things that they do not remember doing.
- \_\_\_ 26. Some people sometimes find writings, drawing, or notes among their belongings that they must have done but cannot remember doing.
- \_\_\_ 27. Some people sometimes find that they hear voices in their head that tell them to do things or comment on what they are doing.
- \_\_\_ 28. Some people sometimes feel as if they are looking at the world through a fog so that people or objects appear far away or unclear.

**Appendix H – The Community Assessment of Psychic Experiences (CAPE) – Positive symptoms scale**

**1. Do you ever feel as if people seem to drop hints about you or say things with a double meaning? (please tick)**

Never  Sometimes  Often  Nearly always

If you ticked "never", please go to question 2

If you ticked "sometimes", "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed  A bit distressed  Quite distressed  Very distressed

**2. Do you ever feel as if things in magazines or on TV were written especially for you? (please tick)**

Never  Sometimes  Often  Nearly always

If you ticked "never", please go to question 3

If you ticked "sometimes", "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed  A bit distressed  Quite distressed  Very distressed

**3. Do you ever feel as if some people are not what they seem to be? (please tick)**

Never  Sometimes  Often  Nearly always

If you ticked "never", please go to question 4

If you ticked "sometimes", "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed  A bit distressed  Quite distressed  Very distressed

**4. Do you ever feel as if you are being persecuted in some way? (please tick)**

Never  Sometimes  Often  Nearly always

If you ticked "never", please go to question 5

If you ticked "sometimes", "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed  A bit distressed  Quite distressed  Very distressed

**5. Do you ever feel as if there is a conspiracy against you? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 6

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**6. Do you ever feel as if you are destined to be someone very important? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 7

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**7. Do you ever feel that you are a very special or unusual person? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 8

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**8. Do you ever think that people can communicate telepathically? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 9

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**9. Do you ever feel as if electrical devices such as computers can influence the way you think? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 10

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**10. Do you believe in the power of witchcraft, voodoo or the occult? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 11

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**11. Do you ever feel that people look at you oddly because of your appearance? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 12

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**12. Do you ever feel as if the thoughts in your head are being taken away from you? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 13

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**13. Do you ever feel as if the thoughts in your head are not your own? (please tick)**

Never            Sometimes            Often            Nearly always

If you ticked "never", please go to question 14

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed            A bit distressed            Quite distressed            Very distressed

**14. Have your thoughts ever been so vivid that you were worried other people would hear them? (please tick)**

Never            Sometimes            Often            Nearly always



If you ticked "never", please go to question 15

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed                  A bit distressed                  Quite distressed                  Very distressed

**15. Do you ever hear your own thoughts being echoed back to you? (please tick)**

Never                  Sometimes                  Often                  Nearly always

If you ticked "never", please go to question 16

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience:(please tick)

Not distressed                  A bit distressed                  Quite distressed                  Very distressed

**16. Do you ever feel as if you are under the control of some force or power other than yourself? (please tick)**

Never                  Sometimes                  Often                  Nearly always

If you ticked "never", please go to question 17

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience:(please tick)

Not distressed                  A bit distressed                  Quite distressed                  Very distressed

**17. Do you ever hear voices when you are alone? (please tick)**

Never                  Sometimes                  Often                  Nearly always

If you ticked "never", please go to question 18

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience:(please tick)

Not distressed                  A bit distressed                  Quite distressed                  Very distressed

**18. Do you ever hear voices talking to each other when you are alone? (please tick)**

Never                  Sometimes                  Often                  Nearly always

If you ticked "never", please go to question 19

If you ticked "sometimes" , "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed                  A bit distressed                  Quite distressed                  Very distressed

**19. Do you ever feel as if a double has taken the place of a family member, friend or acquaintance? (please tick)**

Never      Sometimes      Often      Nearly always

If you ticked "never", please go to question 20

If you ticked "sometimes", "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed      A bit distressed      Quite distressed      Very distressed

**20. Do you ever see objects, people or animals that other people cannot see? (please tick)**

Never      Sometimes      Often      Nearly always

If you ticked "never", you have now finished this questionnaire.

If you ticked "sometimes", "often" or "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed      A bit distressed      Quite distressed      Very distressed

## Appendix I – Psychological Treatment Inventory – Attachment Style Scale

The following statements concern your relationship with your partner (or your most important partners either in the present or in the past). If you have never had a partner, you can refer to a particularly important and intimate person.

Please answer the following statements and choose the alternative that correspond to your level of agreement by using the following scale:

1 = Not at all

2 = Somewhat

3 = Moderately

4 = A good deal

5 = Very much

1. I am able to establish intimate and satisfying relationships.
2. My partner scares me by how aggressive he/she can be.
3. I can always do without love no matter what.
4. When I am in intimate relationships, I am afraid of being abandoned.
5. I am able to be in tune with my partner.
6. My partner mistreats me.
7. I am always afraid of my relationships ending, even when they are going well.
8. My relationships are influenced by dark and threatening forces.
9. People live better alone than in couples.
10. I can express myself easily with my partner.
11. I could live without losing my head over someone else.
12. My relationships are violent and destructive.
13. I am able to be in tune with the person I love.
14. I prefer to stay away from demanding relationships.
15. I need a lot of emotional security in order to feel good in intimate relationships.
16. I am able to maintain authentic relationships with the people I love.
17. I can do without a significant emotional relationship.
18. When I am in love I am always afraid of being left.
19. I act hurtfully toward my partner.
20. I am afraid of spending my life without a partner.
21. I can do without a steady partner.
22. My partner pursues me aggressively.

