

REJECTION SENSITIVITY AND ATTACHMENT



Rejection Sensitivity and Attachment

Submitted by **Jennifer Simmons**, to the University of Exeter

as a thesis for the degree of Doctor of Clinical Psychology, May 2021

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

A handwritten signature in black ink, appearing to read "Jennifer Simmons". The signature is written in a cursive style with a large, decorative initial "S".

Signature:

LITERATURE REVIEW	4
Abstract.....	5
Background.....	5
Objectives	5
Method.....	5
Results	5
Conclusions	6
Introduction.....	7
Review Question	11
Review Method.....	11
Search Strategy	11
Databases	12
Search terms	12
Screening procedures.....	12
Publication Inclusion/ Exclusion Criteria.....	14
Inclusion	14
Exclusion	15
Data Extraction.....	16
Quality Assessment	16
Results	17
Critical Evaluation.....	Error! Bookmark not defined.
Study Characteristics	26
Sample Characteristics	26
Studies Rated as “Poor”.....	27
Synthesis.....	32
Relationship Between the RSQ and Versions of ECR	32
Other Measures.....	33
Mediation and Moderation	34
Discussion.....	35
Summary.....	35
Theoretical Implications and Future Research	36
Implications for Clinicians	38
Critical Appraisal.....	39
Conclusion.....	41
References.....	42
Appendices.....	51
Appendix A: NIH Quality Assessment Tool.....	51
EMPIRICAL PAPER.....	52
Acknowledgements	53
Abstract.....	54
Objective.....	54

Methods	54
Results	54
Conclusion.....	54
Introduction.....	56
Aims & Hypotheses.....	61
Methods.....	62
Design.....	62
Participants	62
Justification of Target Sample Size	64
Materials	64
Screening.....	64
Trait Measures	65
State Measures	65
Experimental Tasks	66
Rejection Paradigm	66
Attachment priming	66
Mood Repair	67
Procedure	67
Data Analysis.....	69
Results	71
Hypothesis 1	71
Hypothesis 2	71
State Attachment Security.....	72
State Attachment Avoidance.....	73
State Attachment Anxiety	73
Hypothesis 3	74
Feelings of rejection.....	75
Felt Anxiety	75
Felt Avoidance	76
Felt Security	77
Hypothesis 4	78
Discussion.....	80
Clinical Implications	85
Critical Appraisal.....	86
Future Research	87
Conclusion.....	88
References.....	89
Appendices.....	96
Appendix A: Data Cleaning Flow Chart	96
Appendix B: State Adult Attachment Measure	97
Appendix C: Secure and Neutral Priming Tasks.....	99
Appendix D: Patient Health Questionnaire -8.....	101
Appendix E: Rejection Sensitivity Questionnaire	101

Appendix F: Experiences in Close Relationships- Revised Questionnaire.....	101
Appendix G: Consent form	102
Appendix H: Participant Information.....	103
Appendix I: Participant Debrief	105
Appendix J: Power Analyses.....	106
Appendix K: Ethics Approval from the University of Exeter Psychology Ethics Committee	107

Figure 1 PRISMA flow diagram showing inclusion and exclusion for this review

Figure 1 Steps included in online survey

Figure 2 Changes in feelings of rejection following the rejection paradigm, before and after priming

Figure 3 Changes in felt attachment anxiety following the rejection paradigm, before and after priming

Figure 4 Changes in felt attachment avoidance following the rejection paradigm, before and after priming

Figure 5 Changes in felt attachment security following the rejection paradigm, before and after priming

Table 1 Common names and definitions for categories of attachment style

Table 2 PECO criteria for inclusion and exclusion of studies

Table 3 Risk of bias allowable for each grade using the NIH quality assessment tool

Table 4 Summary of eligible studies in alphabetic order by author

Table 5 Quality rating using the NIH

Table 6 Summary of effect sizes for correlations between categories of attachment and the RSQ

Table 1 Demographic Information for Participants

Table 2 Bivariate correlations for all variable entered into stepwise regression analyses

Table 3 Results for stepwise linear regression predicting felt attachment entering trait attachment anxiety avoidance and anxiety and rejection sensitivity as predictor variables

Table 4 2x2 MANOVA results for pre-post changes in state feelings according to secure or neutral priming group

Table 5 Zero-order correlations for trait variables, priming group and residual gain scores in felt attachment

Table 6 Power Analyses for each Hypothesis

SCHOOL OF PSYCHOLOGY

DOCTORATE IN CLINICAL PSYCHOLOGY

LITERATURE REVIEW

**What is the Relationship Between Rejection Sensitivity as Assessed by the Rejection
Sensitivity Questionnaire and Measures of Adult Attachment Styles?**

Trainee Name: **Jennifer Simmons**

Primary Research Supervisor: **Professor Anke Karl**

Associate Professor of Clinical Psychology and Affective Neuroscience, Mood
Disorders Centre

Secondary Research Supervisor: **Dr Alicia Smith**

Lecturer, Doctorate in Clinical Psychology, University of Exeter

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Abstract

Background

Rejection sensitivity has been proposed as a mediator between experiences of childhood trauma and the development of attachment style, with individuals with high rejection sensitivity being more likely to develop an insecure attachment style (Feldman & Downey, 1994). However, it has not been investigated whether rejection sensitivity is differentially associated with different types of insecure and with secure attachment style.

Objectives

To establish the relationship between a popular measure of rejection sensitivity, the rejection sensitivity questionnaire (RSQ), and measures of adult attachment that assess secure, anxious and avoidant attachment.

Method

Systematic review of all literature to date using PsychInfo, Medline, Web of Science, ScienceDirect, SCOPUS and Proquest databases with a narrative discussion. Papers were assessed for quality using the National Institute of Health (NIH) Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (NIH, 2014).

Results

Twenty-seven relevant papers were included, consisting exclusively of cross-sectional studies. 24 out of 27 studies reported a significant correlational relationship between measures of attachment and rejection sensitivity as measured by the RSQ, with greater effect sizes for anxious styles of attachment. Higher ratings of insecure attachment were related to higher ratings of rejection sensitivity, whereas secure attachment was negatively associated with rejection sensitivity. 6 studies additionally examined mediation and moderation

influences of attachment on rejection sensitivity on various outcomes including symptoms of eating disorders and friendship satisfaction.

Conclusions

Overall, there is strong evidence to suggest that rejection sensitivity is positively correlated with all insecure styles of attachment. There is also emerging evidence that it is negatively correlated with secure attachment. However, the existing research uses cross-sectional design and self-report measures of adult attachment, and no studies examined causal links between rejection sensitivity and attachment. It is therefore important for clinicians to assess and formulate the impact of rejecting parenting on psychopathology. Future reviews looking into child and adolescent populations are suggested to establish directional relationships between attachment and rejection sensitivity.

Keywords: Rejection sensitivity, rejection sensitivity questionnaire, attachment.

Introduction

Because human beings have a fundamental need to belong (Baumeister & Leary, 1995), chronic experience of social rejection can have detrimental physical and mental health consequences (Mc Elroy & Hevey, 2014). One effect of early experience of rejection through parents or caregivers is an enduring fear of being rejected (Claesson & Sohlberg, 2002). This fear, called rejection sensitivity, is defined as the tendency to anxiously expect, readily perceive and overreact to rejection, and was originally proposed as a mediating variable for the development of adult attachment styles; i.e., a person's predominant way of emotional bonding with others, following psychological trauma (Feldman & Downey, 1994). It is therefore a long-held assumption that rejection sensitivity is closely related to attachment. Despite this claim, the relationship between attachment styles and rejection sensitivity has yet to be systematically reviewed. To address this gap, this review explores the relationships between the rejection sensitivity questionnaire and measures of attachment.

Previously published literature reviews have explored the links between rejection sensitivity and interpersonal processes, finding strong to moderate links between rejection sensitivity and interpersonal difficulties in obesity (Albano et al., 2019) and modelling its contribution to cognitive affective processing systems ([CAPS] Ayduk & Gyurak, 2008). Other reviews have found strong links between rejection sensitivity and a number of psychiatric diagnoses such as borderline personality disorder (BPD), anxiety, depression, and body dysmorphic disorder (Foxhall et al., 2019; Gao et al., 2017). Given the links between early trauma, attachment and mental distress, understanding how rejection sensitivity relates to attachment is important for understanding the mechanisms underlying mental health difficulties and could provide ways to address experiences of rejection within interventions. The measurement of rejection sensitivity and attachment will be discussed, alongside theories about how the two may be related.

Rejection sensitivity is typically assessed using the Rejection Sensitivity Questionnaire (RSQ), developed by Downey and Feldman (1996) as a measure of individual differences in the tendency to anxiously expect and react negatively towards rejection in a college student population. Subsequent iterations of the questionnaire have addressed rejection sensitivity in different age groups, including one adapted for children (Downey et al., 1998) and a 9-item adult RSQ (ARSQ) (Berenson et al., 2009). Other questionnaires have been developed to assess the impact of discrimination, including age-based (Kang & Chasteen, 2009) and race-based rejection sensitivity (Mendoza-Denton et al., 2002). The original RSQ remains the most commonly used measure of interpersonal rejection within the literature; the likely reason for this is that students form the most common research population for rejection sensitivity research.

The RSQ is an 18-item self-report measure that presents brief scenarios (e.g., “After class, you tell your professor that you have been having some trouble with a section of the course and ask if he/she can give you some extra help.”) The respondent is then asked to rate using a 6-point Likert scale measuring two dimensions: rejection concern (how concerned or anxious the respondent would be that a significant other would reject their request) and acceptance expectancy (how likely the respondent feels that the significant other would respond positively to their request). A total score for this measure is then calculated by multiplying the level of rejection concern by the reverse of the level of acceptance and dividing the total score for the questionnaire by 18 to achieve an overall average ranging between one and 36. The questionnaire has been demonstrated to have good internal consistency (Cronbach’s $\alpha = .81$) and test-retest reliability ($r = .83$) (Downey & Feldman, 1996). It has been shown to correlate with related concepts such as interpersonal sensitivity and social avoidance and attachment (Downey & Feldman, 1996), however the underlying links with these concepts have yet to be explored in a review.

There is an assumption within the literature that the RSQ is related to theories of adult attachment (Abraham & Adiratna, 2014; Adler, 2017; Afram & Kashdan, 2015; Ayduk et al., 2001). Attachment theory proposes that children form internal working models (IWMs) of relating to the world according to patterns of early relationships with caregivers (Bowlby, 1969). IWMs have since been divided into and described in terms of discrete categories of relating between parent and child, such as secure, anxious, avoidant and disorganised (Ainsworth, 1979). Theories of adult attachment posit that early experiences of being parented are carried through to relationships in adult life, including romantic attachments (Hazan & Shaver, 1987). There are many ways to measure and categorise adult attachment style; Hazan & Shaver's (1987) created a categorical forced-choice self-report measure which asks recipients to self-identify between three romantic attachment styles developing from childhood parental attachment: secure, anxious and avoidant. Several continuous measures have been developed from this original self-report measure including the experiences in close relationships revised ([ECR-R] Fraley et al., 2000), Adult Attachment Scale ([AAS] Collins & Read, 1990) and Adult Attachment Questionnaire ([AAQ] Simpson, 1990). For a full review of all self-report measures of adult attachment see Ravitz et al. (2010). Equally, there are many other techniques for categorising adult attachments such as interview techniques or measures of physiological reactions (see Mikulincer & Shaver, 2007 ch.4 for a review). Categories of attachment can have differing labels for concepts that overlap. Table 1 below summarises the most common terms and definitions, developed from Bartholomew and Horowitz (1991)'s four-category model.

Table 1*Common names and definitions for categories of attachment style*

Name	Definition
Secure. Resolved	Positive view of both self and others
Anxious, Preoccupied, Unresolved	Positive view of others, negative view of self
Avoidant, Dismissing, Unresolved	Negative view of others, positive view of self
Fearful, Ambivalent, Disorganised, Unresolved	Negative view of others, negative view of self.

There has been a historical assumption within the literature that categories of adult attachment are orthogonal, and research is often predicated on the assumption that attachment dimensions are unrelated (Allen, 2000; Mikulincer et al., 2003). However, a systematic review on the dimensions of the ECR-R found that whilst medium to large intercorrelations between the anxiety and avoidance subscales of this measure are often treated as a “surprising” result, this is a common finding (Cameron et al., 2012). Insecure attachment dimensions are therefore likely to be related via underlying factors. Although this has yet to be confirmed for other measures of attachment, this idea is concurrent with Bowlby (1969)’s original assertion that whilst attachment may be categorical in theory, in practice it is likely to be oblique and interconnected.

Feldman & Downey (1996) argue that rejection sensitivity may underlie both anxious and avoidant styles of attachment but that those with anxious attachment styles will react to expected rejection by behaving in a way that enforces continued closeness, whereas those

higher on avoidance may make efforts to distance themselves from relationships in which they make risk rejection. Previously explored mediators for the link between anxious and avoidant attachment are age of participants, university population vs adult population, country of research and relationship status (Cameron et al., 2012). It is therefore hypothesised that all categories of insecure attachment are likely to be associated with high rejection sensitivity, with sub scales for secure attachment style having an inverse relationship with high rejection sensitivity. Since this initial study, a huge variety of measures and theories underlying attachment have been published, and it is unclear whether the RSQ continues to be associated with more recently developed measures of attachment, or whether the relationship between the RSQ and attachment holds true for other methods of measuring and categorising attachment, such as interview techniques. It is pertinent to conduct a review of how different measures of attachment relate to the RSQ within the literature; this will allow researchers using these measures to be clear as to whether rejection sensitivity is a related and overlapping concept with attachment, and clarify whether rejection sensitivity is, as claimed by Feldman & Downey (1994) a potential mediator between childhood trauma and adult attachment style. This will have implications for clinicians using attachment based interventions and inform thinking about the early impact of trauma on relationships.

Review Question

What is the relationship between rejection sensitivity as assessed by the RSQ and measures of adult attachment style?

Review Method

Search Strategy

Search strategy was based on PRISMA-P guidelines (Moher et al., 2015).

Databases

The following databases were searched for relevant literature: PsychInfo, Medline, Web of Science, ScienceDirect, SCOPUS and Proquest. Additionally, open access thesis and dissertations was searched in order to highlight grey literature that might be relevant.

Databases were searched from 1996 (the publication year of the RSQ) up to 17th August 2020.

Once all papers were selected, forward and backward chaining of sources was used to check whether references or citations contained further literature. Two potential candidates were identified, however, they did not fulfil the PECO criteria due to changes made to the wording of the RSQ (see Table 2).

Search terms

Searches were conducted using terms developed from a preliminary search of the literature and previous literature reviews related to attachment. The search terms used were:

"rejection sensitivity questionnaire" AND (attachment OR "avoidant" OR "dismiss*" OR "fearful" OR "ambivalent" OR "preoccupied" OR "secure" OR "insecure")

Boolean operators AND and OR were used to ensure that records selected contained both the phrase rejection sensitivity questionnaire and a word that was in some way related to attachment. Words relating to attachment were taken from common categorisations for attachment within measures.

Search terms were sought in all database fields.

Screening procedures

Papers were selected on the basis of PECO (population, exposure, comparator, outcome) criteria outlined in Table 2. All study designs were eligible for this review if they

presented a direct statistical association between the RSQ and a measure of adult attachment. Measures of adult attachment were defined as any instrument or method of scoring participants on scales based on a categories of attachment drawing on seminal theories of attachment (Ainsworth, 1979; Bowlby, 1969; Hazan & Shaver, 1987): avoidant, dismissive, fearful, ambivalent, preoccupied, secure or insecure. As many measures touch on related concepts such as relationship satisfaction, Ravitz et al. (2010)'s review of attachment measures was used as a guide as to what measures constituted a measure of attachment. Attachment measures were considered to be any assessment (e.g. interview, self-report) that produced scores for participants based on attachment categories; this criteria was set as there are many measures that test for attachment related concepts such as the Inventory of Parent and Peer Attachment ([IPPA] Armsden & Greenberg, 1989) which measures quality of attachment relationship with parents and peers but does not provide a categorical label such as secure or avoidant.

Table 2*PECO criteria for inclusion and exclusion of studies*

Criteria	Inclusion	Exclusion
Population	Adults or adolescents (16 and above).	Children (aged 16 or under)
Exposure	Rejection sensitivity as measured by the original 18-item RSQ (Feldman &Downey, 1996) or shortened versions such as the 8-item RSQ where the same questions contained in the original 18-item were presented.	Rejection sensitivity not measured. Rejection sensitivity measured by alternative questionnaire or adapted questionnaire with questions changed in terms of their wording in order to match specific populations, for example the ARSQ (Berenson et al., 2009).
Comparator	Attachment style, as measured by any measure of attachment. Measure must categorise into attachment related categories (e.g., secure vs anxious).	Attachment style not measured. Measure does not categorise into attachment related category, e.g., IPPA which measures of quality of relationship with attachment figure.
Outcomes	Statistical analysis of the RSQ with relation to measure of attachment -Pearson or Spearman's rank -ANOVA -Moderation analysis -Mediation analysis -t-test	Relationship between attachment measure and RSQ not directly statistically analysed.

Publication Inclusion/ Exclusion Criteria

Inclusion

- Published full-text research articles
- Grey literature and theses
- Articles published in English or translated into English by journal
- Quantitative methodology

Exclusion

- Articles published in a language other than English
- Articles published as abstracts or conference proceedings only
- Reviews, commentaries and editorial articles
- Articles providing systematic reviews or meta-analyses

After the initial search, papers were screened initially using the title and abstract of the paper. As the RSQ was developed in 1996, screening excluded any studies published prior to this year.

Full-text articles were examined for suitability by examining the methodology section to check that the RSQ had been used alongside a measure of attachment that fitted the PECO criteria (see Table 2).

Following this, included papers were categorised into which versions were used (18-item original version; (Downey & Feldman, 1996) 8-item shortened version (Downey & Feldman, 1996) or the 9-item adult version (Berenson et al., 2009), or an adapted version using different questions); this involved checking abstracts and comparing item measures quoted to copies of these measures. As can be seen in Table 2, versions of the original RSQ that used the same items as the original were included, however versions where the questions were changed and adapted were excluded, including the 9-item ARSQ.

