The Relationship Between Self-Report Adult Attachment Dimensions and Depressive Symptoms: A Meta-Analysis

Melinda Vardanega B.Psych (Hons)

This thesis is presented in the fulfilment of the requirements of the degree of

Master of Clinical Psychology

University of Newcastle

December 2017

Declarations

Statement of Originality

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the University's Digital Repository**, subject to the provisions of the copyright Act 1968.

**Unless an Embargo has been approved for a determined period.

Acknowledgement of Collaboration

I hereby certify that the work embodied in this thesis has been done in collaboration with other researchers. I have included as part of this thesis a statement clearly outlining the extent of collaboration, with whom and under what auspices.

I contributed to the development of the research question, the database search, the statistical analysis, the interpretation of results and editing of the manuscript. Associate Professor Ross Wilkinson contributed to the development of the research question, the peer review process relating to the selection of articles included, the interpretation of results, and editing of the manuscript. Karen Watson assisted during the peer review process relating to the selection of articles excluded.

01/12/2017

_____ _____

Melinda Vardanega Date

Acknowledgments

The completion of this thesis was far from an easy task. I have a number of people that I need to thank, who in their own unique way, contributed to the final product. My deep gratitude goes first to my supervisor, Associate Professor Ross Wilkinson. I appreciate not only your wisdom and academic guidance, but also your compassion and understanding for times when it seemed that Murphy's Law was in overdrive. To my thesis buddy and predecessor, Karen Watson, your contribution to the completion of this thesis goes beyond the practical support and hours spent peer reviewing articles, and extends to the emotional comfort I received from knowing that crossing the finish line was possible. The completion of this work would have been incredibly difficult without your contribution, so I thank you deeply. To my parents, Janet and Steve, for your unconditional love and support through whatever endeavour I embark on. I am undoubtedly the person I am today because of both of you and I would not have been able to finish my seven years studies without your ever-present support. Finally, to my partner Alex, for supporting me during the times I felt overwhelmed, for pushing me when I wanted to give up and for making me laugh when I wanted to cry. Your love and support helped make crossing the finish line possible.

Table of Contents

List of Tables

List of Figures

Structured Abstract

Scope. Depression is a debilitating mental health condition which is the leading cause of disability worldwide. Adult attachment research is an extension of Bowlby and Ainsworth's early attachment theory and aims to understand how attachment phenomena apply to adult romantic relationships. Adult attachment theory has proven to be a useful framework in understanding the importance of close interpersonal relationships for psychological health and adjustment. To date, a large amount of studies using self-report measures of adult attachment have consistently reported associations between attachment dimensions in romantic relationships and the presence of depressive symptoms in both clinical and non-clinical samples.

Purpose. Given the large amount of studies reporting these associations and the fact that to date there are only general reviews of the literature, the aim of the current study was to conduct a meta-analysis on the extant empirical literature reporting statistical relationships between self-reported attachment dimensions and self-reported depressive symptoms in a range of clinical and non-clinical populations. In addition to overall effect sizes we also aimed to explore potential moderating factors to these relationships including a number of sample and study design characteristics.

Methodology. A literature search of online databases resulted in an initial 2,512 articles being identified as potentially relevant. Following a thorough screening process, there were 104 studies remaining for inclusion in the meta-analysis. To meet eligibility criteria articles must have been published in peer reviewed journals in the English language. Participants had to be aged 17 years and over and the study must have reported a bivariate relationship between self-report attachment styles/dimensions and depression symptoms as measured by well-known and validated self-report measures. The computer software program

"Comprehensive Meta-Analysis" was used to conduct the analysis. Three separate analyses for secure attachment, avoidant attachment and anxious attachment were conducted using the random-effects model, with Pearson's *r* correlation coefficients as the effect sizes. Subgroup analysis was applied to explore potential moderating factors such as gender, type and language of attachment measure, clinical and non-clinical samples and the use of student and non-student samples.

Results. Results demonstrated that secure attachment is negatively correlated with depression with a medium effect size (r = -.28), and both avoidant and anxious attachment are positively correlated with depression with medium and large effect sizes (*r* = .27 and *r* = .40, respectively). No significant differences were found between gender, or clinical and non-clinical samples. Studies using the RSQ to measure attachment avoidance resulted in significantly larger effect sizes compared to studies using other measures. The relationship between avoidant attachment and depression was shown to be significantly weaker in students than in non-students. Finally, studies using translated measures of adult attachment resulted in significantly weaker effect sizes compared to studies using English measures in the secure and avoidant attachment analyses.

General Conclusions and Implications. Overall, this meta-analysis provides robust evidence that, as measured by common self-report instruments of adult attachment, secure attachment in close relationships is associated with fewer self-reported depressive symptoms and insecure attachment in close relationships, both attachment avoidance and more so attachment anxiety, are associated with more self-reported depressive symptoms. It was also found that these associations were influenced by a number of factors including the use of the RSQ to measure attachment avoidance, the use of student samples when measuring attachment avoidance and the use of translated measures of adult attachment, particularly when measuring attachment security and attachment avoidance. The findings of this study

have a number of both research and clinical implications. Firstly, the findings suggest that more work needs to be to develop sound measures of adult attachment in languages other than English. Secondly, it is suggested that caution should be applied to the use of student populations in adult attachment research, particularly if the focus of the study is attachment avoidance. Thirdly, the findings indicate that adult attachment measures should not be used interchangeably in attachment research and that an understanding of the underlying constructs of the measure is required to ensure they are being use appropriately. This is particularly relevant when using the RSQ. In terms of clinical implications, the findings of the current study support the use of self-report measures of adult attachment in clinical practice and suggest that addressing insecure attachment thoughts and behaviours may be useful in the psychological treatment of depression.

The Relationship Between Self-Report Adult Attachment Dimensions and Depressive Symptoms: A Literature Review

Bowlby (1907-1990) proposed that attachment is an integral part of human nature that is influential "from the cradle to the grave" (Bowlby 1979, p.154). He also considered negative attachment experiences in childhood, to be a risk factor for the development of psychological illnesses such as depression. Attachment theory has significantly evolved since Bowlby's original texts, and contemporary adult attachment research, using self-report instruments to measure attachment thoughts, feelings and behaviours in adulthood, has further developed our understanding of the relationship between attachment phenomena and depressive symptoms. As depression is a significant contributor to the overall global burden of disease (World Health Organisation, 2017) and rates of depression continue to rise, we must strive to progress our understanding of its aetiology to develop and apply evidence based treatment. The following review provides an overview of attachment theory before discussing how attachment theory has evolved to understand adult relationships including the development of a number of key self-report measures of adult attachment. Depression and commonly used self-report measures of depression are considered before an overview of the literature exploring the association between self-report adult attachment dimensions and depressive symptoms is provided.

Attachment theory

Attachment theory, originally derived from the joint work of John Bowlby and Mary Ainsworth (Ainsworth, 1979, 1989; Bowlby, 1969, 1973, 1980, 1982), is a broad framework which seeks to understand the nature of human relationships. Bowlby is considered to have formulated the basic elements of the theory and Ainsworth expanded the theory by developing a methodology that was able to empirically test some of Bowlby's ideas

(Ainsworth & Bowlby, 1991). Bowlby (1969, 1973, 1980, 1982) proposed that the emotional bond between an infant and their primary care giver (usually the mother), is driven from a biological system that is vital to survival and developed from an evolutionary need of the child to seek protection. Attachment theory states that the primary care giver (or attachment figure) serves as a secure base from which to explore the world and as a safe haven to which the child turns to when feeling threatened (Ainsworth, 1979, 1989). Specifically, when the child perceives danger, the attachment system is activated and the child engages in attachment seeking behaviours such as crying, reaching out, and when able, actively seeking out the attachment figure, with the goal of achieving a felt sense of security (Sroufe & Waters, 1977).

Bowlby (1969, 1973, 1980, 1982) argued that based on attachment experiences, humans organise their beliefs about themselves and others in relationships using two types of internal mental models or schemas. The 'working model of others' involves an appraisal of whether or not the attachment figure is considered likely to respond to the individual's needs and the 'working models of the self' involves an appraisal of whether or not the self is judged to be the sort of person who an attachment figure is likely to respond. Thus, attachment theory implies that beliefs and feelings about the self (i.e., self-esteem) is somewhat determined by the responsiveness of the attachment figure to the individual's need for felt security (Cassidy, 1988). While Bowlby proposed that internal working models are generally stable over the lifetime and early experiences with our primary attachment figure can directly impact our future relationships, he also argued that change is possible at any stage of life (Bowlby, 1969). These changes usually occur through significant life events and experiences with romantic partners but change can also be achieved through support relationships such as those in psychotherapy (Mikulincer & Shaver, 2007).

In her landmark Baltimore longitudinal study conducted between 1963 and 1967, Mary Ainsworth and her colleagues (Ainsworth Blehar, Waters & Wall, 1978; 2015) developed a methodology that provided insight into individual differences in child attachment. Infant/mother dyads from white, middle-class America were observed at home for four hours every three weeks for a period of 17 weeks. When the infants were 51 weeks old, they were brought into the laboratory for a procedure now commonly known as the 'strange situation' which included several periods of separation from, and reunion with the mother, also involving a researcher (or "stranger") that was unfamiliar to the child.

Based on the results, infants were classified into one of three groups according to the patterning of their behaviours. Avoidant infants were observed to show an overall disinterest in the mother, they tended to treat the stranger similarly to the mother and were generally not distressed during the separation period (and if so, the distress seemed more likely to be attributable to being left alone). When reunited with their mothers, Avoidant infants were observed to avoid proximity to, or interaction with the mother by ignoring her completely or engaging in avoidant responses such as turning away and averting gaze when she returned to the room. Secure infants were observed to seek proximity to and interaction from the mother, demonstrate a preference for interaction with the mother compared to the stranger and may or may not have been distressed during the separation period (and if so, the distressed seemed more attributable to the mother's absence). When the mother returned, these infants appeared more accepting of the mothers attempts to comfort them. Anxious infants were generally more vigilant concerning the mother's presence and were highly distressed during the separation periods. They were observed to show both interaction resisting and proximity seeking behaviour during the reunion period, giving the impression of being ambivalent to the mother. Additionally, these infants were more difficult to settle on reunion demonstrating either more aggressive or resistant behaviour (Ainsworth et al, 1978; 2015).

In an attempt to understand causal factors contributing to individual differences in attachment behaviour, Ainsworth and her colleagues explored the relationship between the behaviour of infants in the strange situation experiment and the behaviour of the mother during the home observation visits. In line with predictions, it was found that a mother's sensitive responsiveness to an infant's signals and communication was strongly associated with the child's attachment classification (Ainsworth et al, 1978, 2015). For example, it was found that mothers of Avoidant and more so Anxious infants, took longer than Secure mothers to respond if the infant was crying and were more likely to ignore the infant's crying altogether. Secure mothers were more likely to acknowledge their babies when they entered the room and were more physically affectionate than mothers of Avoidant or Anxious infants. Avoidant and Anxious mothers were more insensitive, rejecting, interfering than Secure mothers. They were also less emotionally expressive when interacting with their babies and tended to be more rigid and perfectionistic, with both of these more attributable to Avoidant mothers. Additionally, Avoidant mothers were found to more frequently and intensely, provide their babies with unpleasant experiences associated with close bodily contact (Ainsworth et al, 1978, 2015).

Main and Solomon (1986), later added another classification group for infants whose behaviour did not fit with the original three groups. Infants in this group did not appear similar to one another in coherent and organised ways. Rather, they demonstrated sequences of behaviour that seemed to lack an obvious goal or explanation (e.g. freezing of movement for a period of time with a dazed expression). This classification was termed disorganised/disoriented attachment and was found to be associated with the mother's unresolved attachment traumas (i.e. the death of an attachment figure; Main & Solomon, 1990), maternal depression, and abuse (Crittenden, 1988; Main & Hesse, 1990).

Attachment in Adulthood

While Bowlby acknowledged that there are attachment relationships beyond infancy, he did not develop these ideas in detail. Building on his foundational work, researchers have now extensively explored attachment relationships throughout the life span and have found that attachment related emotions, thoughts and behaviours occur in many more relationships than was originally suggested in the child attachment literature (Mikulincer & Shaver, 2007). There are a number of relationship partners that can serve as attachment figures throughout the life span (e.g. siblings, teachers, close friends), this review will focus primarily on romantic partners, which Bowlby considered the archetype of adult attachment bonds (Bowlby, 1979).

As with child attachment relationships, Mikulincer and Shaver (2007) suggest that an adult attachment figure serves three functions including: being the target for proximity seeking; serving as a safe haven in times of need; and acting as a secure base from which the adult can pursue non-attachment related goals. Additionally, as with child attachment relationships, the real or expected disappearance of the adult attachment figure evokes separation distress (Mikulincer & Shaver, 2007). Adult attachment relationships are also distinct from child attachment relationships in significant ways (Weiss, 1982). For example, child attachment relationships are complimentary (i.e. an attachment figure provides care while the infant seeks security) whereas adult attachment relationships are reciprocal, with each partner being both a provider and a recipient of comfort. Additionally, the perceived threat required to activate the attachment system is greater for adults compared to infants, as adults have developed more autonomous coping strategies and symbolic thought allowing them to be able to simply imagine being calmed by an attachment figure, rather than requiring immediate physical proximity for comfort (Mikulincer & Shaver, 2007).