## Appendix J – The Relationship Questionnaire (RQ)

Following are four general relationship styles that people often report. Place a checkmark next to the letter corresponding to the style that best describes you or is closest to the way you are.

**A.** It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

**B.** I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

**C.** I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

**D.** I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

*Now please rate each of the relationship styles above to indicate how well or poorly each description corresponds to your general relationship style.*

### Style A

1	2	3	4	5	6	7
Disagree			Neutral/			Agree
Strongly			Mixed			Strongly

### Style B

1	2	3	4	5	6	7
Disagree			Neutral/			Agree
Strongly			Mixed			Strongly

### Style C

1	2	3	4	5	6	7
Disagree			Neutral/			Agree
Strongly			Mixed			Strongly

### Style D

1	2	3	4	5	6	7
Disagree			Neutral/			Agree
Strongly			Mixed			Strongly

## Appendix K – Revised Psychosis Attachment Measure (PAM-R)

We all differ in how we relate to other people. This questionnaire lists different thoughts, feelings and ways of behaving in relationships with others.

Thinking generally about how you relate to other key people in your life, **please use a tick to show how much each statement is like you**. Key people could include family members, friends, partner or mental health workers.

There are no right or wrong answers

Item	Not at all	A little	Quite a bit	Very much
1. I prefer not to let other people know my 'true' thoughts and feelings.				
<b>2. I find close relationships overwhelming</b>				
3. I find it easy to depend on other people for support with problems or difficult situations.				
<b>4. I feel frightened in close relationships</b>				
5. I tend to get upset, anxious or angry if other people are not there when I need them.				
6. I usually discuss my problems and concerns with other people.				
7. I worry that key people in my life won't be around in the future.				
<b>8. I find people I am in close relationships with to be unpredictable in their actions and behaviours</b>				
9. I ask other people to reassure me that they care about me.				
10. If other people disapprove of something I do, I get very upset.				

11. I find it difficult to accept help from other people when I have problems or difficulties.

**12. When I try to get close to someone sometimes I shut down and find it difficult to think or move**

13. It helps to turn to other people when I'm stressed.

14. I worry that if other people get to know me better, they won't like me.

**15. Sometimes I am confused by my feelings towards others**

16. I worry a lot about my relationships with other people.

**17. I want close relationships, but being close makes me feel frightened**

**18. I often freeze when I try to get close to someone**

19. I try to cope with stressful situations on my own.

20. I worry that if I displease other people, they won't want to know me anymore.

**21. I want to be close to others but I often find myself pulling away when I am**

22. I worry about having to cope with problems and difficult situations on my own.

**23. When I form close relationships I lose sense of who I am**

**Title of project: Validating a measure of attachment styles in psychosis**

**BRIEF SUMMARY OF PROPOSAL IN LAY TERMS**

*Please provide a summary of the proposed study including background information, aims, methods and implications in lay terms.*

300/300 words maximum. Please include measures of readability (e.g., Flesch Indices.)

Psychosis is a mental health issue that affects how people view and understand things. People may hallucinate and have unusual beliefs. They may also struggle to think clearly. Research has tried to understand what leads to psychosis. Early relationships with parents or guardians may play an important role.

Early relationships affect how we think about ourselves and others. Parents that are kind and reliable build more positive relationships with their children. Children learn that they are safe, loved, and can trust people.

These beliefs impact how children generally behave in relationships. This behaviour is known as their attachment style. Positive experiences lead to children having a “secure” attachment style. This means they feel comfortable in relationships. They can form close and stable bonds with others.

Parents can also be unreliable, uncaring, or scary. Children may then feel unsafe, unprotected, and not trust other people. They may not feel good about themselves. This can lead to one of three insecure attachment styles. Children with an insecure attachment style struggle to build healthy relationships. This is because they may believe that people will hurt or leave them.

Insecure attachment is linked to psychosis. Tools are needed to assess attachment styles so we can learn more about this. The Psychosis Attachment Measure (PAM) is the main questionnaire that is used for people with psychosis. It has been recently updated to include questions about all three insecure attachment styles.

This study aims to check that the new PAM is a good way of measuring insecure attachment. People with psychosis will be invited to complete the PAM online. They will also complete

other attachment questionnaires. Their answers on the questionnaires will be compared to see if they are alike. People will complete the PAM again two weeks later to see if they give similar answers.

Flesch Reading Ease Score = 61 (standard/average)

#### **INTRODUCTION / SUMMARY OF CONTEXT**

*Provide a brief summary of the relevant literature.*

400/400 words maximum

Psychosis is a significant mental health issue. It is characterised by symptoms such as delusions, hallucinations, confused thought patterns (WHO, 1992), alongside marked social and interpersonal difficulties (Penn et al., 2004). Research indicates that attachment difficulties appear to play an important role in the development and maintenance of psychotic experiences (Berry, Barrowclough and Wearden, 2008).