The remaining papers were then screened to check within the results section whether an analysis suitable to infer an association between the two measures was provided. An independent reviewer confirmed eligibility of six randomly selected full-text records. The measured Cohen's Kappa for the two ratings was 1.0, indicating complete agreement (McHugh, 2012).

Lastly, papers were removed if statistics were not reported in relation to separate attachment categories; for example, Fang (2017) calculated an overall average score for attachment measures used instead of separating out categorical subscales. This was not considered to have passed the “comparator” aspect of PECO.

Data Extraction

Data extraction required ascertaining and collating the versions of attachment measure used. This included checking references, abstracts and descriptions of measures included within the articles; it was not always clear which measure was being used, for example study 13 states in its methods that it used the Multi-Item Measure of Adult Romantic Attachment (MIMARA; Brennan & Shaver, 1995), however it describes it as a “36-item” self-report measure and describes items that correspond not to the MIMARA but the ECR-R.

Similarly, some studies were not clear in their description of the RSQ, and it was not always clear if the 18-item or 8-item short version or 9-item ARSQ was being used. There were also several examples of papers that incorrectly cited the 9-item ARSQ (Afram, 2013; Biggs-Heisler, 2020). Because of this confusion, included papers that referenced the 18-item measure but gave no verifiable evidence of which measure was used were therefore evaluated as poor.

Quality Assessment

Papers were assessed for quality using the National Institute of Health Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (National Institute of Health, 2014) (Appendix A). Given that the focus of the current review is on a cross-sectional analysis of measures, this tool was selected as the most appropriate framework to judge the quality of the included papers. Whilst the tool outlines clear guidance for the scoring of items, it does not outline a strict cut off criteria for grading the papers. It suggests that papers

are categorised into three categories: good, fair and poor, with guidance stating that “each study must be assessed on its own based on the details that are reported and consideration of the concepts for minimising bias.” (*National Institute of Health, 2014, p. 4*) Given the similarity in methodology and structure in many of the selected papers, flaws such as (cross-sectional design and being unable to state the number of participants approached for the study were considered allowable for a rating of “good”. The researcher therefore developed the following rules for categorising bias (see Table 3).

Table 3

Risk of bias allowable for each grade using the NIH quality assessment tool

Grade	Risk of bias
Good	<ul style="list-style-type: none"> • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
Fair	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided
Poor	<ul style="list-style-type: none"> • Gave little or vague information on the measures used, to the extent that it was not possible to verify which measure was used. • Combining measures such that it was not possible to evaluate validity or reliability of the measure.

Studies rated as poor were considered separately to the overall narrative synthesis as it was not possible to assess measures used for reliability or validity, impacting the generalisability of conclusions drawn from the studies.

Results

Figure 1 outlines the selection process following initial searches. 644 citations were found using the search terms across the identified databases. After deletion of duplicates, 515

papers were screened for inclusion using title and abstracts. Of these, 335 did not meet the specified PECO criteria (see Table 2).

183 full-text records were assessed for eligibility based on the inclusion and exclusion criteria. 114 papers were excluded following screening of methodology section as they did not use the RSQ (n=24) or a measure of attachment (n=90). 30 papers were excluded due to not having a direct statistical comparison between the RSQ and a measure of attachment. A further four papers were excluded for using the 9-item adult RSQ and another 3 were excluded for adapting the questions presented within the original 18-item measure by changing the wording.

For the remaining 27 papers which fulfilled the eligibility criteria, data was extracted and assessed for quality. Reference lists of all full-text papers were reviewed for relevant records, but no additional publications were identified.

Figure 1

PRISMA flow diagram showing inclusion and exclusion for this review



PRISMA 2009 Flow Diagram

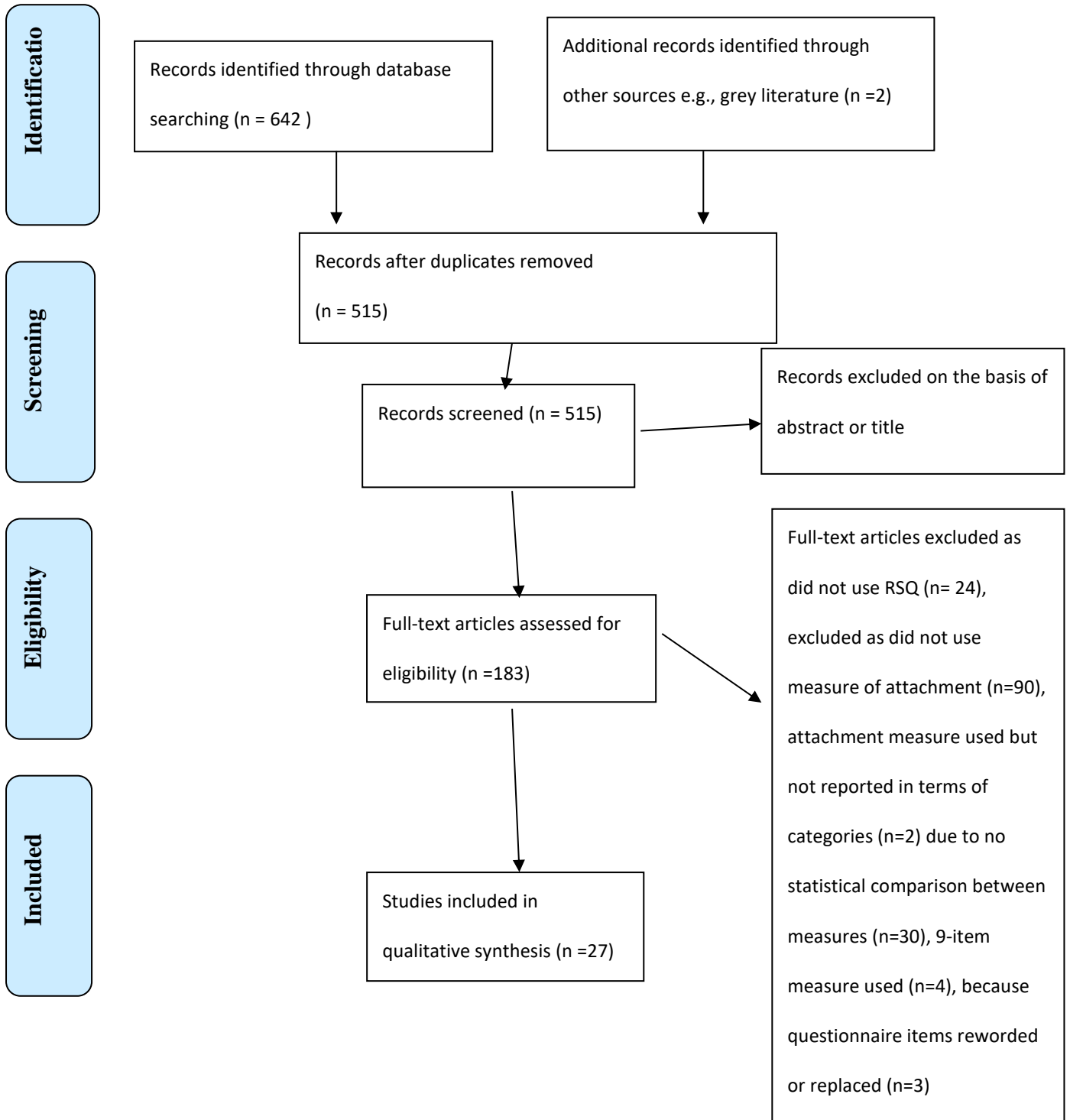


Table 4

Summary of eligible studies in alphabetic order by author

Number	Author	Year	Country	Population	Study Aims	Study Design	Outcome: RSQ measure used	Attachment measure used	Results	Moderation/Mediation Analyses
1	Adler, N	2017	United States	499 students (M _{age} =22, SD=3.7, no. females =302)	To examine the relationship between self-posting on social media and the Dark Triad, impulsivity, narcissm, attachment and rejection sensitivity.	Cross-sectional	8 item	ECR-R	RSQ was significantly correlated with anxious attachment r(499)=.28 <i>p</i> <.001 and avoidance 4(499)=.39 <i>p</i> <.001	-
2	Berenson, K. R. G., Anett: A	2009	United States	70 students (M _{age} =20.6, SD=4.8, no. males= 37)	To assess whether rejection sensitivity increases vulnerability to disruption of attention by social threat cues.	Cross-sectional	18 item	ECR-R SF	RSQ was significantly correlated with anxious attachment r(68)=.43, <i>p</i> <.001, and avoidance r(68)=.30 <i>p</i> <.05)	-
3	Blackhart, G. C. F., Jennifer: Williamson, Jessica	2014	United States	725 adults who were single or had been in a relationship for less than one year (M _{age} =22.31 SD=6.75 no. females 537)	To examine how dispositional factors such as rejection sensitivity and attachment are related to online dating behaviours.	Cross-sectional	No specification	RQ and Relationship Scales Questionnaire composite	RSQ was significantly correlated with secure attachment r(725)= -.4 <i>p</i> <.05, preoccupied r(725)=.32 <i>p</i> <.05; fearful r(725)= .32 <i>p</i> <.05 and dismissive r(725)=.03 <i>p</i> >.05	-
4	Boldero, J. M. H., Carol A.: Bloom, Lisa: Cooper, Jae: Gilbert, Flora: Mooney, Jessica L.: Salinger, Jodi	2009	United States	101 students (M _{age} =20.64, SD=4.55, no. females= 71)	To examine the mediational relationship between rejection sensitivity and attachment on symptoms of borderline personality disorder.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(101)=.53 <i>p</i> <.001 and avoidance r(101)=.38 <i>p</i> <.001	RSQ partially mediated the impact of both anxious, <i>z</i> = 4.33, <i>p</i> < 0.001, and avoidant attachment, <i>z</i> = 4.26, <i>p</i> < 0.001, on number of BPD features reported.

5	Boldero, J. M. H., Carol A.: Bloom, Lisa: Cooper, Jae: Gilbert, Flora: Mooney, Jessica L.: Salinger, Jodi	2009	Australia	131 students ($M_{age}=20.10$, $SD=4.37$, no. females=93)		Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(131)=-.51$ $p<.001$ and avoidance $r(131)=-.28$ $p<.05$	RSQ and negative self-beliefs partially mediated the impact of anxious attachment (RSQ: $z = 1.97$, $p = 0.02$; negative self-beliefs: $z = 3.49$, $p < 0.001$) and completely mediated the impact of avoidant attachment (RSQ: $z = 1.82$, $p = 0.034$; negative self-beliefs: $z = 4.22$, $p < 0.001$) on number of BPD features reported.
6	Boussi, A.	2017	United States	174 students ($M_{age}=20.15$, $SD=3.54$, no. females=111)	To understand the links between rejection and subsequent behaviour, and how this relates to dispositional factors.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(174)=-.39$ $p<.01$ and avoidance $r(174)=-.25$ $p<.01$	-
7	De Paoli, T. F.-T., Matthew: Halliwell, Emma: Puccio, Francis: Krug, Isabel	2017 a	Australia	122 eating disorder patients ($M_{age}=25.16$, $SD=7.60$, no. females=119), 622 university students ($M_{age}=22.01$, $SD=8.63$, no. females=491)	To assess how symptoms of eating disorder, attachment and maladaptive schema are mediated by rejection sensitivity.	Cross-sectional	18 item	ECR-R	For the ED group RSQ was significantly correlated with anxious attachment $r(122)=-.52$ $p<.01$, and avoidance $r(122)=-.40$ $p<.01$; For healthy control group RSQ was significantly correlated with anxious attachment $r(622)=-.47$ $p<.01$ and avoidance $r(622)=-.31$ $p<.01$	Mediation analysis did not show any significant indirect effects of attachment via RSQ on drive for thinness, body dissatisfaction or bulimia.
8	De Paoli, T. F.-T., Matthew: Krug, Isabel	2017 b	Australia	108 Eating disorder patients ($M_{age}=25.45$, $SD=7.65$, no. females=108), 616 university students ($M_{age}=22.18$, $SD=4.23$, no. females=491)	To examine how rejection sensitivity (interpersonal and appearance based) and social rank mediate the relationship between attachment and symptoms	Cross-sectional	18 item	ECR-R	For the ED group the RSQ was significantly correlated with anxious attachment $r(108)=-.58$ $p<.01$ and avoidance $r(122)=-.37$ $p<.01$. For the healthy control group RSQ was	Mediation Analysis showed significant indirect effect of AttAnx → emotional deprivation → RSQ → disordered eating ($\beta=0.016$, $SE=0.005$ $p=.001$)

				females=616)	of eating disorder.				significantly correlated with anxious attachment r(616)=-.46 p<.01 andavoidance r(622)=-.10 p<.05	and AttAnx → abandonment → RSQ → disordered eating β=0.043 SE= 0.011 p<.001 but other pathways involving the RSQ were insignificant
9	De Paoli, T. F.-T., Matthew: Huang, Chia: Krug, Isabel	2020	Australia	753 adults, university students and targeted eating disorder patients (M _{age} =22.36, SD=8.20, no. females=606)	A network analysis of the associations between borderline personality disorder and eating disorder symptoms.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(753)=.50 p<.001 and avoidance r(753)=.35 p<.001	-
10	Downey, G. F., Scott I.	1996	United States	293 students (M _{age} =18.7, SD=81.6, no. females=166)	To examine the impact of rejection sensitivity on intimate relationships.	Cross-sectional	18 item	AAS	RSQ was significantly correlated with secure attachment r(192)=-.28 p<.001, anxious attachment r(192)=-.24 p<.001 andavoidant attachment r(192)=.17 p<.01	-
11	Erozkan, A.	2009	Turkey	500 students (M _{age} =20.20, SD=1.80, no. females=260)	The effect of attachment styles on levels of rejection sensitivity in relation to gender and parenting styles.	Cross-sectional	18 item (Turkish translation)	Relationship Scales Questionnaire (Turkish Translation)	RSQ was significantly correlated with secure r(500)=-.42 p<.05, fearful r(500)=0.49 p<.01, preoccupied r(500)=.41 p<.01 and dismissing r(500)=.33 p<.05 styles of attachment	-
12	Hafen, C. A. Spilker, A., Chango, J., Marston, E., Allen, J.P	2014	United States	180 teenagers assessed over 6-year period (M _{age} =16.35 [SD=0.87] to 21.66 [SD=.96], no. females=96)	To examine the impact of adolescent rejection sensitivity on later adult romantic relationships.	Longitudinal (4 annual follow-ups)	18 item	MIMARA cited, however description and example questions correspond to the ECR-R	RSQ explained a significant amount of the variance in anxiety β=.43, SE= .11 p<.01, and avoidance β=.33, SE=.12, p<.05	-
13	Hospital, M. M.	2006	United States	385 students (M _{age} =20.26, SD=3.6 no. females=307)	To develop a multivariate model of differentiation of self for a Hispanic population.	Cross-sectional	18 item	ECR	RSQ was significantly correlated with anxious attachment r(385)=.44 p<.001, avoidant r(385)=-.21 p<.001	-

1 4	Jobst, A. P., Mauer, F., Daltrozzo, M. C., Bauriedl- Schmidt, T.C., Sabass, C., Sarubin, L., Falkai, N., Renneberg, P., Zill, B., Gander, P., Buchheim, A	2016	Germany	Twenty-two female patients aged 19 to 46 years ($M_{age} = 30.0$ years, $SD =$ 7.95) diagnosed with BPD	To investigate whether attachment representati ons are related to peripheral oxytocin levels in people with a diagnosis of borderline personality disorder.	Cross- sectional	Not specified (German translation)	AAP (German translation)	In a student t- test there wasno significant difference in RSQ scores between unresolved or organised attachment groups $t(7,12)=-.36$ $p=.727$	-
1 5	Khoshkam, S. B., Fateme: Rahmatollahi , Farahnaz: Najarpourian , Samaneh	2014	Iran	125 students. ($M_{age} = 20.76$, $sd=1.94$, no. females=62)	To examine the relationship between attachment and rejection sensitivity and its links to self- esteem and worry.	Cross- sectional	18-item (Persian Translatio n)	Attachment Styles Questionnai re (Persian Translation)	RSQ was significantly correlated with fearful $r(125)=.27$ $p<.01$; and preoccupied $r(125)=.33$ $p<.01$ styles of attachment	-
1 6	Leary, M. R., Kelly, K.M, Cottrell, C.A., Schreindorfe r, L.S	2013	United States	124 students ($M_{age} = 32.5$, $SD=6.71$, No. females= 69)	To assess the construct validity of the Need to Belong scale.	Cross- sectionl	18-item	ECR	RSQ was significantly correlated with anxious attachment $r(124)=.40$ $p<.05$) and avoidant $r(124)=.29$ $p<.05$	-
1 7	Logue. M.	2006	Canada	82 adults ($M_{age} = 22$ $SD=$ not reported, no. males 49)	To investigate the link between peer rejection, acceptance and aggression and how this is impacted by rejection sensitivity and attachment style.	Experimen tal	18 item	ECR	RSQ was not significantly correlated with anxious attachment $r(82)=.13$ $p=.25$, but was significantly correlated with avoidant attachment $r(82)=.23$, $p<.05$	Rejection concern and avoidant attachment did not significan tly moderate negative affect or state anger. There was significant moderation for aggression ($\beta = -0.34$ $SE = -0.55$ $p < .05$) And positive affect ($\beta =$ 0.38 $SE =$ 2.64 $p < .05$)
1 8	Murphy, E. A.	2021	United States	146 students ($M_{age} = 22.5$ $SD = 3.25$ no. females= 113)	To examine the relationship between adult attachment, worry and intolerance of uncertainty.	Cross- sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(146)=.52$ $p < .01$ and avoidant $r(146)=.48$ $p < .01$	-
1 9	Ozen, A. S., Nebi: Demir, Meliksah	2011	Turkey	569 students ($M_{age} = 21.14$ $sd = 1.7$, no. females 265)	To investigate the relationship between rejection sensitivity, attachment and friendship quality.	Cross- sectional	18 item (Turkish Translatio n)	ECR-R (Turkish Translation)	RSQ was significantly correlated with anxious attachment $r(569)=.47$ $p < .01$ and avoidance $r(569)=.45$ $p < .01$	Moderation : the interaction between attachment avoidance and RS influenced friendship quality ($\beta =$.12, $p <$