When researchers began to empirically explore adult attachment phenomena in the 1980s, two independent ‘traditions’ of adult attachment research emerged. Extending on the work of Ainsworth and her colleagues, developmental psychologists Main, Kaplan and Cassidy (1985) developed the Adult Attachment Interview (AAI). The AAI assesses an adult’s memories of childhood experiences with their parents. It was found that an adult’s current representations of their childhood attachment experiences (i.e. an adult’s “attachment state of mind”) were associated with their children’s classification in the strange situation procedure (Main, Kaplan & Cassidy, 1985). For example, infants classified as Avoidant in the strange situation, had parents who demonstrated dismissiveness of attachment related memories in the AAI. Around the same time, social psychologists were interested in understanding the processes involved in current adult attachment relationships (e.g. relationships between peers and romantic partners), and developed a number of self-report scales to assess these relationships (e.g. Hazan & Shaver, 1987; Collins & Read, 1990; Bartholomew & Horowitz, 1991; Brennan, Clark & Shaver, 1998). While both methods are valuable in understanding attachment in adulthood, there is generally trivial-to-small overlap identified between the two attachment measurement traditions and they are considered to predict distinct aspects of functioning in adult attachment relationships (Roisman et al., 2007).

Self-Report Measures of Adult Attachment

In 1987, Hazan and Shaver introduced the first self-report measure of adult attachment when they developed three descriptions of how people think, feel and behave in romantic relationships based on Ainsworth’s three major attachment styles (avoidant, secure, anxious). They asked participants to read the descriptions, think back over their history of romantic relationships and indicate which description was most appropriate to them. Based on these categories, they found almost exactly the same distribution for the three attachment

styles for adults that were found for infants in the strange situation study (Hazan and Shaver, 1987). While this was pioneering work in the self-report adult attachment literature, it quickly became evident that categorical measures of attachment are problematic for a number of reasons including limiting researchers to analysis of variance statistical analysis and implying that individual variation within a category either does not exist or is not important. To address these issues, attachment researchers such as Collins and Read (1990) and Simpson (1990) deconstructed Hazan and Shaver's (1987) descriptions to create continuous self-report measures that included multiple questions answered on a Likert-type scale.

Simpson's (1990) measure, the Adult Attachment Questionnaire (AAQ), originally included 13 Likert-type items developed by breaking down Hazan and Shaver's (1987) prototype descriptions into separate propositions. It was later expanded by Simpson, Rholes and Phillips (1996) to include 17 items. The AAQ asks participants to consider how the feel in romantic relationships in general (i.e. not to think about a specific romantic partner). Factor analyses have found that the items of the AAQ load onto two separate constructs of attachment, anxiety and avoidance (Brennan et al., 1998; Simpson, 1990). Overall, the AAQ has been found to have good psychometric properties (Mikulincer & Shaver, 2007; Simpson, 1990; Simpson, Rholes & Phillips, 1996).

The Adult Attachment Scale (AAS) was developed by Collins and Read (1990). It includes 18 items answered on a five-point Likert scale concerning beliefs about whether or not the attachment figure (i.e. the romantic partner) is considered available and reactions to separation from the attachment figure. A factor analysis revealed that their questions loaded onto three factors which they called discomfort with closeness, discomfort depending on others and anxious concern about being abandoned or unloved (known as Close, Depend and Anxious, respectively; Collins & Read, 1990). Collins (1996) later revised the measure by changing the wording of a number of items and changing one item of the discomfort with

closeness subscale to increase clarity and improve reliability. The updated Revised Adult Attachment Scale (RAAS; Collins, 1996), demonstrated improved internal consistency with Cronbach's alpha coefficients ranging from .78 to .85. The RAAS was found to be highly correlated with the AAS (r = .98; Collins, 1996). While both measures have been shown to have good psychometric properties (Collins & Read, 1990; Collins, 1996;) some researchers have questioned its precision (Fraley, Waller & Brennan, 2000). Additionally, while it is generally assumed that the Close and Depend sub-scales both relate to the general construct of avoidant attachment, Shaver, Belsky and Brennan (2000) demonstrated that the two sub-scales do not completely overlap and that a distinction between the two types of avoidant attachment may be appropriate in some cases.

Bartholomew (1990) presented a slightly different conceptualisation of adult attachment to Hazan and Shaver (1987). She dichotomised both the working model of the self and working model of others as positive or negative resulting in four rather than three theoretical attachment prototypes; secure (positive model of self, positive model of other), preoccupied (negative model of self, positive model of other), fearful (negative model of self, negative model of other) and dismissing (positive model of self, negative model of other). Bartholomew and Horowitz (1991) developed the Relationship Questionnaire (RQ), which similar to Hazan and Shaver (1987), contained descriptions of each of the categories which participants are required to read and indicate which is most appropriate to them. Participants are also asked to rate how well each of the descriptions relate to them which allows researchers to use both categorical and continuous indicators. Griffin and Bartholomew (1994) later developed the Relationship Scales Questionnaire (RSQ), a 30-item measure that creates a score for the participant for each of the attachment patterns (secure, preoccupied, fearful and dismissing). It can also be used to place a person in the two-dimensional space "working model of self" (positive vs. negative) and "working model of other" (positive vs.

negative). The working model of self is considered comparable to the anxious attachment conceptualisation and the working model of other is considered comparable to the avoidant attachment conceptualisation (Mikulincer & Shaver, 2007). The RSQ is generally considered more reliable than the RQ however, both measures have been found to have low internal consistency coefficients, particularly for the four subscales (Mikulincer & Shaver, 2007).

The Experiences in Close Relationships Scale (ECR) was devised following Brennan et al.'s (1998) extensive factor analysis of adult attachment measures that were available at the time. Based on the finding that the two major dimensions first identified by Ainsworth, attachment anxiety and attachment avoidance were common to most measures, Brennan et al. (1998) created a 36-item measure (18 items measuring anxiety and 18 items measuring avoidance). The ECR was revised in 2000 by Fraley, Waller and Brennan. The Experiences in Close Relationships Revised (ECR-R; Fraley, Waller & Brennan, 2000) replaces some of the items of the ECR with different items taken from Brennan et al.'s (1998) large item pool in an attempt to create improved discrimination at the secure ends of both scales. While some researchers have questioned the wording of some of the items in the ECR-R (Fairchild & Finney; 2006; Mikulincer & Shaver, 2007), both measures are generally considered comparable in meaning (correlation between them consistently reported as .95; Mikulincer & Shaver, 2007). Both the ECR and ECR-R have been shown to have good psychometric properties when used in both clinical and non-clinical samples (Fairchild, & Finney, 2006; Parker, Johnson, & Ketring, 2011; Sibley, Fischer, & Liu, 2005; Sibley & Liu, 2004; Wei, Russell, Mallinckrodt, & Zakalik, 2004). A suggested limitation of the ECR is that by focusing primarily on anxiety and avoidance, the ECR does not adequately assess for attachment security (Mikulincer & Shaver, 2007).

As the above discussion illustrates, there have been a number of advances in the self-report measures of adult attachment literature. Today, there are a number of commonly used

measures including the AAQ, AAS, RQ and ECR as well as others not discussed here. While all measures generally distinguish between secure and multiple insecure attachment patterns, they differ in how they approach this task leading to several question and challenges. Such challenges include: whether or not attachment is best measured as categories or continuous scores; whether or not it is better to measure continuous ratings of individual attachment patterns (e.g. secure, anxious, avoidant, fearful) or dimensional scores (e.g. anxiety and avoidance); whether it is best to ask participants to consider their romantic relationships in general or a specific romantic partner; and how best to conceptualise the two major dimensions of attachment style (e.g. as working models or beliefs or as attachment system functioning in close relationships; Mikulincer & Shaver, 2007). A consensus regarding the best approach is yet to be made, thus further research is required to explore the most appropriate use of these measures.

Taking into account the work of Bowlby, Ainsworth and Main, as well as the findings of self-report adult attachment researchers (e.g., Hazan & Shaver, 1987; Simpson 1990; Collins & Read, 1990; Feeney, Noller & Hanrahan, 1994; Bartholomew & Horowitz, 1991; Brennan et al., 1998), Mikulincer and Shaver (2007) proposed a model of attachment-system functioning and dynamics in adulthood that is widely considered ground breaking in adult attachment literature. Their model outlines that when adults perceive threat and are driven to seek physical or mental proximity to the attachment figure, the attachment figure's availability appraised. If the attachment figure is considered available, the individual achieves a sense of felt security (which broadens and builds attachment security), if the attachment figure is not considered available, distress is compounded and an evaluation of whether or not proximity seeking is a viable option takes place. If proximity seeking is considered viable option, the individual engages in hyperactivating strategies which are considered to be associated with an anxious attachment style and include behaviours such as exaggerating the

seriousness of psychological and physical threats, exaggerating inability to cope without the attachment figure, intensifying experiences of distress, protesting an attachment figure's unavailability and acting childish or excessively needy (Mikulincer & Shaver, 2007). They often lead to damaged self-esteem by increasing the individuals sense of helplessness and vulnerability and the development of negative appraisals of others who are considered untrustworthy or unfaithful. If proximity seeking is not considered viable, the individual engages in deactivating strategies which are considered to be associated with an avoidant attachment style and include behaviours such as attempts to control and avoid psychological proximity to the attachment figure, avoidance of interactions that require intimacy or interdependence, suppression of attachment related thoughts and emotions, reluctance to admit personal weaknesses and suppression of thoughts related to rejection or abandonment. In some cases, both hyperactivating and deactivating strategies are employed and this approach is considered reflective of disorganised attachment sometimes observed in the strange situation (Main & Hesse, 1990).

Attachment theory (Bowlby, 1969, 1973, 1982) is considered to be a theory of psychopathology from the very beginning. Bowlby drew from his experiences as a psychiatrist in the development of the theory and sought to explain emotional problems that he witnessed in children and adults. Building on Bowlby's original writings, Mikulincer and Shaver's (2007) model of attachment outlined above, suggests that the foundation for mental health lies in attachment security, that is, repeated experiences with loving and sensitive attachment figures. Conversely, attachment insecurity, or an over-reliance on deactivating or hyperactivating strategies associated with negative (or perceived negative) experiences with rejecting or neglectful attachment figures, puts a person at risk for the development of psychological disorders.

Depression

Depression is considered a common but serious psychiatric condition. While individual experiences of depression can vary greatly, the defining feature of all depressive disorders is considered to be a manifestation of abnormal affect or mood (American Psychiatric Association, 2013). Typically, this includes pervasive feelings of sadness, feeling low, hopeless or empty but can also include irritability, loss of interest and motivation or apathy (Hammen & Watkins, 2013). Other symptoms of depression include: cognitive changes including negative thoughts such as low self-evaluation, negative expectations, self-blame and self-criticism and suicidal thoughts (Beck & Alford, 2009) as well as impairment in mental processes including concentration, decision making and memory; behavioural changes including withdrawal from social activities or usual behaviours as well as changes in actual motor behaviour in the form of being slowed down or agitated and restless; and physical symptoms including changes in appetite, sleep and energy (American Psychiatric Association, 2013). There are a number of depressive disorders classified in The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–5*; American Psychiatric Association, 2013) with the most common including major depressive disorder and persistent depressive disorder (dysthymia). Subtypes include depression developed in the peripartum period, also known as postnatal depression (Cox, Murray & Chapman, 1993), or with a seasonal pattern, also known as seasonal affective disorder (Melrose, 2015). Depressive symptoms also feature in other psychiatric conditions including adjustment disorder and bipolar I and bipolar II disorders (American Psychiatric Association, 2013).

Many depression researchers consider depressive symptoms to occur on a continuum ranging from mild, moderate to severe (Angst, Sellar & Merikangas, 2000; Flett, Vredenburg & Krames, 1997; Geiselmann & Bauer, 2000; Goldberg, 2000). Subthreshold forms of depression are not only highly prevalent (Cuijpers, DeGraaf & Van Dorsselaer, 2004;

Horwarth, Johnson, Klerman & Weissman, 1992), but are also associated with substantial economic costs (Cuijpers et al., 2007), have considerable impact on quality of life (Cuijpers, Smit & van Straten, 2007) and are a risk factor for the development of major depressive disorder (Cuijpers & Smit, 2004). As such, methods to identify depressive symptoms at all levels of severity, despite diagnosis are required. Self-report measures of depression have been developed for specifically this purpose. There are many empirically based, self-report measures of depression symptoms available to practitioners with varied empirical evidence available regarding their psychometric properties and usefulness. Some of the more commonly used measures are outlined below.