Attachment theory suggest that our early relationships with caregivers lead us to develop expectations about ourselves, others and relationships (Bowlby, 1988). These are known as “internal working models”, which guide our future social and emotional behaviour. Depending on the nature of these early experiences, children develop one of four attachment styles, which describes how they will behave towards others and emotionally regulate (Main & Solomon, 1990). Positive parenting experiences facilitate the development of a “secure” attachment style, whereby children can build trusting relationships with others and are appropriately independent.

However, difficulties within early relationships may lead to children forming negative views about themselves and/or others. This results in the development of one of three “insecure” attachment styles (avoidant, ambivalent or disorganised), which significantly impact a child’s ability to initiate and maintain healthy relationships (Main & Soloman, 1990). Insecure attachment styles in adulthood appear to be associated with difficulties in close relationships, social functioning, and mental health (Pielage, Gerlsma & Schapp, 2000; Scheinbaum et al., 2015).

With respects to psychosis, there has been increasing interest in the concept of disorganised attachment especially. This usually develops when caregivers are experienced as frightened, or frightening, and results in intimacy being both desired and feared (Bartholomew, 1994). In adulthood, disorganised attachment seems linked to increasing “positive symptoms” (experiences which are heightened or distorted in some way, e.g. delusions and hallucinations). and a higher proportion of sexual and physical abuse (Bucci, Emsley and Berry, 2017). The latter finding is important, as trauma



is a significant risk factor in the development of psychosis (Varese et al., 2012), thus highlighting the possible mediating role of attachment in this relationship.

To better understand the role of attachment in psychosis, robust measures of attachment styles are needed. The Psychosis Attachment Measure (PAM; Berry, Barrowclough & Wearden, 2008) is the most widely used self-report questionnaire, which has been shown to have good psychometric properties in non-clinical (Berry et al., 2006) and clinical populations (Kvrgic et al. 2011). However, the original PAM does not capture the disorganised dimension, measuring only the anxious and avoidant attachment styles. This presents a significant challenge to further delineating how disorganised attachment contributes to the processes underpinning psychotic or dissociative experiences.

#### **CONTRIBUTION TO BE MADE BY THE PROPOSED RESEARCH**

*What is the gap in the literature that the proposed research aims to address?*

*What **novel** and **significant** contribution to the knowledge base would be made by your proposed research?*

217/250 words maximum

At present, there is a lack of psychometrically valid and reliable measures of adult disorganised attachment (Pollard, Berry & Bucci, in preparation). The existing measures also tend to focus on experiences of romantic relationships. This format may be less accessible for individuals with psychosis who tend to be more socially isolated and can struggle to sustain romantic relationships.

Psychosis Attachment Measure (PAM) was developed with this latter consideration in mind, thus the questionnaire items do not make specific reference to romantic relationships. However, the measure was initially designed to only assess anxious and avoidant attachment. The PAM was recently revised by Pollard, Bucci, MacBeth and Berry (2020) to include a disorganised attachment subscale. Their findings provided promising preliminary evidence that the revised PAM (R-PAM) captures the concept of disorganised attachment, with all three factors displaying good internal consistency and test-retest reliability.

This proposed study presented here would contribute to the knowledge base as it would aim to provide further, more robust psychometric evaluation of the R-PAM. Once validated, the R-PAM could provide clinicians with a practical tool to assess attachment styles of service users, which could inform therapeutic interventions and promote person-centred care. Within research, the R-PAM could also be used to further investigate the apparent associations between trauma, disorganised attachment and the positive symptoms of psychosis.

**OUTLINE OF PROPOSED LITERATURE REVIEW**

*Provide the title, aims and a brief outline of the proposed literature review (e.g. systematic review, meta-synthesis, mixed-methods review, etc.), along with a brief justification for undertaking this review and the conceptual link to the empirical study.*

239/400 words maximum

**Title**

A systematic review of measures of adult secure attachment

**Brief outline**

A systematic literature search will be conducted to identify measures of adult secure attachment. The review aims to systematically critically appraise the methodology and measurement properties of the instruments. This will be in line with Consensus-based Standards for the Selection of health Measurement Instruments (COSMIN) guidance and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement.

**Justification and conceptual link**

Previous systematic reviews of measures assessing attachment styles in adults (e.g. Crowell & Treboux, 1995; Garbarino, 1998; Ravitz et al., 2010) have not specifically explored the measurement of secure attachment. These studies also did not critically evaluate the methodology and psychometric properties of the measures using a standardised quality assessment tool; thus, it is difficult to draw firm conclusions around the quality of each instrument. Though the most recent review paper (Pollard, Berry & Bucci, in preparation) aimed to address this limitation, the study only focused on measures of disorganised attachment, leading to 41 studies being excluded from the scope of the investigation.

Though disorganised attachment has attracted significant interest within the field of psychosis, it is important that secure attachment does not go overlooked. Research indicates that a significant proportion of individuals experiencing psychosis have a secure attachment style (Bucci, Emsley & Berry, 2017). Such individuals will likely possess numerous strengths (e.g. with respects to social supports, self-esteem, sense of self), which could aid their recovery if appropriately capitalised upon. As such, valid and reliable measures of secure attachment are needed to help identify these individuals and promote a strengths-based approach to treatment.