20	Qureshi, A.	2006	United States	152 students (M _{age} = not specified, no. females not specified)	To investigate personality factors involved in the detection of social exclusion.	Experimental	18 item	AAS and Attachment Style Questionnaire-anxiety subscales only	RSQ was significantly correlated with anxious attachment scored by both the AAS $r(152)=-.24$ $p<.01$; and the ASQ $r(152)=.516$ $p<.01$	-.05). Mediation: RS did not significantly mediate the effect of attachment on friendship quality.
21	Stewart, J. G.	2013	Canada	118 females; 43 dysphoric (depressed), 75 non-dysphoric (females M _{age} = 18.58, SD=1.12) (study focussed on couples but only reported on female RSQ)	To test a model of excessive reassurance seeking and personality factors involved which increase likelihood of rejection.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(118)=.59$ $p<.01$; and avoidance $r(118)=.37$ $p<.01$	-
22	Turner, L. C.	2012	Canada	132 female students	To examine how attachment anxiety and rejection salience influence condom use intentions and beliefs.	Experimental	8-item blended with 18-item	ECR-R	Higher levels of anxiety and of avoidance were associated with higher levels of rejection sensitivity, $b = 3.69$, $t(116) = 5.75$, $p < .01$; $b = 1.49$, $t(116) = 2.14$, $p < .05$, respectively	-
23	Weisman, O. A., Idan M., Marom, Sofi, Hermesh, H. Gilboa-Schechtman, E.	2011	Israel	Social anxiety disorder treatment group with co-morbid depression (n=45 M _{age} =28.6, SD=5.7); Social anxiety disorder treatment group (n=42 M _{age} =30.5, sd=6.2)	To validity and reliability of measures of social rank, and to investigate the relationship between social rank and social anxiety disorder.	Cross-sectional	18 item-rejection concern and rejection expectancy items used separately	ECR-R	attachment anxiety was significantly correlated with rejection concern $r(87)=.50$ $p<.001$; and rejection expectancy $r(87)= -.26$ $p<.05$. Attachment avoidance was significantly correlated with rejection concern $r(87)= .36$ $p<.01$ and rejection expectancy $r(87)=-.4$ $p<.001$	-
24	Wilson, N. L.	2008	United States	280 students (M _{age} = 19.14, SD = 1.78, no. females = 165)	To investigate stress and coping with relation to a cognitive affective processing model to predict behaviour	Cross-sectional	8 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(280)=.40$ $p<.01$ and avoidance $r(280)= .19$ $p<.01$	-

					according to context.					
2 5	Winarick , D. J.	2013	United States	123 students (M _{age} =20.55 SD=3.59 no. females=65)	To investigate traits and individual differences which could aid differential diagnosis between schizoid and avoidant personality disorder.	Cross-sectional	18 item	ECR-SF	RSQ was significantly correlated with anxious attachment r(123)=.39 p<.01 and avoidance r(123)= .26 p<.01	-
2 6	Wismeijer , A. A. J. v. A., Marcel A. L. M.	2013	Netherlands	902 adults from BDSM forum, 464 men (M _{age} =45.5 sd=11.12) 438 females (mage=37.05 SD=10.8), control 434 adults (mage= 40.3 sd= 14.4, Females=305)	To compare scores of BDSM practitioners and a control group on various psychological characteristics.	Cross-sectional	18 item	Attachment Style Questionnaire (Dutch translation)	For the control group RSQ was significantly correlated with anxious attachment r(438)=-.56 p<.001 and avoidance r(438)= .43 p<.001; for the BDSM group RSQ was significantly correlated with anxious attachment r(902)= .63 p<.01 and avoidance r(902)=.43 p<.001	-
2 7	Young , B. J.	2011	United States	148 female students in DV relationships (M _{age} =22.52 years SD = 2.77)	To explore the role of depression and post-traumatic stress in ending domesticall y violent relationships.	Cross-sectional	9 items used from 18 item	BSQ	RSQ was significantly correlated with anxious attachment r(148)=.50 p<.01 and avoidant r(148)=.25 p<.01	-

Study Characteristics

27 data sets were identified, consisting of a pooled sample of 8767 participants. Mean age of participants was 24.17 and 68% of participants were female. 26 studies employed a correlational design, with only study 15 reporting on group differences. The majority of studies were conducted in the United States (n = 14), and a minority in Canada (n=3), Australia (n=4), the Middle East (Iran=1, Israel=1) and Europe (Turkey, n = 2, Germany, n = 1, Netherlands n=1). In terms of quality assessment, three studies were rated poor quality, 15 were rated fair, and nine good.

Most studies used self-report measures, with the exception of study 14, which used the Adult Attachment Picture Projective (AAP; George & West, 2001) which is an assessment of qualitative responses interpreting a set of pictures involving different relationship based scenarios.

Sample Characteristics

The majority of studies used student samples (n=18), which is the original target population for the RSQ. Other samples included non-student adult populations (3 and 17) eating disorder population with a comparative student group (7 and 8) and a mixed eating disorder and student population (9), a participant group targeted from bondage-discipline, sadism-masochism (BDSM) groups alongside an adult control group (26), a social anxiety treatment disorder group (23), teenage population (12), and a female only depressed population with adult control (21).

Eating disorder groups for both studies showed larger effect sizes for significant correlational relationship between the RSQ and anxious and avoidant attachment than the comparative control group for both studies; this trend was also seen for dysphoric and social anxiety treatment disorder groups in comparison to studies using the same measures with

students. In particular the relationship between anxious and attachment and the RSQ appeared to be more pronounced within populations that included clinical samples.

An interesting result was that study 16 showed that for the control group, the more sensitive to rejection participants were, the less anxiously attached they were, however the inverse of this was true for the BDSM group.

Quality Ratings Table 5 below summarises the quality rating of the included papers and their strengths and weaknesses.

Table 5 Quality	Quality rating	Strengths	Weaknesses
1	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed • Participants were selected from both university students and the wider population, and were comprised of two distinct populations.
2	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed

3	Poor	<ul style="list-style-type: none"> • Clearly defined study population and question. 	<ul style="list-style-type: none"> • Gave vague information on the measures used, to the extent that it was not possible to verify which measure was used. • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed.
4	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed Sample size justification, power description, or variance and effect estimates not provided
5	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed Sample size justification, power description, or variance and effect estimates not provided
6	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
7	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly described methodology for recruiting participants • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Exposure of interest not measured prior to the outcome being assessed

8	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly described methodology for recruiting participants • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Exposure of interest not measured prior to the outcome being assessed
9	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly described methodology for recruiting participants • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Exposure of interest not measured prior to the outcome being assessed
10	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
11	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
12	Poor	<ul style="list-style-type: none"> • Sample size justification provided • Clearly defined study population and question • Exposure of interest was measured prior to the outcome being assessed. 	<ul style="list-style-type: none"> • Gives incorrect and contradictory information on the measures used. • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above
13	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly described methodology for recruiting participants • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Exposure of interest not measured prior to the outcome being assessed
14	Poor	<ul style="list-style-type: none"> • Clearly defined study population and question. 	<ul style="list-style-type: none"> • No information given on validity and reliability of measure or how administered • Low participation rate and low power • Sample size justification, power description, or variance and effect estimates not provided

			<ul style="list-style-type: none"> • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed.
15	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
16	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
17	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
18	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure 	<ul style="list-style-type: none"> • Exposure of interest not measured prior to the outcome being assessed
19	Good	<ul style="list-style-type: none"> • Sample size justification provided • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure 	<ul style="list-style-type: none"> • Exposure of interest not measured prior to the outcome being assessed
20	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
21	Good	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
22	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
23	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided

			<ul style="list-style-type: none"> • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
24	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
25	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
26	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed
27	Fair	<ul style="list-style-type: none"> • Clearly defined study population and question. • Clearly defined and described measures for both outcome and exposure. 	<ul style="list-style-type: none"> • Sample size justification, power description, or variance and effect estimates not provided • Not possible to determine whether the participation rate of eligible participants was 50% or above • Exposure of interest not measured prior to the outcome being assessed

Studies rated as “poor” were considered separately to the overall synthesis as the reason for this rating was due to concerns in being able to discern the validity of the measures used. This therefore limited how interpretation could be applied to the rest of the population (see

Number	Author	Year	Country	Population	Study Aims	Study Design	Outcome: RSQ measure used	Attachment measure used	Results	Moderation/Mediation Analyses
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1	Adler, N	2017	United States	499 students (M _{age} =22, SD=3.7, no. females =302)	To examine the relationship between selfie-posting on social media and the Dark Triad, impulsivity, narcissism, attachment and rejection sensitivity.	Cross-sectional	8 item	ECR-R	RSQ was significantly correlated with anxious attachment r(499)=.28 p<.001 and avoidance 4(499)=.39 p<.001	-
2	Berenson, K. R. G., Anett: A	2009	United States	70 students (M _{age} =20.6, SD=4.8, no. males= 37)	To assess whether rejection sensitivity increases vulnerability to disruption of attention by social threat cues.	Cross-sectional	18 item	ECR-R SF	RSQ was significantly correlated with anxious attachment r(68)=.43, p<.001, and avoidance r(68)=.30 p<.05)	-
3	Blackhart, G. C. F., Jennifer: Williamson, Jessica	2014	United States	725 adults who were single or had been in a relationship for less than one year (M _{age} =22.31 SD=6.75 no. females 537)	To examine how dispositional factors such as rejection sensitivity and attachment are related to online dating behaviours.	Cross-sectional	No specification	RQ and Relationship Scales Questionnaire composite	RSQ was significantly correlated with secure attachment r(725)= -.4 p<.05, preoccupied r(725)=.32 p<.05; fearful r(725)= .32 p<.05 and dismissive r(725)=.03 p>.05	-
4	Boldero, J. M. H., Carol A.: Bloom, Lisa: Cooper, Jae: Gilbert, Flora: Mooney, Jessica L.: Salinger, Jodi	2009 Study 1	United States	101 students (M _{age} =20.64, SD=4.55, no. females= 71)	To examine the mediational relationship between rejection sensitivity and attachment on symptoms of borderline personality disorder.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(101)=.53 p<.001 and avoidance r(101)=.38 p<.001	RSQ partially mediated the impact of both anxious, z = 4.33, p < 0.001, and avoidant attachment, z = 4.26, p < 0.001, on number of BPD features reported.
5	Boldero, J. M. H., Carol A.: Bloom, Lisa: Cooper, Jae: Gilbert, Flora: Mooney, Jessica L.: Salinger, Jodi	2009, Study 2	Australia	131 students (M _{age} =20.10, SD=4.37, no. females= 93)		Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(131)=.51 p<.001 and avoidance r(131)=.28 p<.05	RSQ and negative self-beliefs partially mediated the impact of anxious attachment (RSQ: z = 1.97, p = 0.02; negative self-beliefs: z = 3.49, p < 0.001) and completely mediated the impact of avoidant attachment (RSQ: z = 1.82, p = 0.034; negative self-beliefs: z = 4.22, p

6	Boussi, A.	2017	United States	174 students (M _{age} =20.15, SD=3.54, no. females=111)	To understand the links between rejection and subsequent behaviour, and how this relates to dispositional factors.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(174)=-.39 p<.01 and avoidance r(174)=-.25 p<.01	< 0.001) on number of BPD features reported.
7	De Paoli, T. F.-T., Matthew: Halliwell, Emma: Puccio, Francis: Krug, Isabel	2017 a	Australia	122 eating disorder patients (M _{age} =25.16, SD=7.60, no. females=119), 622 university students (M _{age} =22.01, SD=8.63, no. females=491)	To assess how symptoms of eating disorder, attachment and maladaptive schema are mediated by rejection sensitivity.	Cross-sectional	18 item	ECR-R	For the ED group RSQ was significantly correlated with anxious attachment r(122)=.52 p<.01, and avoidance r(122)=.40 p<.01; For healthy control group RSQ was significantly correlated with anxious attachment r(622)=.47 p<.01 and avoidance r(622)=.31 p<.01	Mediation analysis did not show any significant indirect effects of attachment via RSQ on drive for thinness, body dissatisfaction or bulimia.
8	De Paoli, T. F.-T., Matthew: Krug, Isabel	2017 b	Australia	108 Eating disorder patients (M _{age} =25.45, SD=7.65, no. females=108), 616 university students (M _{age} =22.18, SD=4.23, no. females=616)	To examine how rejection sensitivity (interpersonal and appearance based) and social rank mediate the relationship between attachment and symptoms of eating disorder.	Cross-sectional	18 item	ECR-R	For the ED group the RSQ was significantly correlated with anxious attachment r(108)=.58 p<.01 and avoidance r(122)=.37 p<.01. For the healthy control group RSQ was significantly correlated with anxious attachment r(616)=.46 p<.01 and avoidance r(622)=.10 p<.05	Mediation Analysis showed significant indirect effect of AttAnx → emotional deprivation → RSQ → disordered eating (β=0.016, SE=0.005 p=.001) and AttAnx → abandonment → RSQ → disordered eating (β=0.043 SE= 0.011 p<.001 but other pathways involving the RSQ were insignificant

9	De Paoli, T. F.-T., Matthew: Huang, Chia: Krug, Isabel	2020	Australia	753 adults, university students and targeted eating disorder patients (M _{age} =22.36, SD=8.20, no. females=606)	A network analysis of the associations between borderline personality disorder and eating disorder symptoms.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(753)=-.50 p<.001 and avoidance r(753)=-.35 p<.001	-
10	Downey, G. F., Scott I.	1996	United States	293 students (M _{age} =18.7, SD=81.6, no. females=166)	To examine the impact of rejection sensitivity on intimate relationships.	Cross-sectional	18 item	AAS	RSQ was significantly correlated with secure attachment r(192)=-.28 p<.001, anxious attachment r(192)=-.24 p<.001 and avoidant attachment r(192)=-.17 p<.01	-
11	Erozkan, A.	2009	Turkey	500 students (M _{age} =20.20, SD=1.80, no. females=260)	The effect of attachment styles on levels of rejection sensitivity in relation to gender and parenting styles.	Cross-sectional	18 item (Turkish translation)	Relationship Scales Questionnaire (Turkish Translation)	RSQ was significantly correlated with secure r(500)=-.42 p<.05, fearful r(500)=0.49 p<.01, preoccupied r(500)=.41 p<.01 and dismissing r(500)=.33 p<.05 styles of attachment	-
12	Hafen, C. A. Spilker, A., Chango, J., Marston, E., Allen, J.P	2014	United States	180 teenagers assessed over 6-year period (M _{age} =16.35 [SD=0.87] to 21.66 [SD=.96], no. females=96)	To examine the impact of adolescent rejection sensitivity on later adult romantic relationships.	Longitudinal (4 annual follow-ups)	18 item	MIMARA cited, however description and example questions correspond to the ECR-R	RSQ explained a significant amount of the variance in anxiety $\beta=.43$, $SE=.11$ p<.01, and avoidance $\beta=.33$, $SE=.12$, p<.05	-
13	Hospital, M. M.	2006	United States	385 students (M _{age} =20.26, SD=3.6 no. females=307)	To develop a multivariate model of differentiation of self for a Hispanic population.	Cross-sectional	18 item	ECR	RSQ was significantly correlated with anxious attachment r(385)=-.44 p<.001, avoidant r(385)=-.21 p<.001	-
14	Jobst, A. P., Mauer, F. Daltrozzo, M. C., Bauriedl-Schmidt, T.C., Sabass, C., Sarubin, L., Falkai, N., Renneberg, P., Zill, B., Gander, P., Buchheim, A	2016	Germany	Twenty-two female patients aged 19 to 46 years (M _{age} =30.0 years, SD=7.95) diagnosed with BPD	To investigate whether attachment representations are related to peripheral oxytocin levels in people with a diagnosis of borderline personality disorder.	Cross-sectional	Not specified (German translation)	AAP (German translation)	In a student t-test there was no significant difference in RSQ scores between unresolved or organised attachment groups t(7,12)=-.36 p=.727	-

15	Khoshkam, S. B., Fatemeh: Rahmatollahi, Farahnaz: Najarpourian, Samaneh	2014	Iran	125 students. (M _{age} 20.76, sd=1.94, no. females=62)	To examine the relationship between attachment and rejection sensitivity and its links to self-esteem and worry.	Cross-sectional	18-item (Persian Translation)	Attachment Styles Questionnaire (Persian Translation)	RSQ was significantly correlated with fearful r(125)=.27 p<.01; and preoccupied r(125)=.33 p<.01 styles of attachment	-
16	Leary, M. R., Kelly, K.M, Cottrell, C.A., Schreindorfer, L.S	2013	United States	124 students (M _{age} =32.5, SD=6.71, No. females=69)	To assess the construct validity of the Need to Belong scale.	Cross-sectional	18-item	ECR	RSQ was significantly correlated with anxious attachment r(124)=.40 p<.05) and avoidant r(124)=.29 p<.05	-
17	Logue. M.	2006	Canada	82 adults (M _{age} = 22 SD= not reported, no. males 49)	To investigate the link between peer rejection, acceptance and aggression and how this is impacted by rejection sensitivity and attachment style.	Experimental	18 item	ECR	RSQ was not significantly correlated with anxious attachment r(82)=.13 p=.25, but was significantly correlated with avoidant attachment r(82)=.23, p<.05	Rejection concern and avoidant attachment did not significantly moderate negative affect or state anger. There was significant moderation for aggression (β =-0.34 SE=-0.55 p<.05) And positive affect (β =-0.38 SE=-2.64 p<.05)
18	Murphy, E. A.	2021	United States	146 students (M _{age} =22.5 SD=3.25 no. females=113)	To examine the relationship between adult attachment, worry and intolerance of uncertainty.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment r(146)=.52 p<.01 and avoidant r(146)=.48 p<.01	-
19	Ozen, A. S., Nebi: Demir, Meliksah	2011	Turkey	569 students (M _{age} =21.14 sd=1.7, no. females 265)	To investigate the relationship between rejection sensitivity, attachment and friendship quality.	Cross-sectional	18 item (Turkish Translation)	ECR-R (Turkish Translation)	RSQ was significantly correlated with anxious attachment r(569)=.47 p<.01 and avoidance r(569)=.45 p<.01	Moderation : the interaction between attachment avoidance and RS influenced friendship quality (β =-.12, p < .05). Mediation: RS did not significantly mediate the effect of attachment on friendship quality.