Self-Report Measures of Depression

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh (1961) and its revised edition the Beck Depression Inventory II (BED-II; Beck, Steer & Brown, 1996) each contain 21 items regarding affective, cognitive, motivational and physiological symptoms associated with depression. Respondents are asked to evaluate each question on a severity scale ranging from 0-3 with a total score ranging from 0-63. For the BDI, scores from 0-9 indicates a non-depressed state, 10-18 reflects a mild level of depression, 19-29 reflects a moderate level of depression and 30-63 indicates a severe level of depression (Beck, Steer & Garbin, 1988). The BDI II was developed following criticism that the original version did not reflect diagnostic criteria for a major depressive episode. Four items were replaced with items regarding agitation, worthlessness, concentration and energy loss, questions regarding appetite and sleep were adapted to include overeating and oversleeping as well as reduced appetite and insomnia, and the time frame for endorsing items was extended from one week to two weeks (Hammen & Watkins, 2013). For the BDI II scores of 0-13 reflect a non-depressed state, 14-19 indicates mild depression, 20-28 moderate depression and 29-63 reflects severe depression. Numerous studies of the psychometric

properties of the BDI and BDI II (Beck, Steer & Garbin, 1988; Erford, Johnson & Bardoshi, 2016; Wang & Gorenstein, 2013), indicate high internal consistency, test-retest reliability and convergent validity with other depression measures. The BDI is suggested to tap into other constructs such as self-esteem, performance difficulties, somatic complaints other forms of psychopathology and the effects of personality on symptom reporting (Beck et al., 1988; Enns, Larsen & Cox, 2000).

The Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) and its revised edition the Centre for Epidemiological Studies Depression Scale, Revised (CESD-R; Eaton, Muntaner, Smith, Tien & Ybarra, 2004) are 20 item scales that assess a respondent's perceived affect, somatic complaints, interactions with others and motor functioning over the past seven days. The questions are responded to on 4-point Likert scales ranging from 0-3. The total score ranges from 0-60 with higher scores indicating more symptom severity. People with a score of 16 or above are considered to have clinically relevant depressive symptoms (Eaton et al., 2004). In order to reflect changes in diagnostic criteria at the time, the revised edition, CESD-R, includes questions assessing anhedonia, psychomotor retardation/agitation and suicidal ideation (Eaton et al., 2004). Both the CES-D and CESD-R have demonstrated good psychometric properties (Eaton et al., 2004; Radloff, 1977). However, given the CESD and CESD-R were both designed for use in epidemiologic surveys in community settings with the goal of screening for the presence of a depressive syndrome, the measures are not generally sensitive to changes individual changes in level of depression for those who screen positive (Eaton et al., 2004). As such, the measure is not considered applicable to individual level treatment planning and outcomes assessment.

The Depression, Anxiety and Stress Scales (DASS-42, DASS-21; Lovibond & Lovibond, 1995) were developed as part of a research program with the goal of developing anxiety and depression scales that cover the full range of core symptoms of depression and

anxiety guided by existing conceptions and determined on empirical grounds. During the testing a new scale emerged with items referring to difficulty relaxing and nervous tension loading onto a separate factor which was later labelled “stress” (Lovibond & Lovibond, 1995). The scales were developed using a boot-strapping strategy in which factors were defined initially in terms of clinical consensus, but were refined empirically using multiple groups factor analysis. The DASS were developed using non-clinical samples and no external criteria (i.e. diagnostic criteria of the DSM) were used in the scale development (Lovibond & Lovibond, 1995). Both the DASS 42 and its shortened version the DASS 21 produce the three sub-scales Depression, Anxiety and Stress and have been shown to have good psychometric properties in both clinical and non-clinical samples (Anthony, Bieling, Enns & Swinson, 1998; Paige, Hook & Morrison, 2007; Lovibond & Lovibond, 1995). Overall, the measure has been found to be moderately sensitive to change and the Depression subscale has been found to have a ceiling effect indicating the measure lacks discrimination at the upper ranges of depression severity (Page, Hook & Morrison, 2007).

Links Between Adult Attachment and Depressive Symptoms

Research has demonstrated that depression is inextricably linked to functioning in social relationships (Kupferberg, Bicks & Hassler, 2016). Individuals with depression have been found to demonstrate impairments in social affiliation, such as social anhedonia (Blanchard, Horan & Brown, 2001), social communication, such as impaired emotion recognition (Leppänen, 2006), and social perception, such as theory of mind deficits (Wolkenstein, Schonenberg, Schirm & Hautzinger, 2011). Attachment theory provides a useful framework which has the potential to further our understanding of the relationship between depression and impairments in social functioning, more specifically to functioning in romantic relationships.

As previously mentioned attachment theory (Bowlby, 1969, 1973, 1982) was developed in the context of Bowlby wanting to explain emotional problems he had witnessed in children and adults, first in his work in a home for maladjusted boys and later in his training and practice as a psychiatrist. In his theory, Bowlby suggested that negative attachment experiences such as a perceived inability to attain stable and secure attachment relationships, being repeatedly told one is unlovable/inadequate and experiencing the death of an attachment figure can lead to the development of an internal working model of the self as unlovable and unwanted and working models of others as unavailable, rejecting or punitive. These experiences and associated beliefs can lead to a predisposition to feelings of hopelessness (Seligman, 1975) and lower an individual's self-esteem, which Bowlby believed is the function behind the transition from sadness to depression. The advancements in our understanding of adult attachment relationship functions as summarised in Mikulincer and Shaver's (2007) model of adult attachment mentioned earlier, also provide further understanding of the link between attachment relationships in adulthood and the development of depressive symptoms. Specifically, that the over-reliance on hyperactivating and deactivating strategies can lead to deficits in emotion regulation resulting in an increased risk of psychological illnesses such as depression (Mikulincer & Shaver, 2007). From a cognitive perspective, an individual's attachment style may contribute to the development of depression by influencing their schemas and expectations of others as well as their cognitive appraisals of interpersonal events.

Bowlby's original ideas have received empirical support from longitudinal studies which have shown that prolonged separations from or death of an attachment figure in childhood leads to a heightened risk of depression in adulthood (Harris, Brown & Bifulco, 1990; Cummings & Cicchetti, 1990) and studies that have found adults who describe their parents as more unavailable and rejecting are more likely to have depression (Gotlib, Mount,

Cordy & Whiffen, 1988). Additionally, there are many studies that have explored the relationship between adult attachment dimensions as assessed by self-report measures of adult attachment such as the AAS and ECR and depressive symptoms as measured by self-report measures such as the BDI and CES-D. Overall, most studies of non-clinical samples report secure attachment is associated with lower levels of depressive symptoms (e.g. Onishi, Gjerde & Block, 2001; Wayment & Vierthaler, 2002, Heene, Buysse & Van Osst, 2005) and attachment anxiety is associated with higher levels of depressive symptoms (e.g. Shaver, Schachner & Mikulincer, 2005; Oliver & Whiffen, 2003; Wei, Russel, Mallinckrodt & Zakalik, 2004). Attachment avoidance is also found to be associated with increased depressive symptoms although to a lesser degree than attachment anxiety (e.g. Aarts, Hinnen, Gerdes, Archerman & Brandjes, 2014; Strodl & Noller, 2003). These associations have also been documented in clinical or special populations including people with chronic pain, eating disorders, drug abuse and anxiety (e.g. Forsythe, Romano, Jensen & Thorn, 2012; Tasca et al., 2009; Luna, Horton, Newman & Mallor, 2016; Heidari, Lewis, Allahyari, Azadfallah & Bertino, 2013). Studies have also explored moderating factors to the association between adult attachment and depression with factors identified including self-esteem (e.g. Hankin, Kassel & Abela, 2005), low self-efficacy (e.g. Strodl & Noller, 2003), hopelessness (e.g. Hankin, Fraley, Lahy & Waldman, 2005) and interpersonal difficulties such as excessive reassurance seeking and feelings of loneliness (e.g. Engels-Rutger, Finkenauer, Meeus & Dekovic, 2001; Wei, Russel & Zakalik, 2005).

Conclusion and Recommendations for Future Research

The purpose of this literature review was to provide an overview of the theory and empirical research that has contributed to our understanding of the relationship between adult attachment phenomena and depressive symptoms, with a specific focus on the self-report method of assessing adult attachment dimensions pioneered by Hazan and Shaver in 1987.

Currently, there are a number of self-report measures used in adult attachment research. While most have demonstrated good psychometric properties, there remains confusion and lack of consensus regarding the most appropriate use of the measures. Despite this, there are many studies that utilise different self-report measures that have consistently reported an association between adult attachment dimensions and depressive symptoms. Given this vast amount of research, there is a clear need for information synthesis. While there have been a number of general reviews of this literature (Mikulincer & Shaver, 2007; Mikulincer & Shaver, 2012) there have been no systematic reviews or meta-analyses. Meta-analysis can provide an unbiased overview of the body of knowledge of a particular topic and is considered the gold standard of empirical evidence. Thus, it is recommended that future research focus on conducting systematic reviews and meta-analyses of available data in this area. Additionally, as there continues to be a lack of consensus regarding the most appropriate use of self-report measures of attachment, studies utilising different measures should be compared in meaningful ways to determine how the choice of specific measures may be influencing the results of the study. Exploring self-report attachment measures as a moderating factor in a meta-analysis would assist in achieving this goal.

References

Aarts, F., Hinnen, C., Gerdes, V. E., Acherman, Y., & Brandjes, D. P. (2014). Psychologists' evaluation of bariatric surgery candidates influenced by patients' attachment representations and symptoms of depression and anxiety. *Journal of Clinical Psychology in Medical Settings, 21*(1), 116-123. doi:10.1007/s10880-014-9385-4

Ainsworth, M. D. S. (1979). Infant–mother attachment. *American Psychologist, 34*(10), 932. doi:10.1037/0003-066X.34.10.932

Ainsworth, M. D. S. (1989). Attachments Beyond Infancy. *American Psychologist, 44*(4), 709-716. doi:10.1037/0003-066X.44.4.709

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: Assessed in the Strange Situation and at Home*: Hillsdale, NJ: Erlbaum.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of Attachment: A Psychological Study of the Strange Situation*. New York: Psychology Press.

Ainsworth, M. D. S., & Bowlby, J. (1991). An ethological approach to personality development. *American Psychologist, 46*(4), 333. doi:10.1037/0003-066X.46.4.333

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing.

Angst, J., Sellar, R., & Merikangas, K. R. (2000). Depressive Spectrum Diagnoses. *Comprehensive Psychiatry, 41*(1), 39-47. doi:10.1016/S0010-440X(00)80007-3

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10*(2), 176. doi:10.1037/1040-3590.10.2.176

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships, 7*(2), 147-178. doi:10.1177/0265407590072001

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226. doi:10.1037/0022-3514.61.2.226

Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment Theory and Close Relationships* (pp. 25-45). New York: Guilford Press.

Beck, A. T., & Alford, B. A. (2009). *Depression: Causes and Treatment*. Philadelphia: University of Pennsylvania Press.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*: Psychological Corporation.

Beck, A. T., Steer, R. A., & Carbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*(1), 77-100. doi:10.1016/0272-7358(88)90050-5

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*(6), 561-571. doi:10.1001/archpsyc.1961.01710120031004

Blanchard, J. L., Horan, W. P., & Brown, S. A. (2001). Diagnostic differences in social anhedonia: A longitudinal study of schizophrenia and major depressive disorder. *Journal of Abnormal Psychology, 110*(3), 363-371. doi:10.1037/0021-843X.110.3.363

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation- anxiety and anger*. New York: Basic Books

Bowlby, J. (1979). *The Making and Breaking of Affectional Bonds*. London: Tavistock Publications.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss-Sadness and depression*. New York: Basic Books

Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry, 52*(4), 664. doi:10.1111/j.1939-0025.1982.tb01456.x

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

Cassidy, J. (1988). Child-mother attachment and the self in six-year-olds. *Child Development*, 121-134. doi:10.2307/1130394

Collins, N. L. (1996). Working models of attachment: Implications for explanation, emotion, and behavior. *Journal of Personality and Social Psychology, 71*(4), 810. doi:10.1037/0022-3514.71.4.810

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*(4), 644. doi:10.1037/0022-3514.58.4.644

Cox, J. L., Murray, D., & Chapman, G. (1993). A controlled study of the onset, duration and prevalence of postnatal depression. *The British Journal of Psychiatry, 163*(1), 27-31. doi:10.1192/bjp.163.1.27

Crittenden, P. M. (1988). Relationships at risk. In J. Belsky (Ed.), *Clinical Implications of Attachment* (pp. 136-174). Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc., Publishers.

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: risk profiles, functional disability, health care use and risk of developing major depression. *Journal of Affective Disorders, 79*(1), 71-79. doi:10.1016/S0165-0327(02)00348-8

Cuijpers, P., & Smit, F. (2004). Subthreshold depression as a risk indicator for major depressive disorder: a systematic review of prospective studies. *Acta Psychiatrica Scandinavica, 109*(5), 325-331. doi:10.1111/j.1600-0447.2004.00301.x

Cuijpers, P., Smit, F., Oostenbrink, J., De Graaf, R., Ten Have, M., & Beekman, A. (2007). Economic costs of minor depression: a population-based study. *Acta Psychiatrica Scandinavica, 115*(3), 229-236. doi:10.1111/j.1600-0447.2006.00851.x

Cuijpers, P., Smit, F., & Van Straten, A. (2007). Psychological treatments of subthreshold depression: a meta-analytic review. *Acta Psychiatrica Scandinavica, 115*(6), 434-441. doi:10.1111/j.1600-0447.2007.00998.x

Cummings, E., & Cicchetti, D. (1990). Attachment, depression, and the transmission of depression. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the Preschool Years: Theory, Research and Intervention* (pp. 339-372). London: The University of Chicargo Press.