**AIMS AND RESEARCH QUESTIONS OF THE EMPIRICAL STUDY**

*Briefly state the principal and subsidiary aims of the research and the research questions to be investigated*

94/150 words maximum

This principal aim is to confirm the structural dimensionality of the R-PAM and determine its psychometric properties. The research questions are as follows:

1. Do participant responses on the R-PAM load onto three distinct factors (anxious, avoidant, and disorganised attachment)?
2. Do measures of internal consistency and test-retest reliability indicate that the R-PAM is a reliable instrument?
3. Does the disorganised subscale of the R-PAM correlate with existing measures of adult disorganised attachment?
4. Do participant responses on the disorganised subscale correlate with related constructs, i.e. severity of positive symptoms, dissociation and trauma?

## **METHOD**

### **STUDY DESIGN**

*Provide an outline of the design to be used (e.g. correlational, group comparison, etc.), stating dependent/target and independent/predictor variables where appropriate*  
45/100 words maximum

The proposed study will utilise a correlational, questionnaire design to examine the psychometric properties of the R-PAM. Questionnaires will be included to measure variables of trauma, dissociative experiences, and positive symptoms. Confirmatory Factor Analysis will be used to determine the structural dimensionality of the R-PAM.

### **STUDY HYPOTHESES**

*State, in formal terms, the hypotheses to be tested and how these relate to the research aims*  
84/200 words maximum

It is hypothesised that:

1. Confirmatory Factor Analysis of the R-PAM will confirm a three-factor solution.
2. The R-PAM will display good internal consistency (McDonald's Omega > .7) and test-retest reliability (ICC > .75)
3. Responses on the disorganised attachment scale of the R-PAM will correlate with the corresponding subscales of the PTI-ASS and RQ.

4. There will be a significant positive correlation between scores on the disorganised attachment scale of the R-PAM and positive symptoms of psychosis, dissociative experiences and trauma.

#### **PARTICIPANTS**

*Describe the types of participants (service users or students, age and sex ratios if appropriate, inclusion / exclusion criteria). Provide an estimate of the number of eligible, potential participants who would have to be screened in order to attain your sample size, accounting for any possible drop outs. Please explain what these estimates are based upon, and justify any calculations provided.*  
202/300 words maximum

The aim is to recruit a minimum online clinical sample of 100 participants. This will be combined with an existing data set from a previous joint trainee project, which recruited 242 participants. Eligibility criteria across the studies is as follows:

1. Age 18 or older.
2. Self-report diagnosis of psychosis (such as schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder, psychosis) **OR**
3. Report receiving at some point in their lives:
  - i. Antipsychotic medication for experiences related to psychosis
  - ii. Treatment in a mental health unit / hospital for experiences related to psychosis
  - iii. Input from community mental health team or early intervention service for experiences related to psychosis
  - iv. Therapeutic input (e.g. CBT therapist, psychologist) for experiences related to psychosis, such as hearing voices, visual hallucinations, paranoid ideation or unusual beliefs.
4. Sufficient English language proficiency to complete the measures.

Previous ClinPsyD projects that have recruited a similar online sample have reported attrition rates of around 30% (see McGonagle, 2017; Pearce et al., 2017). The present study will therefore aim to recruit 145 participants to allow for the possibility of missing data. Strategies to reduce the likelihood and impact of missing data are further discussed in the *Difficulties* section.

#### **RECRUITMENT STRATEGY**

*Describe the proposed recruitment strategy.*  
263/300 words maximum

Recruitment will take place between December 2020 and October 2021. Study advertisement materials will be developed (adapted for both paper and online distribution) and will contain a link for the online survey. Participants will be recruited by:

- Contacting mental health charities, social enterprises, voluntary and community groups, and support networks. Depending on the nature and capabilities of the organisation/group, they will be asked to promote the study through one or more of the following:
  - o Social media platforms
  - o Website
  - o Mailing lists
  - o Displaying posters/leaflets
- Arranging meetings (face-to-face or via Zoom/Videolink) with appropriate representatives and stakeholders of organisations to promote the study and address any concerns, via a short presentation and/or Q&A session.
- Advertising study on social media platforms (Facebook, Twitter, Reddit) using a study-specific account.
- Distributing posters and leaflets locally.

Several relevant organisations and groups have been identified as potential collaborators.

These include:

- *National and international mental health charities* (Intervoice, Mind, Mental Health UK, Time-to-Change, Mental Health Foundation, Hearing Voices Network, Paranoia Network).
- *Local mental health charities and social enterprises* (Beyond Recovery, Start, 42<sup>nd</sup> Street, Six Degrees Social Enterprise)
- *Local voice-hearing support groups* (Hearing Voices Network support groups in Manchester, Rochdale, Stretford, Trafford and Didsbury; Hearing Voices and Unusual Experiences group in Hulme; Mind Hearing Voices Group in Stockport)
- *Mental health support groups* (Rethink Mental Illness Manchester group, Community Lived Experience Organisation, Empower, Rochdale & District Mind, Mental Health Independent Support Team)
- *Community and wellness centres* (The Mind Wellbeing Centre, Romiley Life Centre, Zion Community Resource Centre, The Gateway, The Fountain Project)

**POWER CALCULATION/EXPECTED NUMBER OF PARTICIPANTS**

*Please describe your power or sample size calculation, or the expected number of participants if qualitative research.*

150 words maximum

Sample size requirements has been guided by the work of Wolf, Harrington, Clark & Miller (2013). The Monte Carlo data simulation technique adopted within this study indicates that a sample size of 320 would be required to achieve 80% power (with  $\alpha = .05$ ). This takes into account the 3-factor structure of the R-PAM, the minimum magnitude of factor loadings (approximately 0.5, based on Pollard's (2020) study) and the possibility of missing data.