20	Qureshi, A.	2006	United States	152 students (M _{age} = not specified, no. females not specified)	To investigate personality factors involved in the detection of social exclusion.	Experimental	18 item	AAS and Attachment Style Questionnaire- anxiety subscales only	RSQ was significantly correlated with anxious attachment scored by both the AAS $r(152)=-.24$ $p<.01$; and the ASQ $r(152)=.516$ $p<.01$	-
21	Stewart, J. G.	2013	Canada	118 females; 43 dysphoric (depressed), 75 non-dysphoric (females M _{age} = 18.58, SD=1.12) (study focussed on couples but only reported on female RSQ)	To test a model of excessive reassurance seeking and personality factors involved which increase likelihood of rejection.	Cross-sectional	18 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(118)=.59$ $p<.01$; and avoidance $r(118)=.37$ $p<.01$	-
22	Turner, L. C.	2012	Canada	132 female students	To examine how attachment anxiety and rejection salience influence condom use intentions and beliefs.	Experimental	8-item blended with 18-item	ECR-R	Higher levels of anxiety and of avoidance were associated with higher levels of rejection sensitivity, $b = 3.69$, $t(116) = 5.75$, $p < .01$; $b = 1.49$, $t(116) = 2.14$, $p < .05$, respectively attachment anxiety was significantly correlated with rejection concern $r(87) = .50$ $p < 0.001$; and rejection expectancy $r(87) = -.26$ $p < .05$. Attachment avoidance was significantly correlated with rejection concern $r(87) = .36$ $p < .01$ and rejection expectancy $r(87) = -.4$ $p < .001$	-
23	Weisman, O. A., Idan M.: Marom, Sofi: Hermesh, H. Gilboa-Schechtman, E.	2011	Israel	Social anxiety disorder treatment group with co-morbid depression (n=45 M _{age} =28.6, SD=5.7); Social anxiety disorder treatment group (n=42 M _{age} =30.5, sd=6.2)	To validity and reliability of measures of social rank, and to investigate the relationship between social rank and social anxiety disorder.	Cross-sectional	18 item-rejection concern and rejection expectancy items used separately	ECR-R	Attachment avoidance was significantly correlated with rejection concern $r(87) = .36$ $p < .01$ and rejection expectancy $r(87) = -.4$ $p < .001$	-
24	Wilson, N. L.	2008	United States	280 students (M _{age} = 19.14, SD = 1.78, no. females = 165)	To investigate stress and coping with relation to a cognitive affective processing model to predict behaviour according to context.	Cross-sectional	8 item	ECR-R	RSQ was significantly correlated with anxious attachment $r(280) = .40$ $p < .01$ and avoidance $r(280) = .19$ $p < .01$	-
25	Winarick, D. J.	2013	United States	123 students (M _{age} = 20.55 SD=3.59 no. females= 65)	To investigate traits and individual differences which could aid differential diagnosis between	Cross-sectional	18 item	ECR-SF	RSQ was significantly correlated with anxious attachment $r(123) = .39$ $p < .01$ and avoidance $r(123) = .26$ $p < .01$	-

					schizoid and avoidant personality disorder.					
26	Wismeijer, A. A. J. v. A., Marcel A. L. M.	2013	Netherlands	902 adults from BDSM forum, 464 men (M _{age} =45.5 sd=11.12) 438 females (mage=37.05 SD=10.8), control 434 adults (mage=40.3 sd=14.4, Females=305)	To compare scores of BDSM practitioners and a control group on various psychological characteristics.	Cross-sectional	18 item	Attachment Style Questionnaire (Dutch translation)	For the control group RSQ was significantly correlated with anxious attachment r(438)=-.56 p<.001 and avoidance r(438)=.43 p<.001; for the BDSM group RSQ was significantly correlated with anxious attachment r(902)=.63 p<.01 and avoidance r(902)=.43 p<.001	-
27	Young, B. J.	2011	United States	148 female students in DV relationships (M _{age} =22.52 years SD = 2.77)	To explore the role of depression and post-traumatic stress in ending domestically violent relationships.	Cross-sectional	9 items used from 18 item	BSQ	RSQ was significantly correlated with anxious attachment r(148)=.50 p<.01 and avoidant r(148)=.25 p<.01	-

. Of these three studies (3,12,14), two showed non-significant results. Study 14 showed no significant difference in RSQ scores between resolved and unresolved attachment groups on the AAP, however there were issues with lack of clarity given within methodology about how translated measures were developed and used and small sample size. Equally, study 3 showed a non-significant relationship between the RSQ and dismissive attachment, which does not correspond with other studies, however there was lack of clarity over measures used. Study 12 showed a similar relationship to other studies and was the only longitudinal study included in the review, showing that rejection sensitivity in teen years can explain a significant amount of the variance in both types of adult attachment measured.

Synthesis

Overall, 24 out of 27 studies using self-report measures showed that the RSQ is significantly related to measures of attachment, regardless of attachment category or measure. Study 3 showed no significant relationship between the RSQ and dismissive attachment style,

and study 17 showed no significant relationship between the RSQ and anxious attachment style. Study 14 showed no significant difference in mean RSQ scores between unresolved or resolved attachment style groups. Effect sizes for statistics were compared using Cohen's qualitative labels for individual differences research, which states that small <.3, medium <.5 and large >.05 (Cohen, 2013).

Relationship Between the RSQ and Versions of ECR

Versions of the ECR (including ECR-R and experiences in close relationships short form [ECR-R SF]) were used in 19 out of 24 studies. Study 24 was left out of the synthesis as it split subscales of the RSQ into rejection expectancy and concern, which means that there was no indication of how the ECR-R related to the overall concept of rejection sensitivity. Results of this study indicated that the more anxiously and avoidantly attached participants were, the more concerned they were about being rejected, and the less they would expect to be accepted (significant positive and negative correlation respectively). The RSQ is calculated such that being high on rejection concern and low on expectancy produces a higher score; therefore, this was a similar finding to the other studies.

For studies measuring attachment using a version of the ECR using a correlational design (n=16), the proportion of studies showing significant positive correlation for the relationship between the RSQ and ECR anxiety subscale were 44% large, 31% medium and 12% small effect sizes. One study (6) showed a medium negative correlation and one study (17) did not reach statistical significance; this study used the original ECR, which has been shown to have different properties to the ECR-R (Cameron et al., 2012), however the sample size was large (n=82). The proportion of studies showing significant positive correlation for the relationship between the RSQ and ECR-R avoidance subscale were 63% medium and

31% small. One study (6) showed a small negative correlation. There was no discernible difference in the study showing negative correlation (6) compared with other studies.

Overall, there appears to be a significant positive correlational relationship between the RSQ and both anxiety and avoidance, with larger effect sizes for anxiety. As the ECR instructions state that low scores on both subscales indicate attachment security, it can be assumed that those who score as highly sensitive to rejection tend to experience higher levels of insecure attachment on the ECR, and those who score as having lower sensitivity to rejection are more securely attached. None of the studies were designed in such a way that it was possible to determine causation.

Other Measures

Six out of 24 studies (10, 11, 15, 20,26, 27) used other measures of attachment. All studies showed a significant correlational relationship between the RSQ and all categories of attachment. Below in Table 6 the effect sizes can be seen. There is some initial evidence that the higher participants score on the RSQ, the less secure their attachment style may be. Similar to the findings of this review regarding the ECR-R, there appears to be a relationship between the RSQ and all categories of attachment, in that rejection sensitivity is positively related to categories of insecure attachment and negatively associated with secure subscales. This was not true for studies 20 and 26. Most surprisingly, study 26 showed a large negative correlation between anxious attachment and the RSQ for control group but a large positive correlation for BDSM group. This does not fit with the rest of the data; no theory is given within the paper as to why there might be an inverse relationship for healthy controls compared to a BDSM group.

Table 6*Summary of effect sizes for correlations between categories of attachment and the RSQ*

Study Number	Measure	Secure	Effect size		
			Anxious/preoccupied	Avoidant/dismissing	Fearful
10	AAS Relationship Scales	Small neg	small	small	-
11	Questionnaire Attachment Styles	med neg	medium	medium	medium
15	Questionnaire	-	medium	-	small
20	AAS Attachment Style	-	small neg	-	-
	Questionnaire Attachment Style	-	small	-	-
26	Questionnaire (Control)	-	large neg	medium	-
	Attachment Style	-	large	medium	-
	Questionnaire (BDSM group)	-	large	medium	-
27	BSQ	-	large	small	-

Relationship Scales Questionnaire (Griffin & Bartholomew, 1994); AAS= Adult Attachment Scale (Collins & Read, 1990); Attachment Styles Questionnaire (Hofstra et al., 2005); Attachment Style Questionnaire (Feeney et al., 1994); BSQ=Behavioural Systems Questionnaire (Furman & Wehner, 1999)

Mediation and Moderation

Six studies (4, 5, 7, 8, 17, 19) looked at the mediating or moderating influences of attachment and rejection sensitivity. Concepts explored were features of BPD reported (4 and 5), eating disorder symptoms (7 and 8), aggression and positive/negative affect (17) and friendship quality (19). Results indicate that participants may rate more symptoms of BPD if they are insecurely attached due to being more sensitive to rejection. It also suggests that RSQ may moderate the relationship between avoidant attachment and friendship quality, positive affect and aggression, with avoidant attachment having a lesser effect on these variables if rejection sensitivity is lower. There is no evidence that rejection sensitivity has any moderating or mediating influence on the relationship between attachment and eating disorder symptoms although study 8 shows that when combined with abandonment and emotional deprivation, rejection sensitivity mediates the relationship between attachment anxiety and eating disorder symptoms.

Discussion

Summary

This review explored the relationship between the RSQ and categories of adult attachment. Results highlighted that there is a positive correlation between levels of rejection sensitivity measured by the RSQ and insecure attachment; this holds true across all categories, however effect sizes are generally larger for anxious attachment. The majority of studies used versions of the ECR to measure attachment. Only one poorly designed study used qualitative methods for assessing attachment (AAP), which showed no significant difference between secure and insecure attachment groups. There has been no research that has utilised interview methods, such as the AAI. Studies using different attachment measures showed a similar trend, with insecure attachment styles being positively correlated with the RSQ. There is also some initial evidence that the RSQ is negatively associated with attachment security, suggesting that more securely attached individuals score lower for rejection sensitivity.

Overall, effect sizes for correlations are greater for clinical populations such as social anxiety, depression and eating disorders. Despite Feldman & Downey's (1994) findings that rejection sensitivity might mediate the relationship between early trauma and attachment style, none of the studies within this review extended or explored this. Mediation and moderation were explored in only six studies, which showed that rejection sensitivity mediated the relationship between attachment and some relational variables such as friendship quality, as well as BPD symptoms.

Theoretical Implications and Future Research

It is possible that attachment avoidance is less associated with rejection sensitivity due to defensive strategies of having a higher positive view of self, and therefore having a greater

sense of control over interpersonal rejection (Marshall, 2019). Theories of IWM suggest that positive view of self and other is required to be categorised as securely attached (Griffin & Bartholomew, 1994). The relationship scales questionnaire highlights attachment as being on two dimensions- attachment model of self and other (Griffin & Bartholomew, 1994). One study assessed the RSQ against these dimensions (Reyes, 1998), but was omitted from data extraction as it did not data for categorical attachment dimensions. Nonetheless, this study showed a medium negative association between attachment model of self-dimension and the RSQ, but no relationship between attachment model of other and the RSQ. On this scale, avoidant attachment is theorised to be high on IWM of self but low IWM of others, whereas attachment anxiety is the inverse. This may explain why there is a clearer relationship between attachment anxiety and RSQ on most measures. Future research could explore the question of whether rejection sensitivity underlies IWM of the self differentially to IWM of others. This would provide key insights into factors that allow some adults to develop a secure attachment style following early experiences of rejecting parenting (Ali et al., 2019).

A previous meta-analysis on the ECR measures showed that anxiety and avoidance subscales were highly positively correlated, particularly for the ECR-R (Cameron et al., 2012). This may also be true for subscales of other measures of attachment (Frías et al., 2015). It would be pertinent in future to explore the extent to which this relationship is accounted for by partial correlation with the RSQ. This would answer the question of whether a heightened sensitivity to rejection is a common factor within the development of an insecure attachment style, or linked with specific facets of attachment such as fear of abandonment. There is an argument that secure attachment subscales measure qualities differentially to simply the inverse of insecure attachment subscales (Bäckström & Holmes, 2007). Given that only three studies (3, 10 and 11) explored the relationship between the RSQ and secure attachment subscales, it is only possible to draw a tentative conclusion that

attachment security is associated with low sensitivity to rejection. Future research utilising attachment measures that have an explicit subscale for attachment security such as the relationship scales questionnaire or the AAQ could explore this relationship more explicitly and clarify whether rejection sensitivity is related to secure attachment.

High levels of attachment insecurity are associated with a range of mental health difficulties, and has been shown to mediate mental health outcomes arising from childhood abuse (Bifulco et al., 2006). There is an established relationship between rejection sensitivity, BPD and attachment (Foxhall et al., 2019; Levy, 2005). Given the precedence for seeking to establish a mediational or moderation relationship between rejection sensitivity, attachment and pathology (De Paoli, Fuller-Tyszkiewicz, Halliwell, et al., 2017), future research could aim to understand how rejection sensitivity interacts with childhood adversity, attachment and BPD, providing a deeper understanding of the underlying processes and informing models of pathology.

It will be important to consider the limitations of cross-sectional research in future. Researchers conducting mediation analysis have often made the assumption that adult attachment relates to concepts via rejection sensitivity, however it has yet to be established if adult attachment is as a result of rejection sensitivity or childhood attachment. Ideally, studies would track both traits to establish causality. Given that both attachment and rejection sensitivity are hypothesised to develop in early childhood (Bowlby, 1969; Butler et al., 2007), future reviews focussing on child and adolescent versions of the RSQ are likely to provide insight into the developmental factors involved in these traits. Additionally, it is likely to include studies utilising longitudinal methodology on the development of rejection sensitivity and attachment styles (Fields, 1998).

Implications for Clinicians

The results of this review suggest that attachment patterns are related to how individuals choose to insulate themselves from rejection. Secure relationship styles involve less anticipation and preoccupation with rejection. Clinicians should therefore consider the impact of rejection sensitivity when working with client groups presenting with psychological difficulties that have been linked to insecure attachment (Bifulco et al., 2006; Riggs & Kaminski, 2010)

Rejection salient cues may elicit different responses according to disposition and context (Ayduk & Gyurak, 2008). Assessing for attachment style will help clinicians to formulate potential pitfalls and ruptures within the therapeutic relationship in rejecting contexts such as ending therapy and discharge from services. Clinicians should gather information around early experiences of rejecting parenting and typical patterns of reaction to this within assessment interviews for psychotherapy. This could be supplemented by self-report measures such as the RSQ.

Therapeutic interventions which aim to increase awareness of how IWM of others become internalised as adult patterns of relating may be helpful for clients for whom the goal is to alleviate the anxious anticipation of rejection. Interventions such as cognitive analytic therapy aim to raise insight into problems related to the anxious expectation of rejection and how it relates to attachment processes (Ryle & Kerr, 2003). Despite initial evidence for its efficacy for complex clients it requires more rigorous research (Calvert & Kellett, 2014). This review highlights that such interventions are likely to be most helpful for clients with BPD or relational difficulties, but less likely to be helpful for clients with eating disorders. This has important implications for the future direction of clinical research in terms of client group.

The symptom alleviation model of outcome measurement has been criticised for not capturing the varying needs of complex clients who present with relational difficulties (Levitt et al., 2005). Measuring changes in interpersonal rejection sensitivity can allow clinicians to evaluate dispositional changes in attachment and relationships. This will allow clinicians to reflect the goals and aims of relational psychotherapy more meaningfully than measuring changes in symptoms.

Critical Appraisal

The RSQ was a measure developed for young adults at university, and this population is the most represented within the current literature review. Further reviews into the adult, child or adolescent version of the RSQ may result in more diverse populations and longitudinal analyses being reviewed. This however, was beyond the scope of the current review, which sought to provide clarity within synthesis of results by controlling the version used, given that changing questions within surveys can have an impact on the validity of scales (Fink & Litwin, 1995). Whilst this was necessary to support comparisons across studies using a variety of attachment measures, longitudinal studies have tended to focus on child or adolescent cohorts given that rejection sensitivity is considered to develop in childhood (Fields, 1998; Marston et al., 2010). In order to determine causation, it may be therefore necessary to focus on a younger population by reviewing studies using the child and adolescent versions of the RSQ.

This review has demonstrated problems within the literature around the correct citation of versions of the RSQ, with many papers not correctly acknowledging Berenson et al. (2009) for the 9-item ARSQ and citing Cronbach's alpha for the incorrect measure (Afram, 2013; Biggs-Heisler, 2020). A strength of the methodology of this review was highlighting this issue and cross-checking information such as questions and appendices in order to ascertain

the measure used. By only including the original RSQ and categorical measures of attachments, the review was able to draw focussed and reliable conclusions around a specific measure commonly used within research. Nevertheless, whilst the ARSQ is less commonly used within the literature, it is a more appropriate tool for measuring rejection sensitivity in non-student populations and has fewer cultural references (Berenson et al., 2009). Equally, some excluded studies used adapted versions of the RSQ to make it more appropriate for non-student populations (Hartley, 2006; Robillard & Noller, 2014; Schweinle, 2002). Including this measure and adapted versions of the RSQ would have resulted in the inclusion of more clinical populations and allowed for broader conclusions to be made relating to the wider population.

A further limitation of the scope of this review was that authors were not approached for further information about measures used or unpublished analyses if they were not available, which may have biased the findings of this review. Exploring the relationship between rejection sensitivity and attachment was often not the overall focus of the included papers, meaning that findings were often taken from zero order correlations undertaken prior to main analyses and unusual results such as in study 26 were not discussed or contextualised.

This review explored an assumption within the literature that rejection sensitivity is related to attachment, demonstrating how the RSQ relates to commonly used assessment of attachment. The use of grey literature and theses within this study is a positive aspect of this review, preventing publication bias for results. This review has revealed important gaps in the literature through systematic review; despite Feldman & Downey's (1994) findings that rejection sensitivity mediates the relationship between attachment and childhood trauma, a directional relationship between these two concepts has yet to be confirmed.