Eaton, W. W., Smith, C., Ybarra, M., Muntaner, C., & Tien, A. (2004). Center for Epidemiologic Studies Depression Scale: Review and Revision (CESD and CESD-R). In M. E. Maruish (Ed.), *The Use of Psychological Testing for Treatment Planning and Outcomes Assessment: Instruments for Adults* (pp. 363-377). Mahwah, NJ: Lawrence Erlbaum Associates.

Engels, R. C., Finkenauer, C., Meeus, W., & Deković, M. (2001). Parental attachment and adolescents' emotional adjustment: The associations with social skills and relational competence. *Journal of Counseling Psychology, 48*(4), 428. doi:10.1037/0022-0167.48.4.428

Enns, M. W., Larsen, D. K., & Cox, B. J. (2000). Discrepancies between self and observer ratings of depression: the relationship to demographic, clinical and personality

variables. *Journal of Affective Disorders, 60*(1), 33-41. doi:10.1016/S0165-0327(99)00156-1

Erford, B. T., Johnson, E., & Bardoshi, G. (2016). Meta-Analysis of the English Version of the Beck Depression Inventory–Second Edition. *Measurement and Evaluation in Counseling and Development, 49*(1), 3-33. doi:10.1177/0748175615596783

Fairchild, A. J., & Finney, S. J. (2006). Investigating validity evidence for the experiences in close relationships-revised questionnaire. *Educational and Psychological Measurement, 66*(1), 116-135. doi:10.1177/0013164405278564

Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in Adults: Clinical and Developmental Perspectives* (pp. 128-152). New York: Guilford Press.

Flett, G. L., Vredenburg, K., & Krames, L. (1997). The continuity of depression in clinical and nonclinical samples. *Psychological Bulletin, 121*(3), 395. doi:10.1037/0033-2909.121.3.395

Forsythe, L. P., Romano, J. M., Jensen, M. P., & Thorn, B. E. (2012). Attachment style is associated with perceived spouse responses and pain-related outcomes. *Rehabilitation Psychology, 57*(4), 290. doi:10.1037/a0030083

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*(2), 350. doi:10.1037/0022-3514.78.2.350

Geiselman, B., & Bauer, M. (2000). Subthreshold depression in the elderly: Qualitative or quantitative distinction? *Comprehensive Psychiatry, 41*(2), 32-38. doi:10.1016/S0010-440X(00)80006-1

Goldberg, D. (2000). Plato versus Aristotle: categorical and dimensional models for common mental disorders. *Comprehensive Psychiatry, 41*(2), 8-13. doi:10.1016/S0010-440X(00)80002-4

Gotlib, I. H., Mount, J. H., Cordy, N. I., & Whiffen, V. E. (1988). Depression and perceptions of early parenting: a longitudinal investigation. *The British Journal of Psychiatry, 152*(1), 24-27. doi:10.1192/bjp.152.1.24

Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology, 67*(3), 430. doi:10.1037/0022-3514.67.3.430

Hammen, C., & Watkins, E. (2013). *Depression* (2nd ed.). University of California, LA: Psychology Press.

Hankin, B. L., Fraley, R. C., Lahey, B. B., & Waldman, I. D. (2005). Is depression best viewed as a continuum or discrete category? A taxometric analysis of childhood and adolescent depression in a population-based sample. *Journal of Abnormal Psychology, 114*(1), 96. doi:10.1037/0021-843X.114.1.96

Hankin, B. L., Kassel, J. D., & Abela, J. R. (2005). Adult attachment dimensions and specificity of emotional distress symptoms: Prospective investigations of cognitive risk and interpersonal stress generation as mediating mechanisms. *Personality and Social Psychology Bulletin, 31*(1), 136-151. doi:0.1177/0146167204271324

Harris, T., Brown, G. W., & Bifulco, A. (1990). Loss of parent in childhood and adult psychiatric disorder: A tentative overall model. *Development and Psychopathology, 2*(3), 311-328. doi:10.1017/S0954579400000791

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511. doi:10.1037/0022-3514.52.3.511

Heene, E., Buysse, A., & Van Oost, P. (2007). An interpersonal perspective on depression: The role of marital adjustment, conflict communication, attributions, and attachment within a clinical sample. *Family Process, 46*(4), 499-514. doi:10.1111/j.1545-5300.2007.00228.x

Heidari, S., Lewis, A. J., Allahyari, A., Azadfallah, P., & Bertino, M. D. (2013). A pilot study of brief psychodynamic psychotherapy for depression and anxiety in young Iranian adults: The effect of attachment style on outcomes. *Psychoanalytic Psychology, 30*(3), 381. doi:10.1037/a0033503

Horwath, E., Johnson, J., Klerman, G. L., & Weissman, M. M. (1992). Depressive symptoms as relative and attributable risk factors for first-onset major depression. *Archives of General Psychiatry, 49*(10), 817-823. doi:10.1001/archpsyc.1992.01820100061011

Kupferberg, A., Bicks, L., & Hasler, G. (2016). Review article: Social functioning in major depressive disorder. Neuroscience and Biobehavioral Reviews, 69313-332. doi:10.1016/j.neubiorev.2016.07.002

Leppänen, J. M., (2006). Emotional information processing in mood disorders: a review of behavioral and neuroimaging findings. Current Opinion In Psychiatry, 19(1), 34. doi:10.1097/01.yco.0000191500.46411.00

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation.

Luna, N., Horton, G., Newman, D., & Malloy, T. (2016). An empirical study of attachment dimensions and mood disorders in inpatient substance abuse clients: The mediating role of spirituality. *Addiction Research & Theory, 24*(3), 248-260. doi:10.3109/16066359.2015.1119267

Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *The John D. and Catherine T. MacArthur Foundation series on mental health and development. Attachment in the preschool years: Theory, research, and intervention* (pp. 161-182). Chicago: University of Chicago Press.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, 66-104. doi:10.2307/3333827

Main, M., & Solomon, J. (1986). Discovery of an insecure-disorganized/disoriented attachment pattern. In T. B. Brazelton & M. W. Yogman (Eds.), *Affective Development in Infancy* (pp. 95-124). Westport, CT: Ablex Publishing.

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the Preschool Years: Theory, Research, and Intervention* (pp. 121-160). Chicago: University of Chicago Press.

Melrose, S. (2015). Seasonal affective disorder: an overview of assessment and treatment approaches. *Depression Research and Treatment, 2015*. doi:10.1155/2015/178564

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in Adulthood: Structure, Dynamics, and Change*. New York: Guilford Press.

Mikulincer, M., & Shaver, P. R. (2012). An attachment perspective on psychopathology. *World Psychiatry, 11*(1), 11-15. doi:10.1016/j.wpsyc.2012.01.003

Oliver, L. E., & Whiffen, V. E. (2003). Perceptions of parents and partners and men's depressive symptoms. *Journal of Social and Personal Relationships, 20*(5), 621-635. doi:10.1177/02654075030205003

Onishi, M., Gjerde, P. F., & Block, J. (2001). Personality implications of romantic attachment patterns in young adults: A multi-method, multi-informant study. *Personality and Social Psychology Bulletin, 27*(9), 1097-1110. doi:10.1177/0146167201279003

Page, A. C., Hooke, G. R., & Morrison, D. L. (2007). Psychometric properties of the Depression Anxiety Stress Scales (DASS) in depressed clinical samples. *British Journal of Clinical Psychology, 46*(3), 283-297. doi:10.1348/014466506X158996

Parker, M., Johnson, L. N., & Ketring, S. A. (2011). Assessing attachment of couples in therapy: A factor analysis of the experiences in close relationships scale. *Contemporary Family Therapy, 33*(1), 37-48. doi:10.1007/s10591-011-9142-x

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401. doi:10.1177/014662167700100306

Roisman, G. I., Holland, A., Fortuna, K., Fraley, R. C., Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology, 92*(4), 678-697. doi:10.1037/0022-3514.92.4.678

Seligman, M. E. (1975). *A series of books in psychology. Helplessness: On depression, development, and death*. New York: WH Freeman/Times Books/Henry Holt & Co.

Shaver, P. R., Belsky, J., & Brennan, K. A. (2000). The adult attachment interview and self-reports of romantic attachment: Associations across domains and methods. *Personal Relationships, 7*(1), 25-43. doi:10.1111/j.1475-6811.2000.tb00002.x

Shaver, P. R., Schachner, D. A., & Mikulincer, M. (2005). Attachment style, excessive reassurance seeking, relationship processes, and depression. *Personality and Social Psychology Bulletin, 31*(3), 343-359. doi:10.1177/0146167204271709

Sibley, C. G., Fischer, R., & Liu, J. H. (2005). Reliability and validity of the revised experiences in close relationships (ECR-R) self-report measure of adult romantic attachment. *Personality and Social Psychology Bulletin, 31*(11), 1524-1536. doi:10.1177/0146167205276865

Sibley, C. G., & Liu, J. H. (2004). Short-term temporal stability and factor structure of the revised experiences in close relationships (ECR-R) measure of adult attachment. *Personality and Individual Differences, 36*(4), 969-975. doi:10.1016/S0191-8869(03)00165-X

Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology, 59*(5), 971. doi:10.1037/0022-3514.59.5.971

Simpson, J. A., Rholes, W. S., & Phillips, D. (1996). Conflict in close relationships: an attachment perspective. *Journal of Personality and Social Psychology, 71*(5), 899. doi:10.1037/0022-3514.71.5.899

Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. *Child Development*, 1184-1199. doi:10.2307/1128475

Strodl, E., & Noller, P. (2003). The relationship between attachment, depression and panic disorder with agoraphobia. *Personal Relationships, 10*(2), 171-186. doi:10.1111/1475-6811.00044

Strodl, E., & Noller, P. (2003). The relationship of adult attachment dimensions to depression and agoraphobia. *Personal Relationships, 10*(2), 171-186. doi:10.1111/1475-6811.00044

Tasca, G. A., Szadkowski, L., Illing, V., Trinneer, A., Grenon, R., Demidenko, N., . . . Bissada, H. (2009). Adult attachment, depression, and eating disorder symptoms: The mediating role of affect regulation strategies. *Personality and Individual Differences, 47*(6), 662-667. doi:10.1016/j.paid.2009.06.006

Wang, Y.-P., & Gorenstein, C. (2013). Psychometric properties of the Beck Depression Inventory-II: a comprehensive review. *Revista Brasileira de Psiquiatria, 35*(4), 416-431. doi:10.1590/1516-4446-2012-1048

Wayment, H. A., & Vierthaler, J. (2002). Attachment style and bereavement reactions. *Journal of Loss &Trauma, 7*(2), 129-149. doi:10.1080/153250202753472291

Wei, M., Mallinckrodt, B., Russell, D. W., & Abraham, W. T. (2004). Maladaptive perfectionism as a mediator and moderator between adult attachment and depressive mood. *Journal of Counseling Psychology, 51*(2), 201. doi:0.1037/0022-0167.51.2.201

Wei, M., Russell, D. W., Mallinckrodt, B., & Zakalik, R. A. (2004). Cultural equivalence of adult attachment across four ethnic groups: Factor structure, structured means, and associations with negative mood. *Journal of Counseling Psychology, 51*(4), 408-417. doi:10.1037/0022-0167.51.4.408

Wei, M., Russell, D. W., & Zakalik, R. A. (2005). Adult attachment, social self-efficacy, self-disclosure, loneliness, and subsequent depression for freshman college students: A longitudinal study. *Journal of Counseling Psychology, 52*(4), 602. doi:10.1037/0022-0167.52.4.602

Weiss, R. S. (1991). The attachment bond in childhood and adulthood. In C. M. Parkes, J. Stevenson-Hinde, & P. Marri (Eds.), *Attachment across the life cycle* (Vol. 8, pp. 66-76). London: Routledge.

Wolkenstein, L., Schoenenberg, M., Schirm, E., & Hautzinger, M. (n.d). I can see what you feel, but I can't deal with it: Impaired theory of mind in depression. Journal of Affective Disorders, 132(1-2), 104-111. doi: 10.1016/j.jad.2011.02.010

World Health Organisation. (2017). *Depression and Other Common Mental Disorders: Global Health Estimates*. Retrieved from http://apps.who.int/iris/bitstream/10665/254610/1/WHO-MSD-MER-2017.2-eng.pdf

Manuscript for Submission to the Clinical Psychology Review

The Relationship Between Self-Report Adult Attachment Dimensions and Depressive Symptoms: A Meta-Analysis

Melinda Vardanega, The University of Newcastle

Associate Professor Ross Wilkinson, The University of Newcastle

Corresponding Author:

Associate Professor Ross Wilkinson

School of Psychology, University of Newcastle

University Drive, Callaghan NSW 2308

Australia

Email: Ross.Wilkinson@newcastle.edu.au

Phone: +61 2 4921 6947

Fax: +61 2 4921 4980

Abstract

Depression affects hundreds of thousands of Australian adults every year, is a major cause of disease burden and is the most common condition associated with suicide. Research has consistently reported a link between attachment in adulthood and the presence of depressive symptoms. The aim of the current study was to conduct a meta-analysis on the extant empirical literature reporting statistical relationships between self-reported attachment dimensions and self-reported depressive symptoms. A literature search and screening process resulted in a total of 107 studies (N=31,916) being selected for inclusion. Results demonstrated that secure attachment is negatively correlated with depression with a medium effect size (r = -.28), and both avoidant and anxious attachment are positively correlated with depression with medium and large effect sizes (r = .27 and r = .40, respectively). Since significant heterogeneity was found across the studies a number of categorical moderator variables related to sample and study design characteristics were explored. The relationship between various attachment dimensions and depression were moderated by sample composition, type of attachment measure and language of the sample. Implications for future research and clinical applications are discussed.