#### **MEASURE(S)**

*List the measures that will be used in the study, the rationale for using them, any validation work that may be required and any training required to use them.*

400 words maximum

#### **The Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006)**

This is 12-item self-report measure designed to assess exposure to interpersonal trauma in childhood and adulthood. Good psychometric properties have been established for the BBTS, including test-retest reliability and construct validity. This measure will be used to assess convergent validity, as disorganised attachment is associated with a higher incidence of sexual and physical trauma.

#### **The Community Assessment Psychic Experiences – 42 (CAPE; Stefanis et al., 2002)**

This is a 42-item self-report measure assessing positive and negative psychotic symptoms and depressive symptoms. The CAPE has demonstrated good psychometric properties with both clinical and non-clinical participants (Stefanis et al., 2002; Yung et al., 2009). Only the positive symptom subscale will be used in this study (20 items) to assess convergent validity, as research indicates that disorganised attachment correlates with more severe positive symptoms.

#### **Dissociative Experiences Scale (DES-II; Carlson and Putnam, 1993)**

This is a 28-item self-report measure assessing experiences of amnesia, depersonalisation, derealisation and absorption. Good psychometrics for reliability and validity have been reported (Holtgraves & Stockdale, 1997). This measure will be used to assess convergent validity, as disorganised attachment is linked to dissociative experiences.

#### **The Psychological Treatment Inventory – Attachment Styles Scale (PTI-ASS; Giannini, Gori, Sanctis & Shuldberg, 2011)**

The PTI-ASS is a 22-item self-report measure of all four adult attachment styles. Good psychometric properties have been reported for this measure (Giannini et al., 2011). This measure will be used to assess concurrent validity.

#### **The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991)**

The RQ is a 4-item self-report measure designed to assess the four adult attachment styles. The RQ has good psychometric properties and has been used in previous clinical studies (Ponizovsky, Vitenberg, Baumgarten-Katz, & Grinshpoon, 2013). This measure will be used to assess concurrent validity.

### **The Revised Psychosis Attachment Measure (R-PAM; Pollard et al., 2020)**

The R-PAM is 26-item self-report measure of anxious, avoidant and disorganised attachment in psychosis. The present study will aim to validate this measure.

#### **PROCEDURE**

*Describe the study procedure, in replicable detail.*

360/400 words maximum

#### **Ethics**

Following approval by the ClinPsyD research subcommittee, an application will be made to the University's ethics panel no later than September 2020 for consent to proceed with recruitment.

#### **Recruitment**

Initial contact with relevant organisations and groups will be made during the ethics approval process to identify those that would support with recruitment through advertising (e.g. via website, social media platforms, displaying posters). Following ethics approval, interested parties will be contacted and advertising materials will be shared. Face-to-face and/or zoom meetings will be offered to provide further information about the project if required. Recruitment is expected to take place between December 2020 and October 2021.

#### **Consent to participate**

Advertising materials will provide a link to the online survey. This will commence with a Participant Information Sheet (PIS), which will provide an overview of the study and address issues such as consent, confidentiality, right to withdraw and data management. Participants will also be advised about the steps that they can take should they feel distressed. Participants will then be redirected to a consent form where they will confirm their understanding of the issues raised in the PIS and be asked to provide consent to participate in study. They will also be asked to provide consent to be contacted again in two weeks to repeat one of the questionnaires (the R-PAM).

## Data collection

Once participants have provided their consent to participate, they will be asked to complete the socio-demographics form followed by the questionnaires. The questionnaires will be presented in a random order to reduce order effects; however, the trauma measure will be placed in the middle to minimise participant distress.

## Debrief

Following the completion of the final survey, participants will be redirected to a debrief sheet. This will thank them for their time, reiterate information around confidentiality and outline support that is available to them should they feel distressed. Participants will be asked to provide their email if they wish to be entered into a prize draw for high street shopping vouchers and/or would like a summary of the research findings at the end of study.

The online requirements for this project have been discussed with Austin Lockwood.

## DATA ANALYSIS

*Provide an outline of the procedures to be used in data analysis in relation to each hypothesis/aim.*

240/400 words maximum

*Do participant responses on the R-PAM load onto three distinct factors (anxious, avoidant, and disorganised attachment)?*

This will be examined using Confirmatory Factor Analysis (CFA), carried out with the AMOS software package for SPSS. The overall fit of the three-factor model will be assessed with key goodness-of-fit values, such as the Model Chi-Squared statistic ( $p > 0.05$ ), the Comparative Fit Index (CFI  $> .9$ ) and the Root Mean Square Error of Approximation (RMSEA  $< 0.08$ ).