Conclusion

This review highlights rejection sensitivity as one potential aspect linked to insecure attachment styles in adults and indicates the need to reduce sensitivity to rejection for the development of a secure relationship style. Evidence found within this review supports the theory that sensitivity to rejection is linked to insecure attachment styles in adults, as well as highlighting that low rejection sensitivity is linked with attachment security. Nevertheless, included papers were cross-sectional in design and therefore this review could not establish a causal relationship between the two concepts. Future reviews focussing on child and adolescent studies may find more longitudinal data to establish the direction of this relationship.

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Appendices

Appendix A: NIH Quality Assessment Tool

12/11/2017

Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies - NHLBI, NIH



Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Criteria	Yes	No	Other (CD, NR, NA)*
1. Was the research question or objective in this paper clearly stated?			
2. Was the study population clearly specified and defined?			
3. Was the participation rate of eligible persons at least 50%?			
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?			
5. Was a sample size justification, power description, or variance and effect estimates provided?			
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?			
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?			
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?			
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
10. Was the exposure(s) assessed more than once over time?			
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
12. Were the outcome assessors blinded to the exposure status of participants?			
13. Was loss to follow-up after baseline 20% or less?			
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?			

Quality Rating (Good, Fair, or Poor) (see guidance)
Rater #1 Initials:
Rater #2 Initials:
Additional Comments (If POOR, please state why):

*CD, cannot determine; NA, not applicable; NR, not reported

Guidance for Assessing the Quality of Observational Cohort and Cross-Sectional Studies

The guidance document below is organized by question number from the tool for quality assessment of observational cohort and cross-sectional studies.

Question 1. Research question

Did the authors describe their goal in conducting this research? Is it easy to understand what they were looking to find? This issue is important for any scientific paper of any type. Higher quality scientific research explicitly defines a research question.

Questions 2 and 3. Study population

Did the authors describe the group of people from which the study participants were selected or recruited, using demographics, location, and time period? If you were to conduct this study again, would you know who to recruit, from where, and from what time period? Is the cohort population free of the outcomes of interest at the time they were recruited?

An example would be men over 40 years old with type 2 diabetes who began seeking medical care at Phoenix Good Samaritan Hospital between January 1, 1990 and December 31, 1994. In this example, the population is clearly described as: (1) who (men over 40 years old with type 2 diabetes); (2) where (Phoenix Good Samaritan Hospital); and (3) when (between January 1, 1990 and December 31, 1994). Another example is women ages 34 to 59 years of age in 1980 who were in the nursing profession and had no known coronary disease, stroke, cancer, hypercholesterolemia, or diabetes, and were recruited from the 11 most populous States, with contact information obtained from State nursing boards.

In cohort studies, it is crucial that the population at baseline is free of the outcome of interest. For example, the nurses' population above would be an appropriate group in which to study incident coronary disease. This information is usually found either in descriptions of population recruitment, definitions of variables, or inclusion/exclusion criteria.

You may need to look at prior papers on methods in order to make the assessment for this question. Those papers are usually in the reference list.

If fewer than 50% of eligible persons participated in the study, then there is concern that the study population does not adequately represent the target population. This increases the risk of bias.

Question 4. Groups recruited from the same population and uniform eligibility criteria

Were the inclusion and exclusion criteria developed prior to recruitment or selection of the study population? Were the same underlying criteria used for all of the subjects involved? This issue is related to the description of the study population, above, and you may find the information for both of these questions in the same section of the paper.

SCHOOL OF PSYCHOLOGY

DOCTORATE IN CLINICAL PSYCHOLOGY

EMPIRICAL PAPER

**Priming Security After a Recalled Rejection: Does Rejection Sensitivity have an Impact
on Secure Attachment Priming?**

Trainee Name: **Jennifer Simmons**

Primary Research Supervisor: **Professor Anke Karl**

Associate Professor of Clinical Psychology and Affective Neuroscience, Mood
Disorders Centre

Secondary Research Supervisor: **Dr Alicia Smith**

Lecturer, Doctorate in Clinical Psychology, University of Exeter

Target Journal: Behaviour Research and Therapy

Word Count: 7235 words (excluding abstract, table of contents, list of figures and
tables, references, footnotes, appendices)

**Submitted in partial fulfilment of requirements for the Doctorate Degree in Clinical
Psychology, University of Exeter**

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Abstract

Objective

This research fields aimed to test the hypothesis that rejection sensitivity would moderate attachment priming following a recall of a rejection, specifically that those high on rejection sensitivity would benefit more from secure priming.

Methods

In an online experimental study, 167 young adults were asked to complete measures of trait rejection sensitivity and attachment, before completing a rejection task. After this, participants were randomly divided into neutral and secure attachment priming tasks. Repeated outcome measures were the state adult attachment measure (SAAM), which participants filled out before and after priming.

Results

Feelings of state attachment anxiety and avoidance were significantly greater following recall of a rejection than after priming. Feelings of state attachment security were significantly lower following recall of a rejection than after priming. Priming-related changes were associated with priming condition only for state attachment security and not anxiety or avoidance. Although trait variables of attachment anxiety and avoidance and rejection sensitivity were all significantly associated with medium to large effect sizes, rejection sensitivity was not associated with changes in state attachment before and after secure priming.

Conclusion

Despite being related to trait attachment, rejection sensitivity does not have a relationship to changes in state attachment due to secure priming following a rejection.

Experiences of interpersonal rejection appears to trigger defensive strategies of attachment avoidance and anxiety. This indicates that rejection-salient cues can elicit insecure attachment strategies.

Key words: *rejection sensitivity, attachment priming, felt attachment*

Introduction

The desire to avoid rejection and feel accepted is a central human motive (Baumeister & Leary, 1995) and experience of social rejection has been linked to adverse impact on wellbeing and relationships (Mc Elroy & Hevey, 2014).

Early experiences of parental rejection have been documented to predict depression, aggression, social withdrawal and substance abuse (Campo & Rohner, 1992; Hale III et al., 2005; Parker, 1979; Whitbeck et al., 1992). Parental rejection is therefore commonly considered to be a form of emotional abuse (Ali et al., 2019), with disengaged parenting being a greater predictor of adult attachment and psychological distress than physical or sexual abuse (Briere et al., 2017). The concept of exploring rejection within relationships is a common theme of psychological therapy, for example, within compassion-focussed therapy (Gilbert, 2010a).

The impact of early experiences of being parented are known to be carried through to relationships in adult life (Hazan & Shaver, 1987). Bowlby (1969) proposed that this took the form of internal working models (IWM), in that children internalised early patterns of relationships to form a working model about themselves and the world around them. Hazan and Shaver (1987) extended this theory for adult romantic attachments, recognising similar patterns of relating to others within adult romantic relationships. Measurement of attachment in adults suggests that adult attachment security is best conceptualized across two dimensions: attachment anxiety and attachment avoidance (Mikulincer et al., 2003), with secure attachment categorised as scoring low on both these (Fraley et al., 2000) .

Feldman and Downey (1994) argued that as parental acceptance and rejection was a core component of the development of attachment style, early experiences of overt rejection (e.g., physical maltreatment) or covert rejection (e.g., emotional neglect) are internalized as

hyper-vigilance towards rejection. Thus, those who anticipate and expect rejection may perceive neutral cues as a form of rejection and pre-emptively avoid situations, or make efforts to ensure that they cannot be rejected by seeking further closeness and intimacy, reflecting attachment models of avoidant and anxious styles respectively (Hazan & Shaver, 1987). Feldman and Downey (1994) defined rejection sensitivity as the tendency to anxiously expect, readily perceive and overreact to rejection. Scoring highly on measures of rejection sensitivity has been shown to be linked with perpetrating interpersonal violence within relationships (Downey et al., 2000), borderline personality disorder, social anxiety (Foxhall et al., 2019; Li, 2011) and depression (Tops et al., 2008).

In an attempt to join the field of attachment theory with social cognitive theory, which asserts that behaviour can be based on observing social interactions (Dweck & Leggett, 1988), Feldman & Downey (1994) proposed that overt and covert rejection experienced in childhood could lead to expectation and concern about rejection within new situations. Overall, this model proposed that increased rejection sensitivity could be the underlying factor for developing different styles of insecure attachment in adulthood having experienced family violence. Feldman & Downey (1994) explored their concept of rejection sensitivity in a cross-sectional study. Data from a survey of 212 undergraduates supported the hypothesis that participants identifying having both avoidant and ambivalent patterns of adult attachment scored highly on a measure of rejection sensitivity compared with participants identifying with being securely attached. Additionally, they demonstrated a mediating influence of rejection sensitivity on attachment style following experiences of childhood abuse, suggesting that increased sensitivity to rejection can explain up to 50% of the influence of severity and frequency of childhood experiences of domestic violence (as measured by the conflict tactics scale (CTS; Straus, 1979) on adult attachment style. A potential weakness of the findings is that attachment was measured using a categorical self-report measure (Hazan

& Shaver, 1979), whereas more recently published continuous measures of assessment are considered to be the most reliable self-report measure of adult attachment (Mikulincer & Shaver, 2007). Additionally, given that rejection sensitivity was proposed as a combination of attachment and social-cognitive theory, it is hard to determine the direction of causality; potentially a more insecure attachment style could dictate a higher reporting of rejection sensitivity in adulthood.

Research suggests that significant others can have a role in promoting resilience following childhood experiences of rejection (Bender & Losel, 1997; Ki et al., 2018; Sedighimornani et al., 2020). The role of secure and supportive relationships in modifying rejection sensitivity is therefore worthy of further investigation (Downey & Feldman, 1996). Whilst attachment style is considered to be dispositional, there has been growing evidence that there are elements of attachment that can fluctuate in response to context, for example in reaction to relationship experiences (Feeney & Noller, 1992; Hammond & Fletcher, 1991; Kirkpatrick & Hazan, 1994). Felt security of attachments can be manipulated temporarily by activating a mental representation of an attachment figure; so called “attachment priming” (Baldwin & Meunier, 1999). This has been induced using a variety of methods, including exposure to words and images linked with attachment (for example names of partners or images of hugging), or asking participants to recall or imagine scenarios which may prime attachment memories (Gillath et al., 2019). Such methods have been used to explore the cognitive aspects related to Bowlby’s (1969) theory of IWM of attachment relationships; for example, Rowe and Carnelley (2003) found that by priming individuals to recall secure attachment relationships, they could increase the positivity of participant’s interpersonal expectations in relation to those who were primed with an insecure relationship style (avoidant or ambivalent). Secure priming has been shown to have beneficial and positive

effects, including increased empathy, reduction in feelings of depression and reductions in prejudice and hostile attitude (Gillath et al., 2019).

Attachment priming has also been shown to have an impact on how individuals react to relational threats. Gillath and Shaver (2007) found that priming individuals with insecure attachment cues could significantly change behavioural choices made according to threatening relationship scenarios compared with securely primed participants. Cassidy et al. (2009) found that participants who had been given a secure priming task reacted with less hostility and reported less intense feelings of rejection in response to recalling a moment of personal psychological pain within a relationship than those who had been given a neutral task. This suggests that secure priming could additionally reduce the impact of rejection for rejection sensitive individuals. A potential criticism of these findings is that the choice was made to use subliminal attachment priming to avoid contamination from the manipulation task by presenting attachment-based words at a rate below threshold to consciously attend to. An argument could be made that supraliminal tasks have more direct relevance for clinical practice, where discussing and changing ways of relating to others is often an explicit goal within therapy.

The effects of dispositional attachment style on attachment priming have been noted in a number of studies (Arndt et al., 2002; Rowe & Carnelley, 2003). In particular, those with a more anxious attachment style appear to benefit from secure priming, which may be due to the down-regulating effects of secure priming on hypersensitivity to threat or emotional rejection (Gillath et al., 2019). Conversely, those high on attachment avoidance do not appear to benefit in the same way (Bryant & Chan, 2017) and have been shown to divert attention away from and have more difficulty recalling attachment related memories (Dykas & Cassidy, 2011). It has been hypothesised that this may be due to use of defence mechanisms

or difficulty in generating relationship-related narratives involving positive emotional content (Waters & Roisman, 2019).

(Downey & Feldman, 1996) argue that rejection sensitivity may underlie both anxious and avoidant styles of attachment but that those with anxious attachment styles will react to expected rejection by behaving in a way that enforces continued closeness, whereas those higher on avoidance may make efforts to distance themselves from relationships in which they make risk rejection. Whilst studies have touched on how securely priming individuals can impact behaviour following relational rejection and how this interacts with dispositional attachment, a link between interpersonal rejection sensitivity and secure priming has yet to be made. Nevertheless, both attachment and rejection sensitivity can be understood within a Cognitive Affective Processing Systems (CAPS; Mischel & Shoda, 2008) model, which is a theoretical framework for understanding how context interacts with patterns of behaviour to create individual differences in personality. CAPS proposes that personality and context influences behaviour within an “*if... then...*” profile of personality structure. Thus, according to a CAPS model, attachment style is a profile of behaviour that can be elicited according to context (Bosmans et al., 2014; Fraley, 2007). Similarly, Ayduk and Gyurak (2008) argued that sensitivity to rejection is a measure of reactivity to rejection-salient cues, with research suggesting that high rejection sensitivity can lead to either accommodating behaviour or aggression or reactivity dependent on context.

Given the considerable literature linking relational rejection sensitivity to attachment styles, this study seeks to understand how dispositional trait attachment and rejection sensitivity moderates state attachment feelings within different contexts. Exploring the impact of trait rejection sensitivity on felt attachment in rejection-salient contexts and whether supraliminal secure attachment priming can buffer these effects will have implications for the mechanisms and treatment of conditions linked to high rejection

sensitivity such as borderline personality disorder (Foxhall et al., 2019) and social anxiety (Li, 2011).

Aims & Hypotheses

The aim of this study is to explore the association between rejection sensitivity and attachment, and how manipulations in felt security can impact participants' experience of a relational rejection. Specifically, it will assess whether trait rejection sensitivity is associated with participants state attachment security whilst recalling a relational rejection, and whether secure attachment priming can increase feelings of security within this context.

In particular, the following hypotheses will be tested:

1. Both attachment anxiety and attachment avoidance on a continuous self-report measure of trait attachment will be highly correlated with rejection sensitivity.
2. Rejection sensitivity and ECR-R avoidance and anxiety will be positively associated with higher ratings of state attachment anxiety and avoidance and negatively associated with higher ratings of state attachment security following recall of a rejection.
3. Feelings of rejection, state attachment anxiety and avoidance will be higher after the rejection task and reduce after priming; this will significantly interact with priming group, with the secure priming group reporting lower feelings of rejection, anxiety and avoidance after priming than the neutral priming group. Conversely, state attachment security will be lower after the rejection task and increase after priming; this will significantly interact with priming group, with secure priming group reporting higher feelings of security after priming than the neutral priming group.
4. Given previous research showing trait anxiety but not avoidant attachment to moderate outcomes following a secure prime (Gillath et al., 2019), it is hypothesised

that rejection sensitivity and attachment anxiety but not attachment avoidance will moderate the relationship between priming group and changes in felt attachment between the rejection and priming task. Rejection sensitivity and attachment anxiety will strengthen the association between receiving secure priming and felt security after priming and weaken the association between secure priming and felt anxiety and avoidance.

Methods

Design

The design was experimental, mixed (within-between) and correlational. Dependent variables were felt attachment security, anxiety and avoidance measured by the SAAM. Independent variables were priming group (secure, neutral) and time (pre and post priming). A number of controlling trait variables were measured: rejection sensitivity, ECR-R anxiety and avoidance.

Participants

Participants were made up of an opportunity sample of students and members of the public at the University of Exeter who signed up to participate via the SONA system for credits. Participants were offered course credits or monetary compensation for their participation. Participants were aged 18 and over, English speaking, and scored below 18 for the Patient Health Questionnaire ([PHQ-8] Kroenke et al., 2009), meaning that they were not endorsing severe levels of low mood and psychological distress prior to the study. A total of 167 out of 180 participants were included within the analysis, participants not included were due to language fluency (n=1), PHQ-8 score (n=3), informed consent not given (n=3) and incomplete data (n=6). All included participants gave informed consent and the protocol was approved by the University of Exeter Psychology Ethics Committee (Appendix K).

Table 1*Demographic Information for Participants*

ampo		Total (n=167)	Secure Priming (n= 85)	Neutral priming (n=82)	
Mean (SD)					
Age		19.19 (3.16)	19.62 (4.22)	18.74 (1.26)	
N%					
Gender	Female	88.0	89.4	86.6	
	Male	11.4	10.6	12.2	
	Other	1.6	0	1.2	
Ethnicity	White/White British	79.6	83.5	75.6	
	Chinese	7.8	4.7	11.0	
	Indian	3.0	3.5	2.4	
	Asian British	1.2	1.2	2.4	
	Black or Black British	1.2	3.5	1.2	
	Asian (Other)	4.2	2.4	4.9	
	Arab	1.8	1.2	1.2	
	White and Black African	0.6	0	1.2	
	Relationship Status	Single, never married	99.4	98.8	100
		Married	0.6	1.2	0

Table 1 shows demographic information regarding participants. The majority of participants were White British, female and single. The population was comprised mostly of undergraduate students, and was a young, majority White British female adult population.

Justification of Target Sample Size

The statistical package G*Power 3.1 (Faul et al., 2009) was used to calculate the sample size required to address all hypotheses. To address hypothesis 3 with 80% power, alpha of .05, medium effect size of $f = .3$ (based on Cassidy et al., 2009), for a multivariate analysis of variance (MANOVA) with two groups (secure and neutral priming) and two measurements (pre and post state attachment) a minimum of 90 participants were required. This was the largest target sample size for all hypotheses, therefore the recruitment target was based on this. Appendix J shows power analyses for each hypothesis.

Materials

Screening

Patient Health Questionnaire (PHQ-8; Appendix D) The PHQ-8 (Kroenke et al., 2009) is a standardised questionnaire often used to assess depressive symptoms in primary mental health settings. It was used identify and screen out potentially vulnerable participants who may reach clinical threshold for depression; scores over 15 are considered to be a “red flag” for clinical depression (Kroenke et al., 2001). The threshold for inclusion within the study was set higher than this, at 18 points or below to include participants reporting mild to moderate symptoms of depression whilst excluding people scoring as severely depressed. The PHQ-8 has excellent reliability (internal $\alpha = .82$) and is a valid measure for discriminating depression (Kroenke et al., 2009).