Key words: Adult attachment, depression, self-report.

The Relationship Between Self-Report Adult Attachment Dimensions and Depressive Symptoms: A Meta-Analysis

Bowlby (1907-1990) proposed that attachment is an integral part of human nature that is influential "from the cradle to the grave" (Bowlby 1979, p.154). He also considered negative attachment experiences in childhood, to be a risk factor for the later development of psychological illnesses such as depression. Attachment theory has significantly evolved since Bowlby's original texts. Using self-report instruments to measure attachment thoughts, feelings and behaviours in adulthood (e.g. Hazan & Shaver, 1987; Collin & Read, 1990; Bartholomew & Horowitz, 1991; Brennan, Clark & Shaver, 1998; Mikulincer & Shaver, 2007) contemporary adult attachment researchers have further developed our understanding of the relationship between attachment phenomena and depressive symptoms. Depression is a debilitating mental health condition which is the leading cause of disability worldwide, significantly contributing to the overall global burden of disease (World Health Organisation, 2017). To date, there are a huge amount of studies that utilise self-report measures of adult attachment that have consistently reported an association between adult attachment dimensions and depressive symptoms. Given this vast amount of research, there is a clear need for information synthesis. While there have been a number of general reviews of this literature (Mikulincer & Shaver, 2007; Mikulincer & Shaver, 2012) there have been no systematic reviews or meta-analyses. Meta-analysis can provide an unbiased overview of the body of knowledge of a particular topic and is considered the gold standard of empirical evidence. Additionally, it is widely accepted in the literature that quantitative reviews are considered superior to narrative reviews.

Attachment Theory

Attachment theory, originally derived from the joint work of John Bowlby and Mary Ainsworth (Ainsworth, 1979, 1989; Bowlby, 1969, 1973, 1980, 1982), is a broad framework which seeks to understand the nature of human relationships. Bowlby proposed that the emotional bond between and infant and their primary caregiver is driven from a biological system that developed from an evolutionary need of the child to seek protection (Bowlby, 1969, 1973, 1980, 1982). When the child perceives danger, the attachment system is activated and the child engages in attachment seeking behaviours such as crying, reaching out, and when able, actively seeking out the attachment figure, with the goal of achieving a felt sense of security (Sroufe & Waters, 1977). The attachment figure is also considered to be a safe base from which the child can explore the world, leading to healthy growth and development (Ainsworth, 1979,1989). Bowlby (1969, 1973, 1980, 1982) argued that based on attachment experiences, humans organise their beliefs about themselves and others in relationships using internal mental models or schemas. These models include appraisals of the availability of the caregiver as well as judgements about one's own worthiness of care and attention.

Adult Attachment

While Bowlby acknowledged that there are attachment relationships beyond infancy, and he considered romantic partners to be the archetype of adult attachment bonds, he did not develop these ideas in detail. It was not until the 1980s that researchers began to empirically explore attachment phenomena in adulthood. As a result of this task, two independent "traditions" of adult attachment research emerged. Extending on the work of Ainsworth and her colleagues (Ainsworth, Blehar, Waters & Wall, 1978), developmental psychologists Main, Kaplan and Cassidy (1985) developed the Adult Attachment Interview (AAI). The AAI assesses an adult's memories of childhood experiences with their parents termed an

adult's "attachment state of mind". Around the same time, social psychologists were interested in understanding current adult attachment relationships and developed a number of self-report scales to assess the processes involved in these relationships (e.g. Hazan & Shaver, 1987; Collins & Read, 1990; Bartholomew & Horowitz, 1991; Brennan, Clark & Shaver, 1998). While both methods are valuable in understanding attachment in adulthood, there is generally trivial-to-small overlap identified between the two attachment measurement traditions and they are considered to predict distinct aspects of functioning in adult attachment relationships (Roisman et al., 2007). This study will focus exclusively on the self-report method.

Self-Report Measures of Adult Attachment

Hazan and Shaver (1987) introduced the first self-report measure of adult attachment by developing three descriptions of how people think, feel and behave in romantic relationships based on Ainsworth's three major attachment styles (avoidant, secure, anxious; Ainsworth et al., 1978). They asked participants to indicate which description was most appropriate to them and found the distribution of attachment styles in adults to be almost identical to the observed distribution in children (Hazan & Shaver, 1987). The problems associated with categorical measures soon became evident, and researchers overcame this by deconstructing Hazan and Shaver's (1987) descriptions to create continuous, multi-item measures answered on Likert-type scales such as the Adult Attachment Scale (Collins & Read, 1990) and the Adult Attachment Questionnaire (Simpson, 1990).

Bartholomew and Horowitz (1991) presented a different conceptualisation to Hazan and Shaver (1987). They dichotomised Bowlby's internal working models as positive or negative resulting in four, rather than three attachment styles secure (positive model of self, positive model of other), preoccupied (negative model of self, positive model of other),

fearful (negative model of self, negative model of other) and dismissing (positive model of self, negative model of other). They developed the Relationship Questionnaire, a measure similar to Hazan and Shaver's (1987) original measure which included descriptions of the four categories (Bartholomew & Horowitz, 1994). A multi-item measure which creates sub scores for each of the four categories was also later developed (Bartholomew, 1994).

In an attempt to consolidate findings in the self-report adult attachment literature, Brennan et al. (1998) conducted an extensive factor analysis of adult attachment measures available at the time. They found that most items loaded onto two independent constructs they termed attachment avoidance and attachment anxiety. These factors are considered comparable to Bartholomew and Horowitz's (1991) model of the self and model of other (Brennan et al., 1998). As a result of this study, the Experiences in Close Relationships Scale (ECR; Brennan et al., 1998) was devised which includes items that had the highest loading on the two factors avoidance and anxiety. Despite these advances in the self-report adult attachment literature, no single measure of adult attachment is widely considered superior to all others. To date, there are a number of self-report measures of adult attachment available for researchers including, and in addition to, the measures already discussed. As such, the current research includes a variety of scales.

Depression

While individual experiences of depression can vary greatly, the defining feature of all depressive disorders is considered to be a manifestation of abnormal affect or mood (American Psychiatric Association, 2013). Typically, this includes pervasive feelings of sadness, feeling low, hopeless or empty but can also include irritability, loss of interest and motivation or apathy (Hammen & Watkins, 2013). Other symptoms of depression include cognitive changes such as low self-evaluation, self-blame and self-criticism (Beck & Alford,

2009), impairment in mental processes such as concentration, behavioural changes such as withdrawal from social activities and psychomotor retardation/agitation and physical symptoms such as changes in appetite, sleep and energy (American Psychiatric Association, 2013). The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–5*; American Psychiatric Association, 2013) classifies a number of depressive disorders such as major depressive disorder and persistent depressive disorder (dysthymia). Subtypes include depression developed in the peripartum period, also known as postnatal depression (Cox, Murray & Chapman, 1993), or with a seasonal pattern, also known as seasonal affection disorder (Melrose, 2015). Depressive symptoms also feature in other psychiatric conditions including adjustment disorder and bipolar I and bipolar II disorders (American Psychiatric Association, 2013).

Many depression researchers consider depressive symptoms to occur on a continuum ranging from mild, moderate to severe (Angst, Sellaro & Merikangas, 2000; Flett, Vredenburg & Krames, 1997; Geiselmann & Bauer, 2000; Goldberg, 2000;). Subthreshold forms of depression are not only highly prevalent (Cuijpers, DeGraaf & Van Dorsselaer, 2004; Horwarth, Johnson, Klerman & Weissman, 1992), but are also associated with substantial economic costs (Cuijpers et al., 2007), have considerable impact on quality of life (Cuijpers, Smit & van Straten, 2007) and are a risk factor for the development of major depressive disorder (Cuijpers & Smit, 2004). In order to identify depressive symptoms at all levels of severity, psychometrically sound measures such as the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961) and the Centre for Epidemiological Studies Depression Scale Revised (CESD-R; Eaton, Muntaner, Smith, Tien & Ybarra, 2004) have been developed. These measures (as well as others) have shown to be useful in identifying depressive symptoms in both clinical and non-clinical samples.

Links Between Adult Attachment and Depressive Symptoms

Research has demonstrated that depression is inextricably linked to functioning in social relationships (Kupferberg, Bicks & Hassler, 2016). Individuals with depression have been found to demonstrate impairments in social affiliation, such as social anhedonia (Blanchard, Horan & Brown, 2001), social communication, such as impaired emotion recognition (Leppänen, 2006), and social perception, such as theory of mind deficits (Wolkenstein, Schonenberg, Schirm & Hautzinger, 2011). Attachment theory provides a useful framework which has the potential to further our understanding of the relationship between depression and impairments in social functioning, more specifically to functioning in romantic relationships. The use of reliable assessments of social impairments in depression will allow for the development of treatments that specifically target such deficits. Such advances have the potential to improve prognosis and functional outcomes for depressed patients.

Bowlby (1969, 1973, 1980, 1982) understood from the beginning, that attachment experiences have a profound emotional impact. He believed that negative attachment experiences can result in mental representations of others as unavailable and rejecting and of the self as unlovable and unwanted. Such experiences and beliefs are considered to predispose individuals to psychological illnesses such as depression. This link has further been explored in self-report adult attachment literature, with studies consistently reporting as association between self-report adult attachment dimensions and depressive symptoms as measure by self-report depression measures such as the BDI and CES-D. Specifically it has been reported that secure attachment is associated with lower levels of depressive symptoms (e.g. Onishi, Gjerde & Block, 2001; Wayment & Vierthaler, 2002, Heene, Buysse & Van Osst, 2005) and attachment anxiety and avoidance are associated with increased levels of depressive symptoms, with the effect being greater for anxiety than avoidance (e.g. Shaver,

Schachner & Mikulincer, 2005; Wei, Russel, Mallinckrodt & Zakalik, 2004; Aarts, Hinnen, Gerdes, Archerman & Brandjes, 2014). These associations have also been documented in clinical or special populations such as people with chronic pain, eating disorders, drug abuse and anxiety (e.g. Forsythe, Romano, Jensen & Thorn, 2012; Tasca et al., 2009; Luna, Horton, Newman & Mallor, 2016; Heidari, Lewis, Allahyari, Azadfallah & Bertino, 2013).

The Present Study

The current research will present a systematic review and meta-analysis of published, empirical studies that report an association between self-report adult attachment dimensions as measured by scales such as the AAS, AAQ, RSQ and ECR, and depressive symptoms as measured by self-report scales such as the BDI and CES-D (as well as a number of others) in both clinical and non-clinical samples. Consistent with current findings, it is hypothesised that self-reported secure attachment will be moderately negatively correlated with depression symptoms and that both self-reported attachment anxiety and avoidance will be moderately positively correlated with depression, with the association being greater for attachment anxiety. Additionally, given the variety of available self-report attachment measures, we will explore the choice of attachment measure as a potential moderating factor in an attempt to further understand the impact of attachment measure choice on study findings. Additional moderators, including sample and study design characteristics, will also be explored.

Method

Inclusion Criteria and Definitions

For the purpose of this meta-analysis, depression was defined as self-reported symptoms of depression as measured by validated scales such as the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock & Erbaugh, 1961) and the Centre for Epidemiological Studies-Depression Scale (CES-D; Radloff 1977). We included depression

developed in the postnatal period as measured by scales such as the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden & Sagovski, 1987). Studies that used scales that measured over-all well-being (e.g. Davis, Moris & Drake; 2016) or clinician administered depression scales such as the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962) and Hamilton Rating Scale for Depression (HAM-D; Hamilton 1960) were not included. Adult attachment was conceptualised as dimensions or categories of attachment as measured by self-report measures such as the Adult Attachment Scales (Collins & Read, 1990), the Attachment Style Questionnaire (ASQ; Feeney, Noller, Hanrahan, 1994) and the Experiences in Close Relationships-Revised (Fraley, Waller, & Brennan, 2000). Single item attachment measures such as Hazan & Shaver's original self-report measure (1987) and the Relationship Questionnaire (Bartholomew & Horowitz, 1991) were not included due to their low reliability (Sharfe & Bartholomew, 1994). Only romantic and general attachment measures were included (i.e., not attachment to friends, therapists, pets or God). Adults were defined as samples aged 17 years and over. Due to a lack of translation resources, we only included English language articles or articles that had been previously translated to English. Only studies published in peer-reviewed journals were accepted. As we were exclusively interested in published data, dissertations and theses were not included unless they were published beyond dissertation specific journals.