*Do measures of internal consistency and test-retest reliability indicate that the R-PAM is a reliable instrument?*

The internal consistency of the R-PAM subscales will be examined by McDonald's omega. To determine test-retest reliability, intraclass-correlation coefficients (ICCs) will be calculated between scores at Time 1 and Time 2. ICCs  $> .75$  indicates "good" measure stability.

*Does the disorganised subscale of the R-PAM correlate with existing measures of adult disorganised attachment (PTI-ASS; RQ)*



Pearson's Order correlations will be carried out to assess the relationships between the disorganised subscale of the R-PAM and the corresponding scales within the PTI-ASS and RQ.

*Do participant responses on the disorganised subscale correlate with related constructs, i.e. severity of positive symptoms, dissociation and trauma?*

Pearson's correlations will be used to measure the relationship between the disorganised subscale and related constructs, i.e. the CAPE positive symptoms subscale, the DES-II and the BBTS.

**Dr Lesley-Anne Carter, statistician at the University of Manchester, has been consulted regarding the data analysis plan, however discussions are ongoing.**

#### **DIFFICULTIES**

*Please include a list of the potential challenges or difficulties that this research presents you with and describe how these will be managed. Include practical pitfalls and potential confounds.*

256/300 words maximum

**Missing data** – Participants will be provided with clear information in the PIS about the number of questionnaires contained within the study and the expected completion time to manage expectations. This will reduce the risk of participants closing the survey before they have finished all the questionnaires. Item-level missing data will be reduced by applying settings on the survey to notify participants that they have missed a question.

Questionnaires will also be randomised to minimise the impact of missing data as this will allow for the series mean to be inputted (if appropriate).

**Poor quality data** – There is a risk that participants may respond randomly or provide the same responses for each item. It is hoped that adequate information about the questionnaire length/average time taken will reduce the probability of careless and/or random responding as participants can begin the survey when they know they have enough time to complete it. In extreme cases (e.g. same response to all items of a measure), the data set could be excluded so as not to bias results towards the null hypothesis.

**Ethical** – the content of the questionnaires may be distressing for some participants. To allow for informed consent, participants will be provided with information in the PIS about the nature of the questions. Sources of support will also be outlined in the PIS and debrief sheet should any participants feel distressed. The order of the questionnaires has been

considered to minimise distress, and the trauma scale (BBTS) will be placed in the middle as a result.

#### **CONTINGENCY PLAN**

*Include details of contingency plan and when this would be implemented (i.e. stop-go criteria for main study and dates this will be determined). More detailed contingency plans would be required for 'high-risk' projects, e.g. recruiting from 'difficult to engage' populations. Please note that the contingency plan should have a revised research question and alternate design to the original study. The contingency plan must contain more than recruitment extensions for the original study.*

143/300 words maximum

Kline (2011) indicates that the minimum sample size for Structural Equation Modelling is 200. If the target sample size is not achieved by September 2021, the CFA will be conducted using only the existing data (N = 242) which was collected as part of a previous joint trainee project. The original research question can therefore be retained; however the limitations of this reduced sample size will be discussed and firm conclusions about the R-PAM's structural dimensionality will be avoided.

Validation of the R-PAM will then be carried out using the data collected as part of the present study. Correlational analyses (Pearson's) will be conducted to assess convergent validity. Based on previous research (e.g. Pollard et al., 2020), the smallest correlation value is likely to be around .4, which would require a sample size of 46 (80% power). This would be a much smaller sample size compared to the original proposal, thus significantly reducing pressures on recruitment.

#### **COSTS**

*Estimate the research costs (e.g., cost of tests/measures, travel, photocopying, service user consultation costs, foot pedals, recorders etc.) and provide an itemised budget. All trainees have an allocated budget of £400 for their LSRP. Sums slightly larger than this can be requested if justified, but these are at the discretion of the Research Sub-Committee and cannot be guaranteed. Trainees should therefore ensure that a meaningful project can still be conducted should funding be limited to £400.*

35/300 words maximum

Vouchers (2x£50 high street vouchers)	£100
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Printing and paper for advertising materials (21p for A4; 42p for A3)	£50
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Printing (A0 poster for PGR conference)	£35
Travel (face-to-face meetings with collaborators; recruitment material distribution)	£60
PPI (two hour consultation)	£40
<b>Total</b>	<b>£285</b>

**PATIENT AND PUBLIC INVOLVEMENT (PPI)**

*Describe the potential utility and benefit of the proposed research project to service users and their supporters. If you have had any discussion or consultation with service users, please describe these activities and how exactly they have informed your proposal. Please describe any PPI throughout the research process.*

332/400 words maximum

There is currently a lack of valid and reliable instruments that measure all three insecure attachment styles. The proposed study will aim to address this issue through validation of the R-PAM. The availability of such a measure will allow further research to be conducted to better understand the role of attachment, particularly disorganised attachment, in individual's experiences of psychosis. This could also provide clinical settings with a time- and cost-effective tool that will allow for therapeutic interventions to be adapted based on the relational needs of the individual. Similarly, the R-PAM could be used to support clinicians to anticipate and appropriately respond to any difficulties that may arise within the therapist-client relationship. In turn, this could improve therapeutic alliance, which is the most important predictor of outcomes in therapy.