Trait Measures

Adult Rejection Sensitivity Questionnaire (ARSQ; Appendix E) 9-item version. This scale was developed from Downey & Feldman's (1996) 18-item measure by Berenson et al. (2009) for an adult population. It measures individual differences in the tendency to anxiously expect, perceive and overreact to rejection on a trait level. It has good internal consistency (Cronbach's $\alpha = .89$) and test-retest reliability ($r = .91$) as reported by Berenson et al. (2009).

Experiences in Close Relationships Scale Revised (ECR-R; Appendix F) The ECR-R (Fraley et al., 2000) is considered to be the most reliable self-report measure for adult attachment (Graham & Unterschute, 2015). It scores attachment on two measures- avoidance and anxiety. Scoring low for both measures is considered to be secure attachment. It has high reliability ($\alpha = .95$) and is a valid predictor of behaviour within romantic relationships (Sibley et al., 2005). The items were presented in a randomised order to participants as per instructions for use.

State Measures

State adult attachment measure (SAAM; Appendix B) The SAAM (Gillath et al., 2009) was developed to capture the dynamic aspects of attachment security, and has been shown to be effective in reliably measuring change (Gillath et al., 2009; Xu & Shrout, 2013). It has reliability comparable to other trait measures (internal reliability ranges from $\alpha = .83$ to $\alpha = .87$ for the three subscales ; test re-test ranges from $\alpha = .51$ to $\alpha = .57$.) as well as good convergent and discriminant validity (Gillath et al., 2009). The items were presented in a randomised order to participants as the measure was repeated.

Feelings of rejection Whilst there is no current measure for state feelings of rejection, participants were asked to answer the question “I felt rejected” on a seven-point Likert scale after the rejection paradigm and once again attachment priming.

Experimental Tasks

Rejection Paradigm

The rejection paradigm was based on a task for recalling hurt feelings used by Cassidy et al. (2009). Participants were asked to answer four open-ended questions asking what was rejecting about the partner’s actions, the context in which the event occurred, the participant’s reaction, and the event’s repercussions. The purpose of these questions was to bring the episode fully to mind in order to emulate a “live” experience of relational rejection within a close relationship. As the study was based online, there was a minimum time of 5 minutes given to spend on this task before participants could move on from the online survey, as well as a 100-character word count to ensure that participants were fully engaging in the task.

Attachment priming

Supraliminal attachment priming was used due to its real-life applications to clinical practice. Instructions for the task were developed from Carnelley et al. (2016) and can be found in Appendix C and consisted of neutral priming and secure priming. Participants in the neutral priming group were asked to visualise and jot down thoughts around a shopping trip to the supermarket. Those in the secure priming group were asked to recall a relationship in which they felt easily close and cared for and to visualise aspects of this relationship. To avoid contamination from the rejection paradigm, the instructions made clear that participants must recall a relationship that must be different from the relationship recalled during the rejection task. As the study was based online, there was a minimum time of 5 minutes given

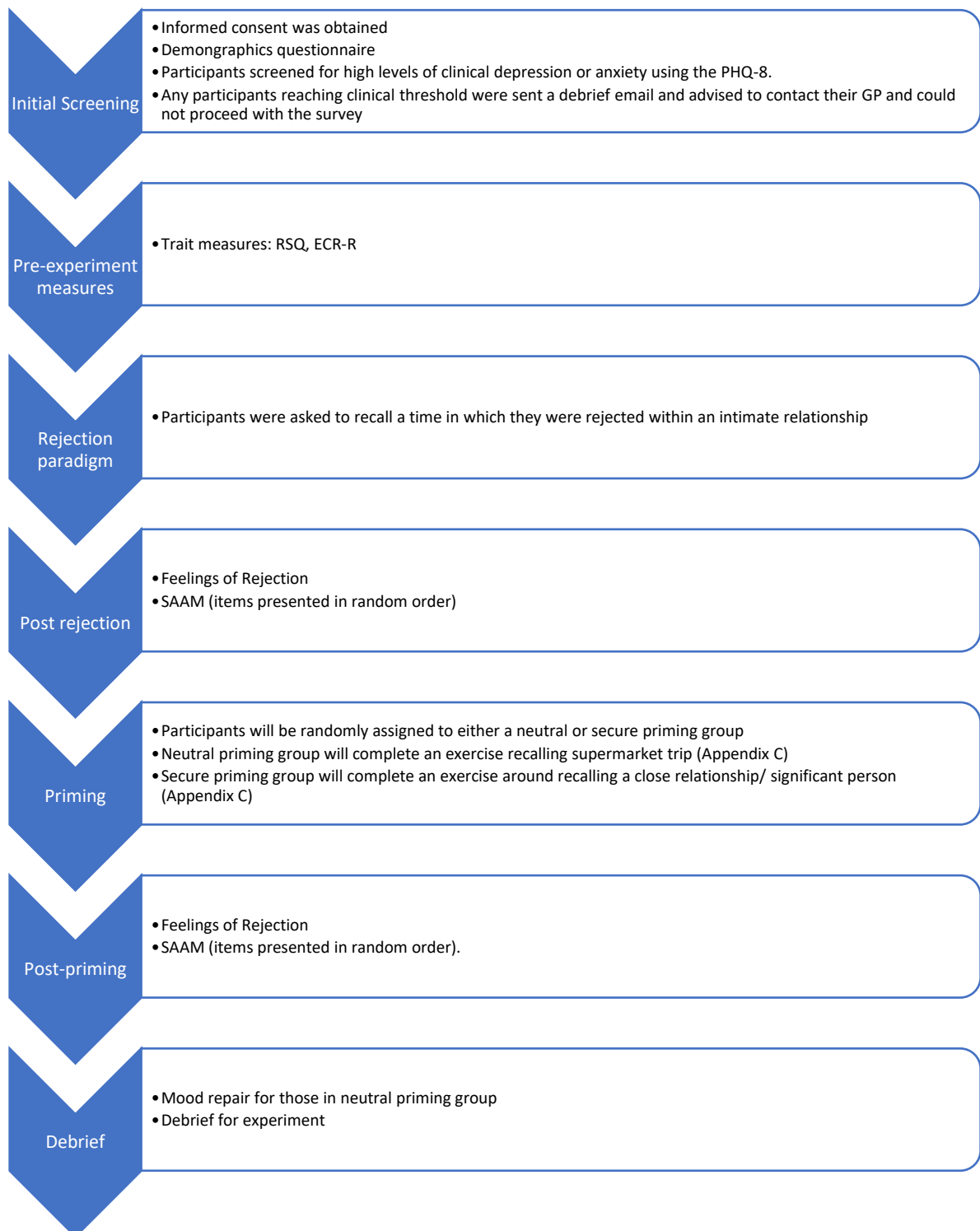
to spend on this task before participants could move on with the online survey, as well as a 100-character word count to ensure that participants were fully engaging in the task.

Mood Repair

Following feedback from piloting the online questionnaire in which highlighted the positive effects of the secure attachment priming following the rejection paradigm, participants in the neutral priming were given an additional mood repair. This was the same as the secure attachment priming task, however there was no minimum time limit or character limit that they had to fulfil.

Procedure

Participants were invited to follow a link and take part in an online survey based on Qualtrics. The survey was piloted by five participants who gave their feedback before the study was released. As a response to feedback, task timings were reduced in order to support full concentration of participants and a mood repair was added for participants who did not receive the secure prime. The order of the survey is detailed in Figure 1.

Figure 1*Steps included in online survey*

Participants were given information about the study (Appendix H) and asked to give informed consent (Appendix G). They were then asked several questions on demographic information, before filling out the PHQ-8. Any participants scoring over 18 were automatically excluded from the rest of the study and sent an email signposting them to further information about depression and where to seek help (Appendix I).

Participants then went on to fill out the RSQ and ECR-R. Participants were then asked to imagine a rejection scenario, after which they were asked to fill out the SAAM, which was presented in randomised order, as well as a measure of state rejection. They were then randomly allocated to two groups; neutral and secure priming, and completed the allocated priming task over 5 minutes. Participants were then asked to fill out the SAAM (items presented in random order) a second time alongside state rejection measure.

Participants who were allocated to the neutral priming group were then given the secure priming task as a mood repair. Following this, all participants received debrief information (Appendix I).

Data Analysis

Appendix A shows a flow-chart outlining the data cleaning process.

The data was checked for multivariate normality, multicollinearity and linearity. Security priming manipulation was coded as a dummy variable, with 0 indicating security priming and 1 indicating neutral priming. For regression analyses, residualised gain scores (RGS) were calculated to determine the pre-to post change in state attachment, to take account for the fact that the amount of change expected is dependent on the initial scores of participants (Mintz et al., 1979). Prior to running regressions, zero-order correlations were calculated.

Hypothesis 1. To investigate whether rejection sensitivity and trait attachment is positively associated, Bivariate Pearson correlations were used to measure the relationships between the RSQ and ECR-R attachment and avoidance subscales. To further investigate intercorrelations between the measures, a partial correlation was run using ECR-R attachment and avoidance controlling for rejection sensitivity.

Hypotheses 2. To investigate whether feelings of state attachment anxiety and avoidance following the rejection paradigm were positively associated with trait factors and secure attachment negatively associated with trait factors, a stepwise multiple regression analysis including rejection sensitivity and ECR-R attachment and avoidance subscales as predictors of initial state attachment avoidance and anxiety ratings following the rejection paradigm. A stepwise analysis was chosen due to the exploratory nature of the hypothesis, in the context of the measures entered being highly inter-correlated.

Hypothesis 3. To investigate if secure priming reduced the feeling of rejection and felt anxiety and avoidance and increased felt security significantly more than the neutral priming, a 2x2 mixed analysis of variance (MANOVA) with time (pre-post) and group (secure vs neutral) was conducted and a significant time-by-group interaction probed.

Hypothesis 4. To investigate whether priming related reductions in state attachment anxiety and avoidance and increase in state secure attachment were moderated by trait factors, moderation analyses using the PROCESS macro by Hayes and Preacher (2013) were conducted based on significant zero order correlations of the interaction terms and the outcome variables. Trait variables were mean centred prior to testing. Interactions reaching significance were probed using the Johnson-Neyman test (Johnson & Fay, 1950).

Results

Hypothesis 1

Bivariate Pearson correlations were calculated for trait rejection sensitivity and trait attachment anxiety and avoidance (see Table 2) ECR-R Anxiety and Avoidance were both significantly correlated with the RSQ. Given the significant intercorrelation between ECR-R Anxiety and Avoidance (see Table 2), a partial Pearson correlation between these measures controlling for RSQ score was run. A significant relationship still exists between the two scores even when controlling for RSQ ($r(163)=.25$ $p<.01$, however the effect size reduces from medium to small, indicating that the RSQ does not fully control for the relationship between attachment anxiety and avoidance.

Hypothesis 2

Table 2

Bivariate correlations for all variable entered into stepwise regression analyses

	RSQ	ECR-R Anxiety	ECR-R Avoidance	SAAM Anxiety	SAAM Avoidance
ECR-R Anxiety	.533**				
ECR-R Avoidance	.474**	.443**			
SAAM Anxiety	.118	.388**	0.021		
SAAM Avoidance	.458**	.513**	.626**	0.132	
SAAM Secure	-.527**	-.426**	-.516**	-0.104	-.517**

** $p<.001$ * $p<.05$, ECR-R=Experiences in Close Relationships Revised, RSQ=Rejection Sensitivity Questionnaire, SAAM=State Adult Attachment Measure

Table 3

Results for stepwise linear regression predicting felt attachment entering trait attachment anxiety avoidance and anxiety and rejection sensitivity as predictor variables

Independent Variable	Entered Predictors	R^2	β	t	p
SAAM Secure	Rejection	.37	-.364	-5.12	<.001
	Sensitivity				
	ECR-R		-.344	-4.84	<.001
SAAM Anxiety	Attachment				
	Anxiety				
	ECR-R	.18	.47	5.91	<.001
SAAM Avoidance	ECR-R		-.18	-2.27	<.001
	Avoidance				
	ECR-R	.46	.49	7.64	<.001
SAAM Anxiety Avoidance	Avoidance				
	ECR-R		.30	4.56	<.001
	Anxiety				

ECR-R=Experiences in Close Relationships Revised, RSQ=Rejection Sensitivity Questionnaire, SAAM=State Adult Attachment Measure

State Attachment Security

The final model indicated that felt attachment security following recall of a rejection was negatively predicated by rejection sensitivity and trait attachment avoidance (see Table 3). Trait attachment anxiety did not enter the model.

State Attachment Avoidance

The final model indicated that felt attachment avoidance following recall of a rejection was positively predicated by trait attachment avoidance and anxiety (see Table 3). Rejection sensitivity did not enter the model.

State Attachment Anxiety

The final model indicated that felt attachment anxiety following recall of a rejection was positively predicted by trait attachment anxiety and negatively predicated trait attachment avoidance (see Table 3). Rejection sensitivity did not enter the model.

Hypothesis 3**Table 4**

2x2 MANOVA results for pre-post changes in state feelings according to secure or neutral priming group

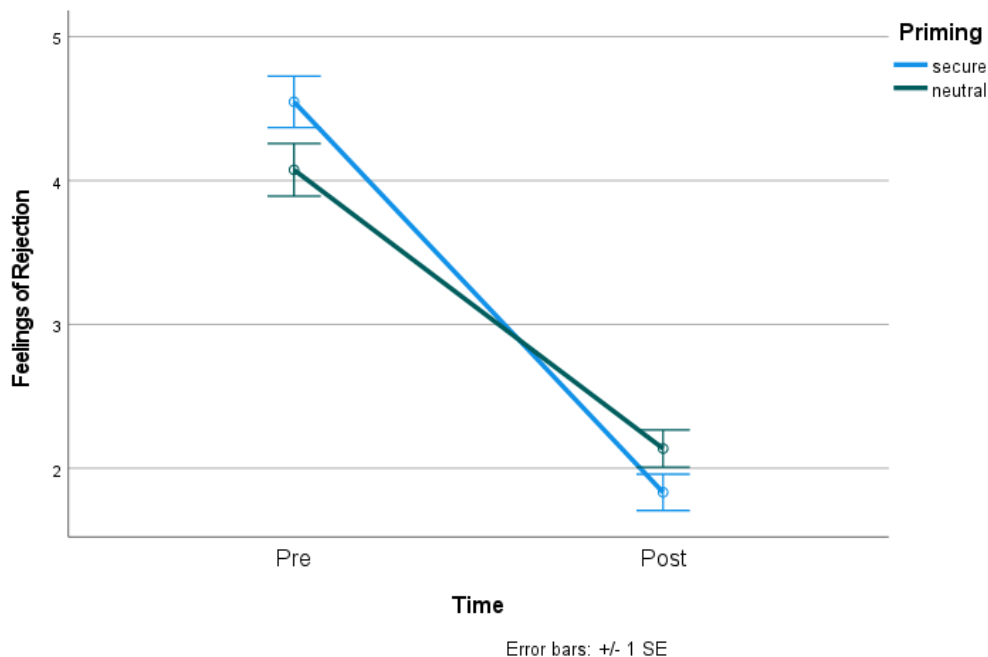
Dependent Variable	Independent Variables	<i>df</i>	<i>F</i>	<i>p</i>	η^2
Feelings of Rejection	Time	1,162	285.10	<.001	.64
	Priming		0.24	.63	.001
	Time x Priming		7.95	.005	.047
SAAM Anxiety	Time	1,165	23.60	<.001	.13
	Priming		0.31	.58	.002
	Time x Priming		2.1	.14	.01
SAAM Avoidance	Time	1,165	52.48	<.001	0.241
	Priming		.001	.97	.001
	Time x Priming		1.14	.29	.007
SAAM Secure	Time	1,165	38.21	<.001	.19
	Priming		.02	.88	<.001
	Time x Priming		13.78	<.001	.08

Feelings of rejection

The results (Table 4) show that there was a significant effect of time on feelings of rejection, but main effect of priming group was non-significant, demonstrating no overall difference in feelings of rejection between neutral priming and secure priming groups. There was a significant interaction between time and priming group. Post hoc tests revealed that feelings of rejection were significantly higher after rejection (and before priming) for both secure $t(83)=14.13$ $p<.001$ and neutral $t(79)=9.8$ $p<.001$ priming groups, but that there was no significant difference between the groups both pre $t(169)=1.86$ $p=.064$ or post $t(169)=-1.75$ $p=.083$ priming (see Figure 2).

Figure 2

Changes in feelings of rejection following the rejection paradigm, before and after priming



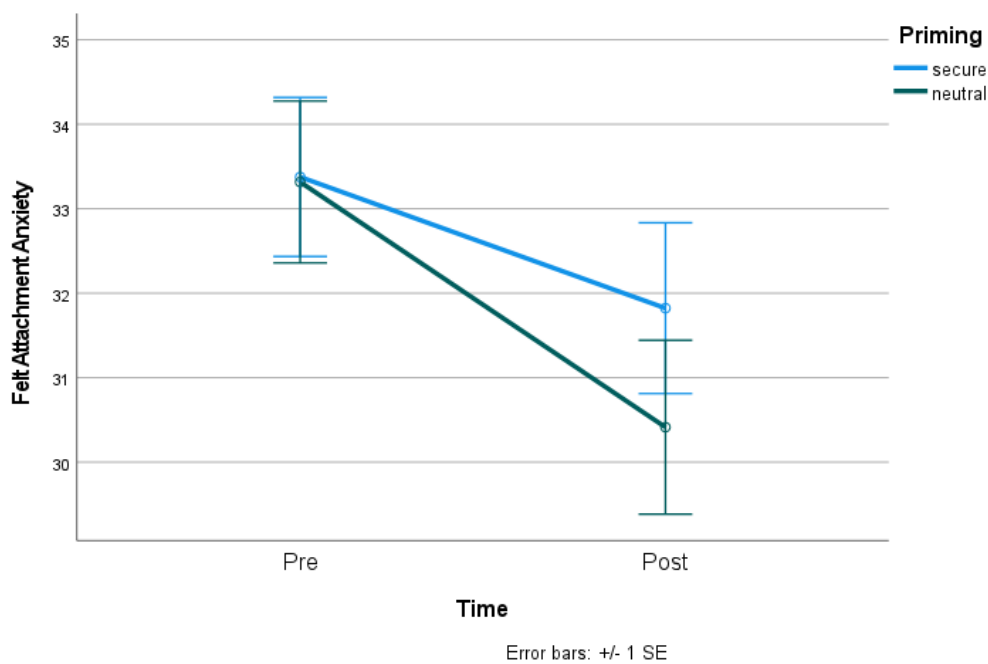
Felt Anxiety

The results (Table 4) show that there was a significant effect of time on felt anxiety, but the main effect of priming group was non-significant demonstrating no overall difference

in feelings of anxiety between neutral priming and secure priming groups. There was no significant interaction between time and priming group. Post hoc tests revealed that felt attachment anxiety was significantly higher after rejection and before priming for both secure $t(85)=2.471$ $p<.001$ and neutral $t(82)=4.34$ $p<.05$ priming groups, but that there was no significant difference between the groups both pre $t(165)=.04$ $p=.97$ or post $t(165)=.98$ $p=.33$ priming (see Figure 3).