Literature Search

In August 2017, we searched databases for journal articles specifically, focusing on self-report measures of adult attachment and self-reported symptoms of depression. We used five strategies to systematically collect studies. First, the electronic databases PsychINFO, PsychARTICLES, PsychEXTRA, Sage, Web of Science, Sciencedirect, Scopus, Ebsco Megafile Premier, Pubmed, Psychology Database and Proquest were searched using the keywords "adult attachment" and depress* not "adult attachment interview". The limits

English language were applied where there was capacity to do so. Secondly, we searched Google Scholar (advanced search) applying our keywords to search article titles. Thirdly, we reviewed articles reported in Mikulincer & Shaver's (2007) Attachment Bases of Psychopathology chapter in Attachment in Adulthood: Structure, Dynamics, and Change, which lists studies reporting a relationship between self-report attachment and depression measures in non-clinical samples. We then reviewed the reference lists of all included articles for studies not yet identified in our search. Finally, we contacted prominent researchers in the field to request any pre-published articles or current research.

Results of the search strategies and selection processes are summarised in detail in the Prisma diagram (Moher, Liberati, Tetzlaff, Altman, The PRISMA group, 2009) in Figure 1. As can be seen, we initially identified 2512 articles before 487 duplicates were identified and removed. Titles and abstracts were screened broadly against our inclusion criteria resulting in 300 articles remaining. Full text examination of these articles against our inclusion criteria resulted in a final 105 articles reporting 107 studies. Of the 195 articles that were deemed ineligible after full-text review; 56 were excluded because they were dissertations or conference papers, 14 were excluded because they did not include a self-report measure of depression, 29 were excluded because they did not include a multi-item self-report attachment measure, 29 were excluded because the article was not in English or we could not gain access to the full-text article, four were excluded because the sample was under 17 years of age, two articles were excluded because it was a missed duplicate, one article was excluded because it included the same sample reported in another included study and 61 were excluded because effect sizes could not be calculated from the results reported. This left a final sample of 104 articles reporting 106 studies to be included in the meta-analysis (see Appendix A and B). To establish inter-rater reliability, a second researcher reviewed the full

text of a randomly selected subsample of articles (k = 100). Inter-rated reliability was found to be very high (98%) and discrepancies were resolved through discussion.**Data Extraction**

After the selection process was finalised, data was extracted for the meta-analysis. Specifically, we extracted data related to the sample characteristics including total sample size, number of males, females and unreported gender, mean age and age range, country in which the study was conducted, and type of sample (clinical, non-clinical, university sample or not); study design including scales used to measure attachment and depression whether or not the scale was an English or a translated scale (participant nationality was used as an proxy when this was not explicitly reported); and effect size data. The effect size utilised in the meta-analysis included a Pearson's *r* correlation coefficient for self-reported adult attachment dimensions and self-reported depression symptoms. Based on Brennan, Clark and Shaver's (1998) extensive factor analysis of available adult attachment measures, it was decided that insecure attachment would be conceptualised as either Anxious attachment or Avoidant attachment. As such, when it was the case that a study reported a correlation for an attachment subtype other than Anxious and Avoidant (e.g., discomfort with closeness, need for approval) a decision was made as to which correlations would be included in the meta-analysis. In some cases, the subscales had already been manipulated to reflect Anxious and Avoidant attachment and in other cases we chose which subscales loaded the highest onto Anxiety and Avoidance consistent with Brennan et al. (1998). Please see Table 1 for a summary of the factorial loadings these decisions were based on. Correlations for Secure attachment and self-reported depression symptoms were extracted where it was available. Correlations between Confidence (e.g. as measured by the ASQ) and depression were also extracted for inclusion in the Secure attachment analysis.

Statistical Methods

The computer software program Comprehensive Meta-Analysis (CMA; Version 3.0, Biostat Inc.) was used to conduct the statistical analysis. Pearson's *r* coefficients and associated sample sizes were imported to the program. The program converted the correlations to Fisher's *z* for analysis and then converted the results back to Pearson's *r* for reporting (Borenstein, Hedges, Higgins & Rothstein, 2009). A weighted mean effect size and 95% confidence interval were first calculated for each study before using the random effects model (Borenstein et al., 2009) to compute an overall effect size. The random effects model was chosen because it is a conservative approach that accounts for expected variation between studies (i.e., within-study variance and between-study variance; Borenstein et al., 2009).

Potential outliers (i.e., effect sizes with standardised residuals higher than two) were identified. A sensitivity analysis was then run using the CMA "one study removed" procedure, in which it is analysed if the removal of any of the potential outliers significantly impacted the overall result. (Borenstein et al., 2009). If the results remained stable, the outliers were not removed from the analysis. Tests of heterogeneity were conducted using the *Q*, I^2, and *Tau* values to determine if the effect sizes were consistent across studies. A significant *Q* value indicates overall heterogeneity. The I^2value estimates the proportion of observed variance that is real with values of 25%, 50% and 75% considered low, moderate and high, respectively (Higgins, Thompson, Deeks & Altman, 2003). The *Tau* value further describes the distribution of the observed variance (Borenstein et al., 2009).

Subgroup analysis was applied to test for potential categorical moderators of the overall results (Baron & Kenny, 1986; Little, Card, Bovaird, Preacher & Crandall, 2007). Potential

moderators included gender, attachment measure, English or translated measures, clinical or non-clinical samples and students or non-students. Finally, we conducted publication bias analysis to test for the fact that studies with significant results are more likely to be published than studies with smaller, insignificant findings (Smith, 1980). This included visually inspecting a funnel plot of Fisher's Z against the relevant sample size (a symmetrical distribution of plotted points around the mean effect size indicates the absence of publication bias; Egger, Smith, Schneider & Minder, 1997) before applying the trim and fill method (Duval & Tweedie, 2000) which calculates an adjusted effect size and confidence interval based on the assumed missing studies from the funnel plot.

Results

Study characteristics

As reported in the Prisma diagram (see Figure 1), 106 studies drawn from 104 articles were selected for the meta-analyses. The main characteristics of the included studies are reported in Table 2. The ECR was the most predominantly used attachment measure (34 studies), followed by AAS/RAAS (27 studies), ECR-R (20 studies), RSQ (8 studies), AAQ (7 studies), ASQ (5 studies), ECR-SF (4 studies) and MAQ (1 study). Out of a total of 31,916 participants, 17,208 (54%) were female and 12,035 (38%) were male. The gender of 2673 (8%) participants was not reported. Samples were predominantly non-clinical (55%), with 40% of studies drawing participants from university samples. Within the clinical populations, mental health samples contributed 15% of studies, medical patient populations contributed 8% of studies and perinatal parents contributed 7% of studies. The articles came from a diverse range of countries with the majority of studies originating from the US (58%). Other prominent countries included Canada (8%), Turkey (6%), Australia (5%) and the UK (5%).

Heterogeneity

In total, there were three separate meta-analyses conducted for the outcome variables secure, avoidant and anxious attachment. Heterogeneity analyses were conducted for each of the meta-analyses to determine the consistency of effect sizes across studies. In accordance with recommendations from Borenstein et al. (2009), we used the *Q*, I^2, and Tau^2 values to determine heterogeneity. A significant *Q* value indicates overall heterogeneity, with I^2 indicating the proportion of observed dispersion that is real, and Tau^2 being the estimate of the between-study variance in true effects. All three of the analyses demonstrated overall heterogeneity as evidenced by significant *Q* values (all $p \leq .005$); and high I^2 proportions. Tau^2 values for the secure, avoidant and anxious attachment analyses were 0.053, 0.017 and 0.011 respectively, indicating reasonably narrow distributions.

Outliers

Potential outliers were defined as effect sizes with a standard residual higher than two. There were no potential outliers identified for the secure analysis, four identified for the avoidant analysis and 10 identified for the anxious analysis. Using the CMA "one study removed" calculation, we conducted a sensitivity analysis to determine if the removal of any study significantly impacted the overall effect size. For all three analyses, the results remained stable. Thus, no potential outliers were removed.

Main Analysis

Secure Attachment. A final sample of 28 studies (N=5353) reported a correlation between secure attachment and depression. Most studies reported a negative correlation between secure attachment and depression, with effect sizes ranging from r = -0.06 to r = -0.640. Two studies, Chi, Zhang, Wu and Wang (2016) and Besharat, Issazadegan, Etemadinia, Golssanamlou and Abdolmanafi (2014), reported positive correlations between secure attachment and depression (r = 0.16 and r = 0.17, respectively). The overall meta-

analysis revealed, secure attachment was negatively correlated depression r = -0.283. This is a medium effect size based on Cohen's (1988, 1992) conventional standards.

Avoidant Attachment. A total of 102 studies (N=31,169) were found to report a correlation between avoidant attachment and depression. There were two studies that reported a negative correlation between avoidant attachment and depression. Chi, Zhang, Wu and Wang (2016) reported a correlation of r = -0.330 and Heidari, Lewis, Allahyari, Bertino and Azadfallah (2013) reported a correlation of r = -0.09. All other studies reported a positive correlation with effect sizes falling between r = 0.007 and r = 0.570. In the meta-analysis, the overall relationship between avoidant attachment and depression was found to be a positive correlation of r = 0.274. Again, this can be considered a medium effect size using conventional standards (Cohen, 1988, 1992).

Anxious Attachment. There were 104 studies (N= 31,317) that reported a correlation between anxious attachment and depression. All studies reported a positive correlation with effects sizes ranging from r = 0.090 to r = 0.670. The meta-analysis found that the relationship between anxious attachment and depression was a positive correlation of r = 0.400. This is a large effect size based on conventional standards (Cohen, 1988, 1992).

Sub-group Analysis

Sub-group analysis was conducted to explore if differences in study methods or participants were able to assist in explaining the variance observed in our samples (Borenstein et al, 2009). We tested eight categorical moderators including gender (male or female), attachment measure (ECR family versus other, ECR versus ECR-R and RSQ versus other), clinical and non-clinical samples, depressed and non-depressed clinical samples, students and non-students and English language versus translated scales (see Tables 4, 5 and 6). **Gender.** We conducted three sub-group analyses for secure, avoidant and anxious

attachment to determine if there was a significant difference between effect sizes reported for males and females. In the analysis of data from secure individuals , there were five studies that reported effect sizes for males and nine studies that reported effect sizes for females. There was no significant difference between effect sizes for males (r = -0.318) and females (r = -0.185), p = 0.340. The analysis of data from avoidant individuals included 28 studies that reported an effect size for females and 11 studies for males. There was no significant difference found between effect sizes for males (r =0.254) and females (r = 0.280), p = 0.740. The analysis of data from anxious individuals included 29 studies that reported effect sizes for females and 12 studies that included effect sizes for males. No significant difference was detected between males (r = 0.421) and females (r= 0.424) for the anxious attachment analysis, p = 0.913.

Attachment Measure. Given the numerous self-report measures available to assess attachment in adulthood, we conducted multiple sub-group analysis to explore if the relationship between attachment and depression differed as a result of the attachment measure used. A summary of effect sizes found for each of the attachment measures used can be seen in Table 7. As some researchers have suggested that the ECR may be superior to other measures (Mikulincer & Shaver, 2007; Sibley et al., 2005), we first conducted a sub-group analysis comparing studies that used the 'family' of ECR measures (ECR, ECR-R, ECR-SF) verses all other attachment measures. Avoidant and anxious attachment analyses were conducted as the secure attachment analysis only included one study that utilised the ECR (Onishi, Gjerde & Block, 2001) who used a three-step prototype matching method to develop continuous prototype scores for Bartholomew and Howowtiz (1991) four attachment patterns: secure, preoccupied, dismissing and fearful. The avoidant attachment analysis included 61 studies which used the ECR family of measures and 44 studies using other measures. The anxious attachment analysis included 61 studies utilising ECR measures and 46 studies using

other measures. Neither sub-group analyses were found to be statistically significant (avoidant attachment: ECR family $r = 0.267$, other $r = 0.285$, $p = 0.523$; anxious attachment: ECR family $r = 0.409$, other $r = 0.386$, $p = 0.294$).

As researchers have suggested that the ECR and ECR-R are distinct measures (Mikulincer & Shaver, 2007), we conducted a sub-group analysis to compare effect sizes for studies using these measures. Again, the secure attachment analysis was not included because only one study used the ECR. The avoidant attachment analysis included 35 studies using the ECR and 21 studies using the ECR-R. The anxious attachment analysis included 36 studies using the ECR and 21 studies using the ECR-R. Neither sub-group analysis was found to be statistically significant (avoidant attachment: ECR $r = 0.273$, ECR-R $r = 0.257$, $p = 0.615$; anxious attachment: ECR $r = 0.418$, ECR-R $r = 0.403$, $p = 0.583$).