The aim had been to meet with the University's Community Liaison Group (CLG) in April 2020 to gain their input around various aspects of the research proposal. However, these meetings were cancelled due to the ongoing restrictions relating to COVID-19 and remote consultations are not going ahead at present. Due to these exceptional

circumstances, CLG feedback on previous trainee projects which were similar in terms of design and participants was reviewed. The following are examples of suggestions that informed the present proposal:

- Manage potential distress by providing information at the beginning and the end of the study to normalise any difficult feelings which may have been evoked. Include a debrief sheet at the end of the study to direct participants to support services and highlight how valuable their participation is.
- Provide clear information about the number of questionnaires to expect and the expected completion time, to manage expectations and to help participants make an informed decision about when to begin the study.
- Remind participants about confidentiality again upon the completion of all measures, as they may feel exposed following the disclosure of personal and/or traumatic experiences.

**The researchers have since identified an alternative PPI group (via the TULIPS RCT) that may be able to provide input – this is currently being explored.**

#### **DISSEMINATION STRATEGY**

*Please outline your plans to disseminate the findings from your research including dissemination via academic publications and conferences AND to wider stakeholders such as clinicians, service users and/or the wider public.*

300 words maximum

- The empirical paper and systematic review will be submitted for publication in relevant academic journals within one month of the viva examination.
- Findings will be presented at the Divisional PGR showcase conference.
- Participants who requested information about the study findings will be provided with a lay summary when the study concludes.
- Relevant organisations will be approached to communicate findings to staff, service users and wider public via website/ mailing lists/newsletters/social media platforms.
- Research findings will be shared to wider public via the study-specific social media accounts (Twitter and Facebook).

## **Appendix M – Clinical Psychology Research Subcommittee Approval Letter**

15<sup>th</sup> June 2020

MIRANDA JUSTO-NUNEZ  
Clinical Psychology, 2<sup>nd</sup> Floor Zochonis Building  
University of Manchester  
M13 9PL

Dear Miranda,

### **Research Subcommittee – 15<sup>th</sup> June 2020**

Thank you for attending the Research Subcommittee meeting on 15<sup>th</sup> June 2020. You proposed to examine a very interesting issue and you may now proceed with your research as set out in your revised proposal.

The Sub-committee would like you and your research team to consider the following but no formal response is expected:

- As this project builds on previous ClinPsyD trainee dissertation research that has aimed to validate the PAM it will be important to be clear about this in the thesis.
- It would be good to specify, a priori, a minimum value or range for the expected correlated between measures as part of evaluating validity. This provides a better test, since even relatively marginal correlations can be significant in a large sample.
- It is recommended that the trainee combines their newly collected data with the existing datasets that are mentioned, in order to enable larger samples. This is currently suggested as a contingency plan but would be good to do in the first instance.
- AMOS is unlikely to be suitable for the analysis given that it provides very limited options for managing categorical or ordinal data. Given the scale items are categorical or ordinal, the analysis and estimation method should reflect this (e.g. WLSMV estimation). Other SEM software would allow this. The lavaan package in R is freely available and would allow these analyses (the trainee could also look at the free software JASP, which makes use of lavaan, but with an easier interface).
- The thresholds set for fit criteria seem generous. As a rule CFI values for good fit should be .95 or above. It would also be good to include a further fit index such as the TLI.
- It would be good practice to compare the hypothesised CFA model against alternative, competing models (e.g. a 1 factor model).

- Missing data is likely, and so it would be beneficial to consider in advance how to manage this.

For the purposes of ethical scrutiny by relevant NHS and/or University bodies, this letter may be taken as confirmation that your research proposal has been independently reviewed and that it is considered to meet necessary scientific and methodological standards.

Supervisors are required to sign off the Trainee Study Master File (SMF) once project has been completed.

On behalf of the Research Subcommittee, we wish you good luck with your research work.

Yours sincerely

A rectangular box containing a handwritten signature in black ink, which appears to be 'Peter Taylor'.

**Dr Peter Taylor**  
**Senior Lecturer in Clinical Psychology**  
**Panel B Chair, Research Sub-Committee**

cc: *Supervisors: Katherine Berry, Sandra Bucci*  
*Tutors: Claire Fothergill*

## Appendix N – Approval letter from University Research Ethics Committee

Ref: 2020-10240-17050

25/11/2020

Dear Ms Miranda Justo-Nunez, Professor Katherine Berry, Professor Sandra Bucci

**Study Title:** Validating a measure of attachment styles in psychosis

University Research Ethics Committee 3

I write to thank you for submitting the final version of your documents for your project to the Committee on 20/11/2020 12:18 . I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form and supporting documentation as submitted and approved by the Committee.

### **COVID-19 Important Note**

Please ensure you read the information on the [Research Ethics website](#) in relation to data collection in the COVID environment as well as the [guidance issued by the University](#) in relation to face-to-face (in person) data collection both on and off campus.

[A word document version](#) of this guidance is also available.