Figure 3

Changes in felt attachment anxiety following the rejection paradigm, before and after priming



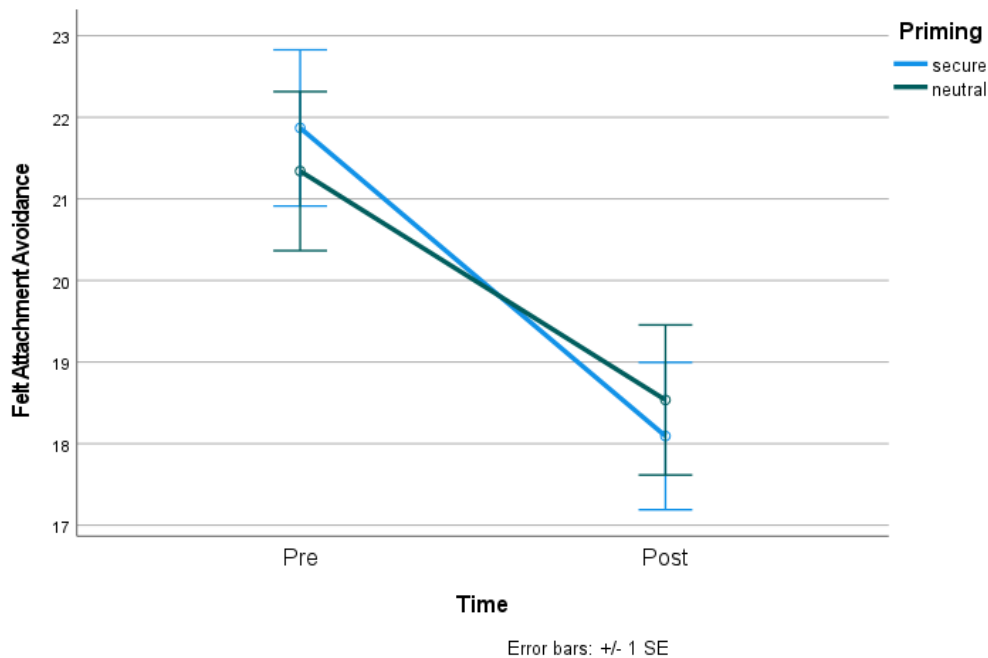
Felt Avoidance

The results (Table 4) show that there was a significant effect of time on felt avoidance, however the main effect of priming group was non-significant demonstrating no overall difference in feelings of security between neutral priming and secure priming groups. There was no significant interaction between time and priming group. Post hoc tests revealed

that felt attachment avoidance was significantly higher after rejection and before priming for both secure $t(84)=5.32$ $p<.001$ and neutral $t(81)=5.0$ $p<.001$ priming groups, but that there was no significant difference between the groups both pre $t(165)=.39$ $p=.70$ or post $t(165)=-.34$ $p=.73$ priming (see Figure 4).

Figure 4

Changes in felt attachment avoidance following the rejection paradigm, before and after priming



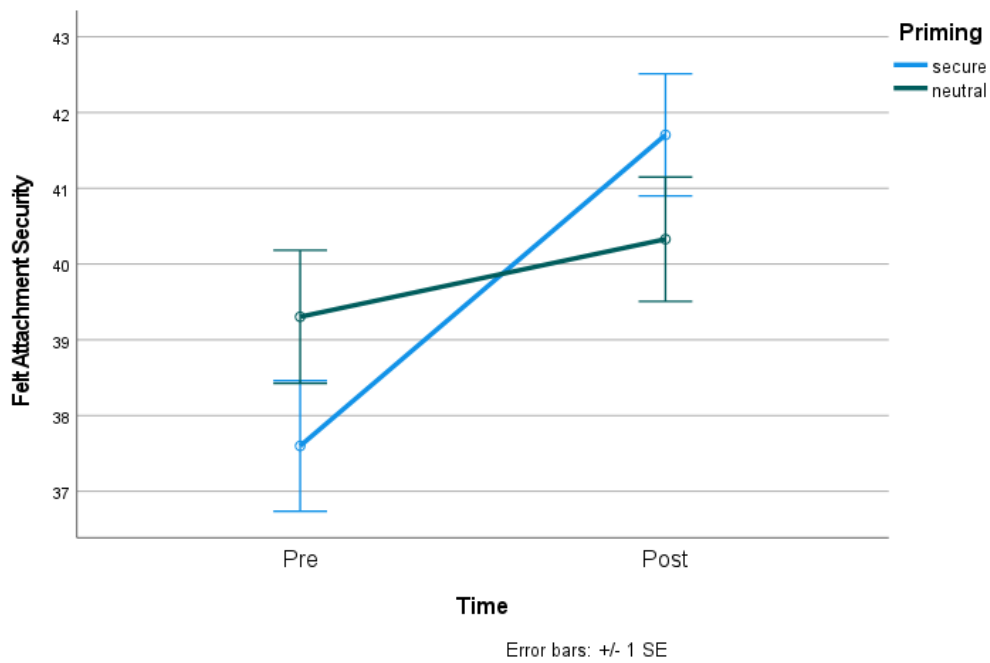
Felt Security

The results (Table 4) show that there was a significant effect of time on felt anxiety but no main effect of priming group was non-significant $F(1,165)=.02$, $p=.88$ $\eta^2 < .001$, demonstrating no overall difference in feelings of security between neutral priming and secure priming groups. There was a significant interaction between time and priming group. Post hoc tests revealed that felt attachment security was significantly lower after rejection and before priming for secure $t(84)=-6.56$ $p<.001$ but not neutral $t(82)=-1.89$ $p=.06$ priming

groups, and that there was no significant difference between the groups both pre $t(165)=-1.39$ $p=.17$ or post $t(165)=1.20$ $p=.23$ priming (see Figure 5).

Figure 5

Changes in felt attachment security following the rejection paradigm, before and after priming



Hypothesis 4

Initial bivariate Pearson correlations can be seen in Table 5.

Table 5

Zero-order correlations for trait variables, priming group and residual gain scores in felt attachment

	Rejection Sensitivity	ECR-R Anxiety	ECR-R Avoidance	Priming	Priming x Rejection Sensitivity	Priming x Anxiety	Priming x Avoidance	RGS Anxiety	RGS Avoidance
ECR-R Anxiety	.533**								
ECR-R Avoidance	.474**	.443**							
Priming	-0.046	-0.098	-0.064						
Priming x Rejection Sensitivity	.68**	.38**	.30**	-0.03					
Priming x Anxiety	.39**	.66**	.33**	-0.08	.58**				
Priming x Avoidance	.28**	.30**	.73**	-0.04	.41**	.45**			
RGS Anxiety	-0.110	0.023	-0.073	-0.118	-0.08	0.14	-0.11		
RGS Avoidance	-0.010	0.087	.334**	0.077	0.01	0.14	.22**	.158*	
RGS Secure	-0.114	-0.089	-.240**	-.257**	-0.07	-0.12	-.258**	-0.110	-.413**

* $p < .05$ ** $p < .01$ RGS=residual gain scores for pre-post changes in felt attachment style, ECR-

R=Experiences in Close Relationships-Revised, RSQ=Rejection Sensitivity Questionnaire

Given the results of zero-order correlations, only ECR-R Avoidance was entered into the moderation analysis as a potential moderator between priming group and pre-post changes in state attachment avoidance and felt security.

The overall model for priming-related change of state attachment avoidance was significant, $F(3,163) = 11.53$ $p < .001$, but explained only 12% of variance. Only trait avoidance was significantly positively associated with increase in state attachment avoidance

($b=.02$, $SE=.01$ $t(163)=3.58$, $p<.001$, 95% CI [.01; .03]), whereas Priming- ($b=1.97$, $SE=.15$, $t(163)=1.35$ $p=.17$, 95% CI [-.09; .49]) and the Interaction term ($b=-.01$, $SE=.01$ $t(163)=-.58$, $p=.56$, 95% CI [-.02; .01]) were not associated with change in attachment avoidance. This indicates that ECR Avoidance did not significantly moderate the relationship between attachment priming and pre-post changes in state attachment avoidance.

The overall model for priming-related change of state attachment security was significant, $F(3,163)= 9.29$ $p<.001$, but explained only 14% of variance. Only priming group was significantly positively associated with increase in state attachment avoidance ($b=-.54$, $SE=.14$ $t(163)=-3.76$ $p<.001$, $p<.001$, 95% CI [-.86; -.25]), whereas trait avoidance ($b=-.01$, $SE=.01$ $t(163)=-1.20$, $p=.23$, 95% CI [-.01; .004]) and the Interaction term ($b=-.01$, $SE=.01$ $t(163)=-1.6$, $p=.10$, 95% CI [-.03; .002]) were not associated with change in attachment avoidance. This indicates that ECR Avoidance did not significantly moderate the relationship between attachment priming and pre-post changes in state attachment security.

Discussion

This study looked at whether recall of a rejection could change state attachment feelings, whether secure attachment priming could support recovery from this, and how this process was related to individual differences in rejection sensitivity and attachment style. It used an experimental mixed repeated measures design in young adults to investigate how state attachment could change over time and between two priming groups.

Key findings were that attachment priming increases felt attachment security following a rejection, with neutral priming having no effect. In contrast, felt attachment anxiety and avoidance significantly reduces over time regardless of priming condition, indicating that recall of a rejection increases feelings of attachment anxiety and avoidance but that this naturally dissipates over time. Whilst increases in felt security were expected due to prior

research (Cassidy et al., 2009), lack of difference between priming groups for felt anxiety and avoidance were not expected results. Research on the sensitivity and specificity of the SAAM suggests that secure priming has a less robust effect on felt anxiety and avoidance measures than the secure dimension (Bosmans et al., 2014). Other studies have explicitly used avoidance and anxiety attachment priming tasks (Boag & Carnelley, 2016; Carnelley et al., 2016), which involve explicit recall of a relationship in which the participant either felt that they did not want to be close to the other (avoidant) or that the other did not want to be close to them (anxious). This task has been shown to have a differential impact on avoidance and anxious subscales of the SAAM (Melen et al., 2017). The current study demonstrates that a similar task involving an interpersonal rejection can induce temporarily higher ratings of both state avoidance and anxiety, and that this variance can be explained by trait attachment style, indicating that rejection is an experience which taps into both categories of attachment insecurity.

Results also indicated that rejection sensitivity does not make an independent contribution to feelings of attachment anxiety or avoidance following recall of a rejection, however it does for feelings of secure attachment. The less sensitive to rejection participants were, the more securely attached they felt following a recall of a rejection. Whilst there is currently no evidence linking the ARSQ explicitly with secure attachment, this is in line with Erozkhan (2009), which demonstrated a negative correlation between secure attachment and the original RSQ. Trait attachment anxiety and avoidance were the best predictors of felt attachment anxiety and avoidance respectively following a recall of rejection, with less avoidant individuals feeling more anxious. This finding is best understood in the context of the findings from hypothesis 1, which showed that trait avoidance, anxiety and rejection sensitivity are all positively related, but that rejection sensitivity does not control for the relationship between ECR-R anxiety and avoidance. Whilst historically attachment anxiety

and avoidance have been considered to be opposing categorical concepts, there is emerging evidence that participants who score highly for anxious attachment dimensions also score highly for avoidance (Cameron et al., 2012). This has been previously noted in other research on attachment priming (Carnelley et al., 2007). The findings of this study suggest that Feldman & Downey's (1996) theory that high rejection sensitivity underlies both anxious and avoidant styles of attachment is not the full picture.

Whilst the ECR-R does not explicitly measure attachment security lower scores on both dimensions are presumed to indicate attachment security; nevertheless there is an argument for measuring this as a separate category (Bäckström & Holmes, 2007). One way to understand these results is that rejection sensitivity may explicitly relate to attachment security, with more secure individuals scoring lower for rejection sensitivity (Erozkan, 2009).

There were no significant individual differences found to be moderators for pre-post changes in felt security anxiety or avoidance found in this study. This is in contrast to a recent systematic review which highlighted several studies finding trait attachment anxiety to be a moderator for increasing the effect of secure priming (Gillath et al., 2019). Trait avoidance was positively related to pre-post changes in avoidance and negatively to pre-post changes in security on the SAAM, indicating that directly following a recall of a rejection, participants who were lower on trait avoidance were more likely to report a decrease in felt avoidance and an increase in felt security over time. Individuals who score highly on measures of attachment avoidance may not benefit from supraliminal secure attachment priming due to defensive mechanisms that make it hard for them to access secure base scripts (Dykas & Cassidy, 2011). Therefore, participants higher in trait avoidance may have employed a defensive attachment strategy which maintained feelings of wanting to be distanced from others.

Results show that trait attachment anxiety has no relationship with priming group or changes in felt attachment style. This was a surprising result, as six previous research papers have demonstrated a moderating impact of anxious attachment style on secure priming (Gillath et al., 2019). An explanation for this is that none of these studies used SAAM as their outcome measure, instead showing that trait anxiety boosts the impact of secure priming for reducing scores on variables such as feelings of distress (Bryant & Chan, 2017), anger (Dutton et al., 2016) and perceived pain intensity (Pan et al., 2017). The findings of this study indicate that whilst secure priming may be effective in reducing some distressing experiences for those who report themselves as highly anxious in their attachments, it does not have an effect on momentary feelings of attachment anxiety. Equally, there was no moderating influence of trait rejection sensitivity on pre-post changes in felt attachment according to priming group.

Theoretical Implications

Findings of this study suggest that not only do rejection-salient cues increase feelings of rejection, but they also temporarily elevate felt attachment insecurity. Understanding results within a CAPS model (Mischel & Shoda, 2008), recalling a rejection temporarily activates fear of attachment loss but also a desire to avoid close relationships. Whilst this study did not track behaviour related to this activation of personality constructs, Ayduk and Gyurak (2008) would suggest that failure to succeed with an anxious strategy of accommodating to prevent further rejection would lead to a more avoidant strategy of reactive aggression or emotional distancing within relationships. Trait attachment avoidance appears to have an influence on the extent to which people employ defensive strategies with response to rejection, by dismissing the desire to feel close to others and increasing feelings of wanting to be alone and independent (Cassidy et al., 2009). The significance of this is that, as predicted by the CAPS

model, more avoidant individuals tend to have less access to secure profiles of behaviour and seem less influenced by context in terms of feelings about relationships.

The specific impact of secure priming on felt attachment security has interesting theoretical implications, suggesting that it is possible to increase felt security without having an influence on felt insecurity in relationships. Recalling a secure relationship produced significant changes for attachment security but not avoidance or anxiety, replicating findings from Bosmans et al. (2014). This indicates that there needs to be a more nuanced view of how “traits” such as attachment are understood to influence behaviour. Given that attachment feelings can be differentially cued and elicited according to context, longitudinal research into how early trauma influences attachment and rejection sensitivity needs to take into account that behaviour is not simply predetermined by categorical “trait” factors, and that humans are capable of a spectrum of reactions to relational experiences which are at least in part driven by context.

This study also confirms that attachment anxiety and avoidance are unlikely to be orthogonal personality structures (Cameron et al., 2012), but indicate a connected spectrum of reactions to relational contexts such as rejection which are likely to change according to environmental factors. Thus, individuals may not exclusively react to interpersonal rejection with strategies that can be easily divided into “anxious” or “avoidant” attachment behaviour, but are likely to have a combination of these traits which could be differentially elicited according to context. Additionally, it highlights initial evidence that rejection sensitivity may be more related to attachment security than insecurity, in that low rejection sensitivity appears to explain feelings of secure attachment better than scales of attachment insecurity. This suggests further evidence that measures of adult attachment require an explicit scale of attachment security (Bäckström & Holmes, 2007).

Clinical Implications

Recalling a rejection temporarily raised scores for insecure attachment feelings. Nevertheless, frequent cueing can result in more lasting effects (Gillath et al., 2008) and attachment feelings towards caregivers are less susceptible to change (Bosmans et al., 2014). It is therefore important for clinicians to ask explicitly about experiences of rejecting parenting at assessment, as this has been shown to be a causal factor in psychopathology (Ali et al., 2019). This can support clinicians to formulate with clients reporting interpersonal difficulties that have been linked to rejection sensitivity, for example. BPD or social anxiety (Foxhall et al., 2019; Li, 2011).

Interventions such as compassion focussed therapy include activating secure attachment related material through compassionate meditation, in a similar manner to the secure priming task completed within this study (Gilbert, 2010). Given that those who score highly on measures of avoidant attachment have difficulty in generating relationship-related narratives involving positive emotional content (Waters & Roisman, 2019), it is likely to be a barrier to benefitting from this therapy. It is therefore important that clinicians consider attachment factors within assessment and formulation when considering compassion focussed interventions.

This research has important implications for outcome measurement of therapy. Studies show that therapeutic alliance can be the most important indicator of positive outcomes in therapy (Ackerman & Hilsenroth, 2003). The provision of frequent cueing for a secure and safe relationship, with the aim for this to become internalised should therefore be a key dimension of psychotherapy (Diamond et al., 2010). Measures of therapist alliance such as the Agnew Relationship Measure (Agnew-Davies et al., 1998) could support evaluation of

therapeutic outcomes within psychotherapy services, as it would indicate the extent to which the client viewed the therapist as a secure attachment relationship.

Critical Appraisal

A limitation of the methodology is that the SAAM was not presented prior to the rejection paradigm and so it was not possible to ascertain pre-post changes from neutral; this was a deliberate decision by the researcher to minimise participant burden and avoid participants repeating the same measure three times which may have led to fatigue. As a consequence, it is not possible to conclude whether the rejection paradigm decreased feelings of attachment security, given that participants in the neutral task did not significantly change their scores on this measure.