After exploring the individual effect sizes, we noticed studies which utilised the RSQ showed a large range in the effect sizes reported. Consequently, we conducted three separate subgroup analyses exploring if the relationship between attachment and depression differed as a result of whether or not the RSQ was used as the attachment measure of choice. The secure attachment analysis included four studies using the RSQ and 25 studies using other measures and this comparison was not found to be statistically significant (RSQ $r = -0.386$, other $r = -0.265$, $p = 0.308$). The avoidant attachment analysis included six studies using the RSQ and 99 studies using other measures. This comparison was found to be statistically significant, $p = 0.011$, with a stronger correlation found for studies using the RSQ ($r = 0.411$) compared to studies utilising other measures ($r = 0.266$). The anxious attachment analysis included eight studies using the RSQ and 99 studies using other measures. This comparison was approaching significance, $p = 0.055$, with a weaker effect size found for studies which reported using the RSQ ($r = 0.324$) compared to other measures ($r = 0.405$).

Clinical and Non-clinical. Three sub-group analyses were conducted to explore if there was a significant difference between clinical and non-clinical samples. The secure attachment analysis included 15 clinical and 14 non-clinical samples. No significant difference was detected between these sub-groups (clinical r = -0.270, non-clinical r = -0.295, p = 0.774). The avoidant attachment analysis included 50 clinical and 55 non-clinical samples with no significant difference being found between the sub-groups (clinical r = 0.291, non-clinical r = 0.262, p =0.305). The anxious attachment analysis included 51 clinical and 56 non-clinical samples. Again, no significant difference was found between studies using clinical versus non-clinical samples (clinical r = 0.399, non-clinical r =0.400, p = 0.965).

Clinical (depressed) and Clinical (other). Three separate analyses were conducted to determine if there was a significant difference between the effect size of clinical (depressed) versus clinical (other). There were three clinical (depressed) studies and 12 clinical (other) studies included in the secure analysis. No significant difference was found between these sub-groups (clinical (depressed) r = -0.184, clinical (other) r = -0.287, p = 0.593). The avoidant attachment analysis included five clinical (depressed) and 45 clinical (other) effect sizes with no significant difference detected between the sub-groups (clinical (depressed) r = 0.253, clinical (other) r = 0.295, p = 0.665). The anxious attachment analysis included a total of four clinical (depressed) and 47 clinical (other) effect sizes with no significant differences being found between the sub-groups (clinical (depressed) r = 0.381, clinical (other) r = 0.400, p = 0.830).

Student and Non-student. There were three separate analyses conducted to determine if the relationship between attachment and depression differed, depending on whether or not the sample was drawn from university students. The secure attachment analysis included seven student sample and 22 non-student sample studies and the anxious

attachment analysis included 38 student sample and 69 non-student sample studies. Both the secure and anxious attachment sub-group analysis did not detect a significant difference between sample types (secure: student r = -0.225, non-student r = -0.301, p = 0.461; anxious: student r = 0.395, non-student r = 0.403, p = 0.723). The avoidant attachment analysis included 38 student sample and 67 non-student sample studies. A significant difference was detected between the sample types, with student samples (r = 0.235) yielding a significantly smaller effect size than non-student samples (r = 0.299; p = 0.025).

English versus Translated Measures. We conducted three separate analyses to explore if the relationship between attachment and depression differed according to whether or not the study used English language or translated measures. For the secure attachment analysis, there were a total of 23 studies using English language and 6 studies using translated scales. The difference between these sub-groups was found to be statistically significant with the effect size for studies using English language measures (r =-0.335) found to be stronger than the effect size for studies using translated measures (r = -0.058; p = 0.002). The avoidant attachment analysis included 78 studies using English language measures and 27 studies using translated measures. For the avoidant attachment analysis, studies using English language measures were found to have a stronger effect size (r = 0.291) compared to studies using translated measures (r = 0.228; p = 0.038). The anxious attachment analysis included 79 English and 28 translated. No significant difference was found for the anxious attachment analysis (English r = 0.406, translated r = 0.383, p = 0.328).

Publication Bias

Potential publication bias was assessed by visually inspecting a Funnel plot of Fisher's Z against sample size for each of the three meta-analyses as well as Duval and

Tweedie's "Trim and Fill" method (See Appendix x). Visual inspection of the secure attachment funnel plot revealed a slightly asymmetrical distribution of plotted points around the mean effect size. The Trim and Fill Report suggested there were some studies missing indicating that the effect size found (r = -0.283), may be an underestimation of the true effect (r = -0.343). Visual inspection of the avoidant and anxious attachment funnel plots was more difficult given the number of studies included in these analyses. The Trim and Fill report for the avoidant attachment analysis suggested some studies may be missing, indicating the effect size found (r = 0.274) may be an overestimation of the actual effect size (r = 0.223). The Trim and Fill report for the anxious attachment analysis suggested there may be studies missing, indicating the effect size found (r = 0.400) may be an underestimation of the actual effect size (r = 0.423).

Discussion

The purpose of this study was to conduct a systematic review and meta-analysis exploring the relationships between self-report adult attachment dimensions and self-report depressive symptoms in both clinical and non-clinical samples. Three separate meta-analyses were conducted in total; secure attachment (28 studies), avoidant attachment (102 studies) and anxious attachment (104 studies). The findings were consistent with the hypotheses. Secure attachment was found to be moderately negatively correlated with depressive symptoms and both avoidant and anxious attachment were found to be positively correlated with depressive symptoms, with the effect size being greater for anxious attachment. While the moderate effect size found for the avoidant analysis was consistent with the expectations the strong effect size for the anxious analysis somewhat more than was expected. These findings suggest that secure attachment in adult romantic relationships is associated with lower levels of depressive symptoms and that both avoidant and anxious attachment in adult

romantic relationships are associated with higher levels of depressive symptoms with the effect being greater for anxious attachment.

All three analyses demonstrated overall heterogeneity and we conducted a number of subgroup analysis to determine if the variation in the effect sizes could be attributed to a number of sample and design characteristics as well as what attachment measure was utilised. The first potential moderating factor we explored was the gender of participants, but significant difference in effect sizes for males and females were not detected. It should be noted, however, that a significant proportion of the studies which reported separate effect sizes for males and females included samples that were married couples or couples in a relationship. Thus, the effect sizes for males and females were often not independent of each other. Additionally, while many studies reported the overall number of males and females in their studies, far fewer studies reported effect sizes for males and females (especially if the males and females in the study were not in a relationship together). Both these factors impacted the ability of the current study to be able to understand how the relationships between insecure attachment and depression may vary according to gender. It is recommended that researchers consider reporting separate effect sizes for males and females as a matter of course, irrespective if the participants are in a relationship. This will allow future meta-analyses the opportunity to further explore the impact of gender on the associations between adult attachment dimensions and depressive symptoms.

Despite significant developments in self-report methods of measuring adult attachment styles/dimensions since Hazan and Shaver (1987) developed their original measure, there continues to be a lack of consensus on a single, most appropriate self-report measure of adult attachment. Additionally, despite often being used interchangeably, some of the commonly used measures differ in their underlying theoretical constructs. Thus, we conducted a number of sub-group analyses to explore if the choice of attachment measure

significantly impacted the effect sizes found in the current meta-analyses. We were only able to do this for the avoidant and anxious analyses as the ECR does not specifically measure attachment security, except in the vague absence of avoidance and anxiety. As can be seen in Table 2, the majority of studies (55%) used the ECR 'family' of measures (ECR, ECR-R, ECR-SF). Given it is the most commonly used measure and that some researchers have suggested it may be superior to others, we compared effect sizes for the studies using the ECR measures compared to all other measures. For the three analyses, there were no significant differences found, indicating that studies using ECR measures had comparable results to studies using other attachment measures. Breaking down the ECR family of measures further, we also wanted to explore if there were differences between studies using the ECR and the ECR-R, as some have suggested that the two differ significantly from each other. We did not find any evidence to support this suggestion, with no significant differences found between studies using the ECR and studies using the ECR-R for both the avoidant and anxious analyses. These findings suggest that the ECR family of measures are comparable to other measures of adult attachment and that the ECR and ECR-R do not differ significantly from each other, at least in respect to their ability to recognise the association between attachment insecurities and depressive symptoms.

We also explored the use of the RSQ as a potential moderating factor, given the RSQ is based on Bartholomew's (1990) four category model of attachment where as a number of other multi-item adult attachment measures are created from Hazan and Shaver's (1987) original three categories. The secure attachment analysis did not detect a significant difference, which is not particularly surprising given the secure attachment conceptualisation between the two models is consistent. Where the results did differ significantly, was in the avoidant analysis, with studies using the RSQ yielding a stronger effect size compared to those using other measures. In interpreting these results, we need to consider the underlying

model of the RSQ, which includes the fearful (high on avoidance, high on anxiety) category that is not included in the Hazan and Shaver (1987) original three categories. Taking into account Mikulincer and Shaver's (2007) model of adult attachment, individuals high on fearful avoidance have trouble deciding between hyperactivating strategies (e.g. overdependence and excessive demands for attention) and deactivating strategies (e.g. ignoring or denying attachment needs) which leads to an incoherent blend of contradictory behaviours when the attachment system is activated. Similarly, to those high on dismissing avoidance, individuals high on fearful avoidance will often cope by distancing and withdrawing from romantic partners. However, unlike those high on dismissing avoidance, fearfully avoidant people continue to experience anxiety and long for their romantic partner's love and support. A potential explanation of this finding is that a higher effect size was found because studies using the RSQ were measuring fearful avoidance (i.e. those who are dependent on others but who avoid intimacy due to fear of rejection) whereas studies using other instruments were classifying both dismissing avoidance (i.e. those who also avoid intimacy but who are self-reliant) and fearful avoidance into an overall 'avoidant' category. Given that fearful avoidance contains both avoidance and 'anxiety', the correlation between avoidance and depression when using the RSQ may be boosted as anxious attachment has been consistently found to have the highest correlation with depression. The anxious subgroup analysis was approaching significance with studies using the RSQ resulting in a weaker effect size compared to studies using other measures, which may be explained by the fact that other measures may be classifying those people who are fearfully avoidant as anxious resulting in an overall larger effect size. These findings suggest that more research is needed to explore and understand how different types of insecure attachment, as measured by the RSQ, are uniquely associated to depressive symptoms. Furthermore, it provides evidence that not all attachment measures are comparable and they should not be used interchangeably

in research. A thorough understanding of the measure's underlying constructs, specifically related to the different types of attachment avoidance, and how this relates to the research question should be a consideration of researchers interested in using adult attachment measures.

Given that many studies have used non-clinical samples to explore the relationship between adult attachment dimensions and depressive symptoms, it is an important consideration whether or not non-clinical samples are an appropriate analogue for clinical patients. To explore this consideration, we conducted two subgroup analyses. The first compared studies using general clinical samples (e.g., eating disorders, bereaved, chronic pain, psychiatric patients) and non-clinical samples. We did not detect any significant differences between these subgroups for all three analyses indicating that the associations found between adult attachment dimensions and depressive symptoms did not differ depending on whether or not the sample was drawn from a clinical population. We also compared studies using clinically depressed samples versus non-clinical samples. Although there were no significant differences found, it is important to note that there were only a small number of studies utilising clinically depressed patients (secure = three studies, avoidant = five studies, anxious = four studies). Therefore, a lack of power needed to identify a significant difference may have impacted the results. Overall, the results suggest that the use of non-clinical samples did not impact the overall effect sizes found, and provides empirical support for the use of analogue studies in adult attachment research. Additionally, the findings suggest that more work exploring adult attachment insecurities, as measured by self-report, in clinically depressed samples would help in understanding how these relationships might differ from those who are not classified as clinically depressed.

It has been suggested that the use of university/college students in behavioural science research (i.e., samples drawn from Western, industrialised and high socioeconomic status

societies) limits the generalisability of study findings to the overall population (Henrich, Heine & Norenzayan, 2010). The studies in this analysis included both student and non-student, non-clinical samples and thus, we were able to explore the use of students as a potential moderating factor. Both the secure and anxious analyses did not detect a significant difference in these sample types. The avoidant analysis, however, did detect a significant difference with the effect size being significantly smaller for students compared to non-student samples. This finding could be attributed to the fact that students represented some of the youngest participants in the current meta-analysis. While attachment style is relatively stable over lifespan, changes can occur based on experiences in romantic relationships. Results of a longitudinal study measuring adult attachment styles found that thirty percent of participants underwent changes in their attachment style over a four-year period (Kirkpatrick and Hazan, 1994). .Future research should seek to understand how attachment dimensions may be related to depressive symptoms throughout the lifespan. Furthermore, caution should be applied to the use of student samples in self-report adult attachment research, particularly if the research question is exploring attachment avoidance.

Cross-cultural research is necessary to understand how cultural differences can influence study findings and cross-cultural researchers are often confronted by the need to translate scales from one language to another and to do this with limited resources. It is necessary for self-report instruments to be both culturally acceptable and appropriately translated to be valid (Cha, Kim & Erlen, 2007). In an attempt to understand the potential impact of the use of translated measures in studies reporting associations between adult attachment and depressive symptoms, we created a subgroup analysis that compared studies using English language measures and those using translated measures. A potential limitation of this analysis is that where it was not specifically stated that a study utilised translated measures, the location of the study and/or details of the study participants ethnicity was used

as a proxy. This could have led to inaccuracy when assigning studies to one of the two subgroups. Despite this, the finding that studies using translated measures yielded significantly smaller effect sizes than studies using English measures (difference was statistically significant for the secure and avoidant analyses and while not statistically significant, was in same direction for the anxious analysis) provides evidence that the full subtlety of meaning of the measures may have been lost when translated from the original language to another. This finding questions the validity of translated measures that have been produced and are currently being used in cross-cultural adult attachment research and suggests that more work is needed in this area, specifically with respect to establishing measurement invariance.