Please see below for a table of the title, version numbers and dates of all the final approved documents for your project:

Document Type	File Name	Date	Version
Default	The Brief Betrayal Trauma Survey	17/07/2020	V1
Default	The Community Assessment of Psychic Experiences (Positive symptoms scale)	17/07/2020	V1
Default	The Psychological Treatment Inventory - Attachment Style Scale	17/07/2020	V1
Default	The Relationship Questionnaire	17/07/2020	V1
Default	The Revised Psychosis Attachment Measure (R-PAM)	17/07/2020	V1
Additional docs	Appendix 3_Sub-committee review outcome letter	05/08/2020	1
Advertisement	Email to potential collaborators	05/08/2020	1
Distress Protocol/Debrief Sheet	Participant Debrief Sheet Version 2	14/08/2020	2
Additional docs	Appendix 2_Email regarding DMP	14/08/2020	1
Advertisement	Research poster V2	09/10/2020	2
Default	The Dissociative Experiences Scale (DES-II)	09/10/2020	2
Additional docs	Consent form from previous studies	21/10/2020	1
Additional docs	Appendix 1_Consent Form Version 4	21/10/2020	4
Default	Demographics questionnaire	23/10/2020	3
Participant Information Sheet	GDPR compliant PIS	23/10/2020	3
Data Management Plan	DMP_V2	23/10/2020	2
Additional docs	Response to comments from ethics committee	23/10/2020	1
Additional docs	Response to comments (second set)	20/11/2020	1

This approval is effective for a period of five years however please note that it is only valid for the specifications of the research project as outlined in the approved documentation set. If the project continues beyond the 5 year period you will be required to submit a new ethics application.

If you wish to propose any changes to the methodology or any other specifics within the project, including the dates of data collection, an application to seek an amendment must be submitted for review. Failure to do so could invalidate the insurance and constitute research misconduct.

You are reminded that, in accordance with University policy, any data carrying personal identifiers must be encrypted when not held on a secure university computer or

kept securely as a hard copy in a location which is accessible only to those involved with the research.

**Reporting Requirements:**

You are required to report to us the following:

1. [Amendments](#): Guidance on what constitutes an amendment
2. [Amendments](#): How to submit an amendment in the ERM system
3. [Ethics Breaches and adverse events](#)
4. [Data breaches](#)
5. [Notification of progress/end of the study](#)

**Feedback**

It is our aim to provide a timely and efficient service that ensures transparent, professional and proportionate ethical review of research with consistent outcomes, which is supported by clear, accessible guidance and training for applicants and committees. In order to assist us with our aim, we would be grateful if you would give your view of the service that you have received from us by completing a **UREC Feedback Form**. Instructions for completing this can be found in your approval email.

We wish you every success with the research.

Yours sincerely,



Mrs Genevieve Pridham

Secretary to University Research Ethics Committee 3



## Appendix O – Description of alternative models for factor analysis

The expected three-factor solution was compared against three other models.

Model 1: A single factor model. All items were submitted to a Confirmatory Factor Analysis (CFA).

Model 2: A two-factor model based on Brennan, Clark, and Shaver's (1998) dimensional model of attachment, which argues that attachment behaviour is underpinned by two factors: avoidance and anxiety. Items were divided accordingly – factor 1 consisted of all the anxious items, plus items 2, 4, 8, 12, 15, 17 of the disorganised subscale, which were thought to more closely resemble experiences of anxiety. Factor 2 included the avoidant subscale, and items 18 and 21 of the disorganised scale. Item 23 was excluded from the subsequent CFA as the research team did not consider that this could be related to anxiety or avoidance.

Model 3: A two-factor model based on statistical testing. An exploratory factor analysis (EFA) was conducted in JASP with Principal Axis Factoring extraction, and the number of factors was manually specified. Oblique factor rotation (Oblimin) was applied as each factor was likely to contain elements of the disorganised attachment style, and thus would be expected to correlate to some extent. Factor 1 consisted of all the anxious items, plus items 2, 4, 12, 17, 18, and 21 of the disorganised subscale. Factor 2 was made up of the anxious subscale, as well as items 15 and 23 of the disorganised scale. Item 8 did not load onto either factor, thus was excluded from the subsequent CFA.

The results of the CFAs are reported in Table A.

Table A. Fit statistics of the one- and two-factor solutions

Model	CFI	TLI	GFI	RMSEA (90% CI)
Model 1: 1 factor	.879	.866	.897	.174 (.168-.179)
Model 2: 2 factors	.862	.845	.890	.178 (.171-.185)
Model 3: 2 factors	.916	.906	.947	.103 (.096-.110)

## Reference

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). The Guilford Press.

Measuring Different Types of Relationship Styles in Psychosis  
Ethics approval reference: 2020-10240-17162

## ADULTS WITH EXPERIENCES OF PSYCHOSIS NEEDED FOR ONLINE STUDY



Our early relationships have been linked to the development of psychosis. Research suggests that children with certain experiences are more likely to report hearing voices and feeling paranoid as adults. However, it is unclear how this happens, so more research is needed. We aim to develop a questionnaire that measures people's experiences in relationships to help us understand this link.

We are looking for **adults (18 years +) who have experienced psychosis** to take part in an online survey. You would be asked to complete some questionnaires about relationships and mental health, which take around 30 minutes. Some of these questions **may potentially be distressing** and may touch on sensitive issues. You will have the option to enter a prize draw for one of two high street vouchers to thank you for your time.

If you are interested and would like more information, please go to this webpage <https://www.psych-ssl.manchester.ac.uk/survey/mjn/>

If you are happy with this information, you will then be redirected to the survey to complete the questionnaires. There is no obligation to take part.

**Thank you!**