Demand characteristics are important to consider when evaluating this study due to the repeated measures design, as well as supraliminal attachment priming, which meant that participants were to some extent aware of the desired impact on their feelings. This may have inflated findings in terms of self-reported feeling. It is hoped that this was mitigated by randomising the presentation of items from the SAAM.

A further limitation is that the population used within this study is not representative of the clinical populations such as those with social anxiety and BPD, for whom rejection sensitivity has been shown to be a primary concern (Foxhall et al., 2019; Li, 2011). It would be expected that a healthy population would show lower scores on rejection sensitivity and insecure attachment, and it is therefore possible that results were impacted by homogeneity in scores. However, this population was easily accessible and meant that a large sample could be recruited, lending the power required to conduct moderation analyses. Additionally, the selected population gives greater insight into healthy rather than pathological mechanisms and processes around rejection and relationships.

This research tested and rejected the novel hypothesis that rejection sensitivity, given its links to attachment, may have an influence on how people recover from a recalling an interpersonal rejection in terms of their felt attachment style using secure priming. It used a randomised controlled design which was appropriately powered, meaning that results can be considered reliable and valid.

Future Research

Further research is needed to understand the underlying factors that control for the relationship rejection sensitivity and attachment subscales, and explore Feldman and Downey (1994)'s hypothesis that rejection sensitivity elicits differential responses according to attachment style. Whilst research has shown that felt attachment avoidance and anxiety can be differentially cued (Melen et al., 2017), the results of this study suggests that recall of a rejection elevates scores on both of these subscales. Rejection sensitivity and trait attachment have independently been shown to shape behavioural reactions to painful interpersonal contexts (Ayduk & Gyurak, 2008; Cassidy et al., 2009).

Recommended future research would investigate the hypothesis that rejection increases both attachment anxiety and avoidance feelings, with priming tasks only increasing scores on respective subscales. This would utilise a between subjects comparison of avoidant and anxious attachment priming as used in Melen et al. (2017) alongside the rejection paradigm within this study. Results could be supplemented by information taken on behavioural responses such as crying, dismissal and hostility as in (Cassidy et al., 2009). This research would further inform a CAPs model of responses elicited by rejection and attachment cues.

Conclusion

In conclusion, this study tested a novel hypothesis that trait factors such as rejection sensitivity and attachment would influence reactions to both recall of a rejection and a secure prime. Whilst recall of an interpersonal rejection elevates feelings of insecure attachment and rejection in the moment, a secure prime is no better than a neutral task for allowing these feelings to dissipate. On the other hand, a secure prime does differentially impact feelings of attachment security. Trait factors do not moderate priming effects, however trait avoidant attachment is significantly linked to pre-post changes in felt avoidance and security. This may represent a defensive strategy to protect from interpersonal pain. Despite limitations relating to lack of baseline analysis of state attachment feelings, this study has important implications for understanding how interpersonal rejection can cue attachment related feelings in the moment.

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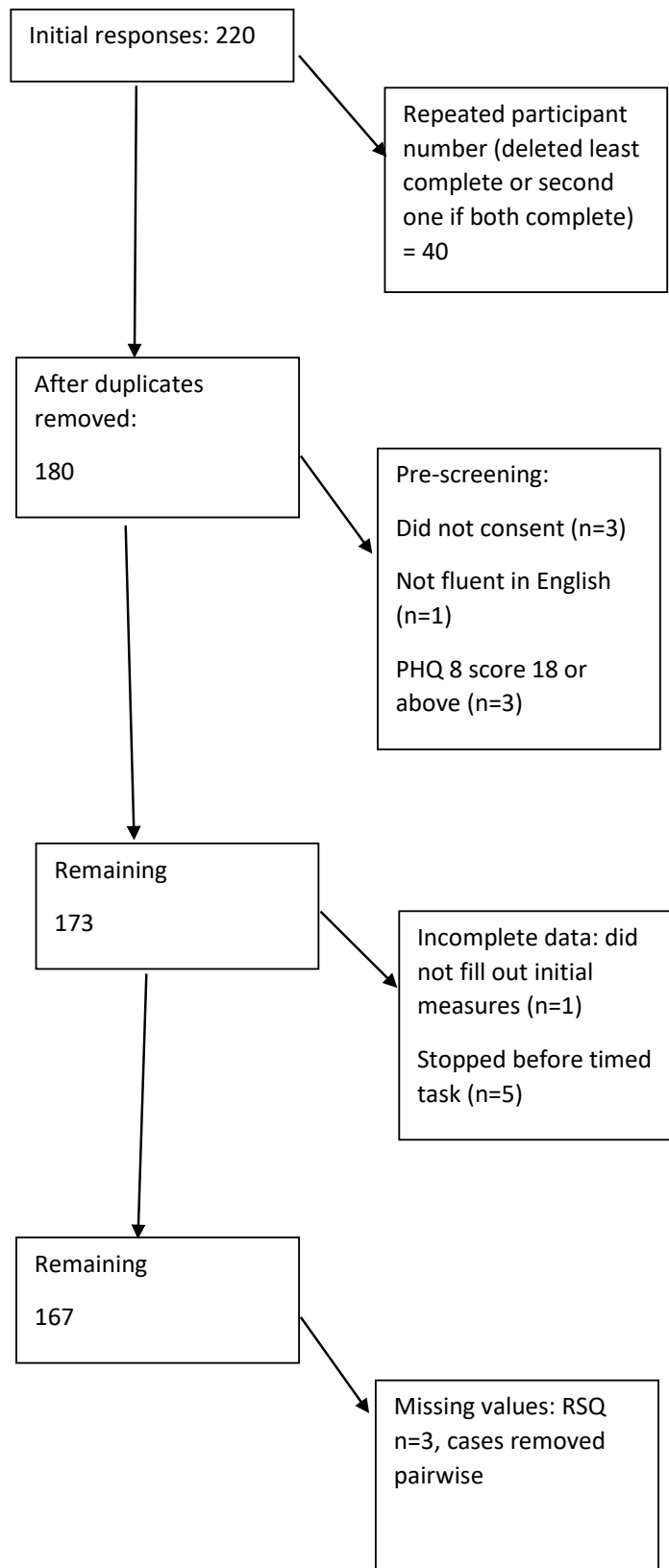
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Appendices

Appendix A: Data Cleaning Flow Chart



Appendix B: State Adult Attachment Measure

SAAM

The following statements concern how you feel **right now**. Please respond to each statement by indicating how much you agree or disagree with it as it reflects your **current** feelings. Please circle the number on the 1-to-7 scale that best indicates how you feel at the moment:

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

Right now...

- Anx 1. I wish someone would tell me they really love me
- Avo 2. I would be uncomfortable having a good friend or a relationship partner close to me
- Avo 3. I feel alone and yet don't feel like getting close to others
- Sec 4. I feel loved
- Anx 5. I wish someone close could see me now
- Sec 6. If something went wrong right now, I feel like I could depend on someone
- Sec 7. I feel like others care about me

- Anx 8. I feel a strong need to be unconditionally loved right now
- Avo 9. I'm afraid someone will want to get too close to me
- Avo 10. If someone tried to get close to me, I would try to keep my distance
- Sec 11. I feel relaxed knowing that close others are there for me right now
- Anx 12. I really need to feel loved right now
- Sec 13. I feel like I have someone to rely on
- Anx 14. I want to share my feelings with someone
- Avo 15. I feel like I am loved by others but I really don't care
- Avo 16. The idea of being emotionally close to someone makes me nervous
- Anx 17. I want to talk with someone who cares for me about things that are worrying me
- Sec 18. I feel secure and close to other people
- Anx 19. I really need someone's emotional support
- Sec 20. I feel I can trust the people who are close to me
- Avo 21. I have mixed feelings about being close to other people

Appendix C: Secure and Neutral Priming Tasks

Participant Number:

Visualization Task

We now want you to complete a visualization task.

Please think about a relationship you have had in which you have found that it was relatively easy to get close to the other person and you felt comfortable depending on the other person. In this relationship you didn't often worry about being abandoned by the other person and you didn't worry about the other person getting too close to you. It is crucial that the nominated relationship is important and meaningful to you.

1. What is the nature of the relationship (e.g., romantic partner, friend, parent, roommate)?

2. How long have you known this person? Please indicate in years and (if applicable) months.

Now, take a moment and try to get a visual image in your mind of this person. What does this person look like? What is it like being with this person? You may want to remember a time when you were actually with this person. What would he or she say to you? What would you say in return? What does this person mean to you? How do you feel when you are with this person? How would you feel if this person was here with you now?

Please jot down your thoughts in the space provided below. You will have 10 minutes to complete this task. The experimenter will let you know when the 10 minutes are up.

Remember that there are no wrong or right answers and you will not have to submit the work

that you write, so feel free to write anything down. If you finish before the 10 minutes are up, please continue to think about the relationship and write down anything else that comes to mind about the relationship.

Please ask now if you have any questions, if not please begin.

Participant Number:

Visualization Task

We now want you to complete a visualisation task.

We are interested in how people feel after thinking about particular topics. We would like you to write for 10 minutes about a supermarket scenario. Try to think of a particular time that you visited a supermarket to do a large or weekly shop and give information about the sequence of events that you completed as you moved around the store. For example, you may have selected a trolley and walked down the first aisle, picking up items as you went. Please try to give as much detail as possible about what you picked up or looked at, i.e., did you have to weigh an item or did you have to reach up to a top shelf?

Please jot down your thoughts in the space provided. You will have 10 minutes to complete this task. The experimenter will let you know when the 10 minutes are up. Remember that there are no wrong or right answers and you will not have to submit the work that you write, so feel free to write anything down. If you finish before the ten minutes are up, please continue to think about the scenario and write down anything else that comes to mind.

Please ask now if you have any questions, if not please begin.

Appendix D: Patient Health Questionnaire -8

https://www.selfmanagementresource.com/docs/pdfs/English_-_phq.pdf

Appendix E: Rejection Sensitivity Questionnaire

http://www.midss.org/sites/default/files/rs_adult.pdf

Appendix F: Experiences in Close Relationships- Revised Questionnaire

<https://fetzer.org/sites/default/files/images/stories/pdf/selfmeasures/Attachment-ExperienceinCloseRelationshipsRevised.pdf>

Appendix G: Consent form**CONSENT FORM**

Title of Project: Experiences of Rejection in Close Relationships

Name of Researcher: Jennifer Simmons

Please click on the statements below once you have read and agreed.

Please initial box

1. I confirm that I have read the information that preceded this form.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without my legal rights being affected.
3. I understand that relevant sections of the data collected during the study may be looked at by members of the research team (Jennifer Simmons) and research supervisors (Dr Anke Karl & Dr Alicia Smith) where it is relevant to my taking part in this research. I give permission for these individuals to have access to my anonymised data.
4. I understand that taking part involves anonymised responses to questionnaires to be used for the purposes of research
5. I understand that my name and email address will be viewed by administrators at the University of Exeter for the purposes of sending a £5 voucher, and will be kept separately from the rest of the data.
6. I agree to take part in the above project.

Would you like to claim course credits or a £5 amazon voucher in exchange for your time?

- £5
- Course credits
- Neither

If £5 then:

Please enter your full name

Please enter a valid email address

Appendix H: Participant Information



Participant Information Sheet

My name is Jennifer Simmons and I am a trainee clinical psychologist. You are invited to take part in my research which looks at the impact of rejection in close relationships and how this interacts with individual differences in people's relationship style. Before you decide whether or not you would like to participate, please read this information carefully. Please feel free to contact me using the contact details given below if you have any further questions.

What would taking part involve?

This study will take up to 1 hour overall to complete. Please ensure that you are in a quiet place with no distractions in order to participate. Please make sure that you have time to complete this study before beginning, as it will not be possible to save your answers.

In this study you will initially be asked to fill out a short questionnaire to assess your eligibility to take part in the project.

If you are eligible, you will be asked to fill out two short questionnaires about your thoughts and feelings within relationships. This part of the study will take about 15 minutes.

Once you have done this, you will be asked to complete two short tasks. The first task will ask you to recall a time where you felt rejected within a close relationship. You will then be asked to do a second task before being asked some questions about your thoughts and feelings at this moment. This part of the research should take around 35 minutes.

Once you have completed this you will be given a debrief by the researcher, who will explain the purpose of the tasks. You will be invited to ask any questions.

For your time participating in this research you will be awarded 2 research credits if you are part of the Psychology department, or £5 if you are from another department or a member of the general public. In order to send you this reward, it will be necessary to ask for your name and email, which will be viewed by administrators at the University of Exeter for purposes of audit. This will be kept separately from the rest of the dataset within this study.

If you are not eligible for the study, you will be presented with a message detailing why this might be including contacts for further support or information. You will still receive payment for your participation.

Participation in this study is voluntary. You may withdraw your consent for use of your data at any point up until 29th January 2021, after which it will no longer be feasible to withdraw your data from analysis.

How will my information be kept confidential?

The University of Exeter processes personal data for the purposes of carrying out research in the public interest. The University will endeavour to be transparent about its processing of your personal data and this information sheet should provide a clear explanation of this. If you do have any

queries about the University's processing of your personal data that cannot be resolved by the research team, further information may be obtained from the University's Data Protection Officer by emailing dataprotection@exeter.ac.uk or at www.exeter.ac.uk/dataprotection.

Data collected from the survey will be input into a spreadsheet for analysis, and will be saved as a password protected file. Identifying information such as your name and email will be held on a separate, password protected file using a randomly allocated participant number as a key. In order to comply with HMRC regulations your name and the value of the voucher you received (£5) will be kept for 7 years.

Results will be analysed by the researcher and the findings will be anonymously reported back to the service. Personal and research data will be held on file for 7 years before being deleted. Anonymised data may be kept and used for other research projects, but will not be linked with any individual or personalised data.

Consent forms and other data will be kept on a password protected secure computer. Only the researcher and project supervisor will have access to this personal data.

Confidentiality may be breached if you reveal any threat of harm to yourself or others, however this will be discussed with you prior to any measures being taken.

What are the possible disadvantages and risks of taking part?

You will be asked to think about and recall aspects of personal close relationships, which may be discomforting, however you will be provided with links for further support at the end of the study should this be required.

What will happen if I don't want to carry on with the study?

You may decide to stop being a part of the study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn/destroyed.

You have the right to omit or refuse to answer or respond to any question that is asked of you.

What will happen to the results of this study?

Results from the study will form part of my doctoral thesis and may be submitted for publication.

Who has reviewed this study?

This project has been reviewed by the Psychology Research Ethics Committee at the University of Exeter (Reference Number **eCLESPsy001399 v3.2**).

Further information and contact details

If you would like to get in touch for further information, please email me, Jennifer Simmons (js1149@exeter.ac.uk). If you are unhappy about any aspect of the project, please contact Professor Anke Karl (a.karl@exeter.ac.uk)

If you would like further information regarding ethics approval for this study, please contact the chair of the ethics committee Dr Nick Moberly (n.j.moberly@exeter.ac.uk).

Thank you for your interest in this project and for taking the time to read this information.

Appendix I: Participant Debrief

Debrief information

Thank you for taking part in this study. This study was looking at people's experiences in close relationships and how this is influenced by personality factors such as sensitivity to rejection. Please be aware that you may withdraw your data from this study up until 29th January, after which it will no longer be possible to remove your data from the analysis.

Attachment style is a way of describing someone's way of conducting close relationships. Whilst it's considered to be fairly stable for people over time, new research suggests that momentary stimuli can influence how people feel about close relationships in the moment. This study was designed to better understand how attachment style might be influenced in the moment by recalling feelings and experiences about a rejection in a close relationship, and whether these feelings could be changed by later recalling a positive and close experience in a relationship as opposed to a neutral supermarket scenario.

Given the nature of this study, some of the tasks that you have been asked to do may have brought up some distressing memories for you; this is normal and should pass with time. In the unlikely event that these feelings continue and you would like to seek further support around your experiences of relationships, please contact your GP in the first instance. I have also added some information about helpful number below. If you have any questions, or would like to discuss any of the themes of this study further, please contact me (Jennifer Simmons) on js1149@exeter.ac.uk. If you would like further information regarding ethics approval for this study, please contact the chair of the ethics committee Dr Nick Moberly (n.j.moberly@exeter.ac.uk).

Appendix J: Power Analyses

As the Adult Rejection Sensitivity Questionnaire (ARSQ; Berenson et al., 2009) has not been used within secure attachment priming research before it is hard to draw on prior literature, however Park et al. (2007) reported a large effect size of .46 for the relationship between high appearance-based RS and feelings of rejection. Cassidy et. al (2009) found small to medium effect sizes of .26 (priming x attachment anxiety) and .35 (priming x attachment avoidance) when comparing the interaction effect of attachment measured by the ECR-R and secure attachment priming on feelings of rejection. Berenson et al. (2009) found large effect sizes for the correlation between attachment anxiety and avoidance measured by the ECR-R and ARSQ ($r = .48$ and $r = .33$, respectively).

Table 6

Power Analyses for each Hypothesis

Hypothesis	Test	No. predictors	Effect size	Sample size
1	Linear regression (Pearson's)	2	0.3	36
2	Linear regression (Pearson's)	3	0.3	41
3	MANOVA	2x2	0.3	90
4	Moderation	3	0.11	74

*Based on power 80%, alpha .05

Appendix K: Ethics Approval from the University of Exeter Psychology Ethics Committee



CLES – Psychology
Psychology
College of Life and Environmental Sciences
University of Exeter
Washington Singer Building
Perry Road
Exeter
EX4 4QG
Web: www.exeter.ac.uk

CLES – Psychology Ethics Committee

Dear Jennifer Simmons

Ethics application - eCLESPsy001399
Rejection Sensitivity and Attachment Priming

Your project has been reviewed by the CLES – Psychology Ethics Committee and has received a Favourable opinion.

The Committee has made the following comments about your application:
Nick Moberly commented, pp Anke Karl

- Please view your application at <https://eethics.exeter.ac.uk/CLESPsy/> to see comments in full.
If you have received a Favourable with conditions, Provisional or unfavourable outcome you are required to re-submit for full review and/or confirm that committee comments have been addressed before you begin your research.

If you have any further queries, please contact your Ethics Officer.

Yours sincerely

Date: 11/04/2021

CLES – Psychology Ethics Committee