Limitations

There are a number of limitations that should be taken in consideration when interpreting the results of this study. Firstly, given the scope of the current research (i.e. a component of a Clinical Master's program) we had limited time and personnel resources. This meant that the search strategies had to be feasible within this context. Certain methodological decisions such as the exclusion of dissertations and theses as well as studies in other languages, reduced the breadth of the studies included in the analysis. This decision could have impacted the overall result and broadening the exclusion criteria in future meta-analyses should be considered.

Additionally, where there are multiple studies by the same author(s) (e.g., Aarts et al., 2014, 2015) there is a possibility of overlap between samples. When this was the case, our first strategy was to inspect the reported sample characteristics. Where there were identical features, only the most recent study was included in the analysis. In cases where it was less clear, attempts were made to contact authors to confirm the samples were independent. In the

absence of confirmation, it was assumed there was no overlap and the studies were treated as independent samples.

Another limitation is related to the data extraction methodology. In order to create meaningful comparisons among a large amount of studies using a range of self-report instruments, we chose to reduce the analysis to including only correlations between depressive symptoms and secure, avoidant and anxious attachment. This resulted in some data being excluded from the analysis which may provide additional information to the unique relationships between certain dimensions of adult attachment and depressive symptoms (this was also highlighted in the above discussion related to the use of the RSQ). For example, studies using the RSQ to measure adult attachment often reported correlations for the sub-scales Secure, Pre-occupied, Dismissing and Fearful. We did not include correlations for the Dismissing subcategory because the Fearful category loaded higher onto the avoidance dimension in Brennan et al.'s (1999) factor analysis, which the data extraction method was based upon. This meant that the current study did not specifically explore the unique relationship between Dismissing attachment and depressive symptomology. Additionally, in some cases we were required to manipulate subscales to fit into one of the three attachment types. For example, studies using the AAS often reported correlations for the sub-scales Comfort with Closeness, Comfort Depending on others and Anxious Concerns About Abandonment. The decision was made to use the Comfort with Closeness to represent secure attachment, the Anxious Concerns about Abandonment to represent anxious attachment and we reversed the score of the Comfort with Dependency subscale as a representation of avoidant attachment, as this seemed to make the most conceptual sense. Manipulating the measures in this way, has the potential to influence their validity as it is not how the measures were originally intended to be interpreted. However, subgroup analyses

conducted for the secure attachment meta-analysis did not indicate any significant differences between the measures used indicating that this was not the case.

It should also be noted that this meta-analysis did not explore the impact of various self-report depression measures used in the studies. To date, there are a considerable number of self-report depression measures available for researchers, which is reflected by the number of various measures included in this analysis (see Table 2). It is considered that future studies conduct sub-group analyses to determine the influence of depression measure on the relationship between self-report adult attachment dimensions and self-report depressive symptoms. It would be of particular interest to compare the use of postnatal measures such as the Edinburgh Postnatal Depression Scale to other more general depression measures.

Finally, there are limitations associated with self-report methods of assessment such as their reliance on conscious appraisals of one's functioning which is vulnerable to bias. To further enhance our understanding of the association between adult attachment phenomena and depression, future meta-analyses should broaden the scope of methodologies applied to measure these constructs. For example, interview based methods to measure adult attachment such as the AAI and formal diagnoses of depression made by trained clinicians.

Conclusion

The attachment framework has proven to be both a popular and useful framework for understanding the importance of close interpersonal relationships for psychological health and adjustment. Overall, this meta-analysis contributes to this understanding by providing robust evidence that, as measured by common self-report instruments of adult attachment, secure attachment expectancies associated with close relationships are associated with fewer self-reported depressive symptoms and insecure attachment expectancies in close relationships, both avoidance and more so anxiety, are associated with more self-reported

depressive symptoms. These results support the use of adult attachment measures in clinical practice and suggest that identifying and addressing insecure attachment expectancies (i.e. attachment related thoughts and behaviours) may be useful in the psychological treatment of depression. The further development of measurement strategies and technologies to investigate individual differences in attachment and their relationship to other constructs will be important to advance this field of enquiry.

References

Aarts, F., Geenen, R., Gerdes, V. E., van de Laar, A., Brandjes, D. P., & Hinnen, C. (2015). Attachment anxiety predicts poor adherence to dietary recommendations: an indirect effect on weight change 1 year after gastric bypass surgery. *Obesity Surgery, 25*(4), 666-672. doi:10.1007/s11695-014-1423-7

Aarts, F., Hinnen, C., Gerdes, V. E., Acherman, Y., & Brandjes, D. P. (2014). Psychologists' evaluation of bariatric surgery candidates influenced by patients' attachment representations and symptoms of depression and anxiety. *Journal of Clinical Psychology in Medical Settings, 21*(1), 116-123. doi:10.1007/s10880-014-9385-4

Ainsworth, M. D. S. (1979). Infant–mother attachment. *American Psychologist, 34*(10), 932. doi:10.1037/0003-066X.34.10.932

Ainsworth, M. D. S. (1989). Attachments Beyond Infancy. *American Psychologist, 44*(4), 709-716. doi:10.1037/0003-066X.44.4.709

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: Assessed in the Strange Situation and at Home*: Hillsdale, NJ: Erlbaum.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing.

Angst, J., Sellar, R., & Merikangas, K. R. (2000). Depressive Spectrum Diagnoses. *Comprehensive Psychiatry, 41*(1), 39-47. doi:10.1016/S0010-440X(00)80007-3

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173. doi:10.1037/0022-3514.51.6.1173

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships, 7*(2), 147-178. doi:10.1177/0265407590072001

Bartholomew, K. (1994). Assessment of individual differences in adult attachment. *Psychological Inquiry, 5*(1), 23-67. doi:10.1207/s15327965pli0501_2

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226. doi:10.1037/0022-3514.61.2.226

Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment Theory and Close Relationships* (pp. 25-45). New York: Guilford Press.

Beck, A. T., & Alford, B. A. (2009). *Depression: Causes and Treatment*. Philadelphia: University of Pennsylvania Press.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*(6), 561-571. doi:10.1001/archpsyc.1961.01710120031004

Besharat, M. A., Issazadegan, A., Etemadinia, M., Golssanamlou, S., & Abdolmanafi, A. (2014). Risk factors associated with depressive symptoms among undergraduate students. *Asian Journal of Psychiatry, 10*, 21-26. doi:10.1016/j.ajp.2014.02.002

Blanchard, J. L., Horan, W. P., & Brown, S. A. (2001). Diagnostic differences in social anhedonia: A longitudinal study of schizophrenia and major depressive disorder. *Journal of Abnormal Psychology, 110*(3), 363-371. doi:10.1037/0021-843X.110.3.363

Borenstein, M., Hedges, L. V., Higgins, J., & Rothstein, H. R. (2009). *Introduction to Meta-Analysis*. United Kingdom: John Wiley & Sons, Ltd.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation- anxiety and anger*. New York: Basic Books

Bowlby, J. (1979). *The Making and Breaking of Affectional Bonds*. London: Tavistock Publications.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss-Sadness and depression*. New York: Basic Books

Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry, 52*(4), 664. doi:10.1111/j.1939-0025.1982.tb01456.x

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

Cha, E. S., Kim, K. H., & Erlen, J. A. (2007). Translation of scales in cross-cultural research: issues and techniques. *Journal of Advanced Nursing, 58*(4), 386-395. doi:10.1111/j.1365-2648.2007.04242.x

Chi, X., Zhang, P., Wu, H., & Wang, J. (2016). Screening for postpartum depression and associated factors among women in China: A cross-sectional study. *Frontiers in Psychology Vol 7 2016, ArtID 1668, 7*. doi:10.3389/fpsyg.2016.01668

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: Academic Press.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155. doi:10.1037/0033-2909.112.1.155

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*(4), 644. doi:10.1037/0022-3514.58.4.644

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry, 150*(6), 782-786. doi:10.1192/bjp.150.6.782

Cox, J. L., Murray, D., & Chapman, G. (1993). A controlled study of the onset, duration and prevalence of postnatal depression. *The British Journal of Psychiatry, 163*(1), 27-31. doi:10.1192/bjp.163.1.27

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: risk profiles, functional disability, health care use and risk of developing major depression. *Journal of Affective Disorders, 79*(1), 71-79. doi:10.1016/S0165-0327(02)00348-8

Cuijpers, P., & Smit, F. (2004). Subthreshold depression as a risk indicator for major depressive disorder: a systematic review of prospective studies. *Acta Psychiatrica Scandinavica, 109*(5), 325-331. doi:10.1111/j.1600-0447.2004.00301.x

Cuijpers, P., Smit, F., Oostenbrink, J., De Graaf, R., Ten Have, M., & Beekman, A. (2007). Economic costs of minor depression: a population-based study. *Acta Psychiatrica Scandinavica, 115*(3), 229-236. doi:10.1111/j.1600-0447.2006.00851.x

Cuijpers, P. v., Smit, F., & Van Straten, A. (2007). Psychological treatments of subthreshold depression: a meta-analy tic review. *Acta Psychiatrica Scandinavica, 115*(6), 434-441. doi:10.1111/j.1600-0447.2007.00998.x

Davis, T. J., Morris, M., & Drake, M. M. (2016). The moderation effect of mindfulness on the relationship between adult attachment and wellbeing. *Personality and Individual Differences, 96,* 115-121. doi:10.1016/j.paid.2016.02.080

Duval, S., & Tweedie, R. (2000). Trim and fill: a simple funnel-plot –based method of testing and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455-463. doi:10.1111/j.0006-341X.2000.00455.x

Eaton, W. W., Smith, C., Ybarra, M., Muntaner, C., & Tien, A. (2004). Center for Epidemiologic Studies Depression Scale: Review and Revision (CESD and CESD-R). In M. E. Maruish (Ed.), *The Use of Psychological Testing for Treatment Planning and Outcomes Assessment: Instruments for Adults* (pp. 363-377). Mahwah, NJ: Lawrence Erlbaum Associates.

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *Bmj, 315*(7109), 629-634. doi:10.1136/bmj.315.7109.629

Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in Adults: Clinical and Developmental Perspectives* (pp. 128-152). New York: Guilford Press.

Flett, G. L., Vredenburg, K., & Krames, L. (1997). The continuity of depression in clinical and nonclinical samples. *Psychological Bulletin, 121*(3), 395. doi:10.1037/0033-2909.121.3.395

Forsythe, L. P., Romano, J. M., Jensen, M. P., & Thorn, B. E. (2012). Attachment style is associated with perceived spouse responses and pain-related outcomes. *Rehabilitation Psychology, 57*(4), 290. doi:10.1037/a0030083

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*(2), 350. doi:10.1037/0022-3514.78.2.350

Geiselman, B., & Bauer, M. (2000). Subthreshold depression in the elderly: Qualitative or quantitative distinction? *Comprehensive Psychiatry, 41*(2), 32-38. doi:10.1016/S0010-440X(00)80006-1

Goldberg, D. (2000). Plato versus Aristotle: categorical and dimensional models for common mental disorders. *Comprehensive Psychiatry, 41*(2), 8-13. doi:10.1016/S0010-440X(00)80002-4

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry, 23*(1), 56.

Hammen, C., & Watkins, E. (2013). *Depression* (2nd ed.). University of California, LA: Psychology Press.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511. doi:10.1037/0022-3514.52.3.511

Heene, E., Buysse, A., & Van Oost, P. (2007). An interpersonal perspective on depression: The role of marital adjustment, conflict communication, attributions, and attachment within a clinical sample. *Family Process, 46*(4), 499-514. doi:10.1111/j.1545-5300.2007.00228.x

Heidari, S., Lewis, A. J., Allahyari, A., Azadfallah, P., & Bertino, M. D. (2013). A pilot study of brief psychodynamic psychotherapy for depression and anxiety in young Iranian adults: The effect of attachment style on outcomes. *Psychoanalytic Psychology, 30*(3), 381. doi:10.1037/a0033503

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral & Brain Sciences, 33*(2/3), 61-135. doi:10.1017/S0140525X0999152X

Higgins, J. P., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *BMJ: British Medical Journal, 327*(7414), 557. doi:10.1136/bmj.327.7414.557

Horwath, E., Johnson, J., Klerman, G. L., & Weissman, M. M. (1992). Depressive symptoms as relative and attributable risk factors for first-onset major depression. *Archives of General Psychiatry, 49*(10), 817-823. doi:10.1001/archpsyc.1992.01820100061011

Kupferberg, A., Bicks, L., & Hasler, G. (2016). Review article: Social functioning in major depressive disorder. Neuroscience and Biobehavioral Reviews, 69313-332. doi:10.1016/j.neubiorev.2016.07.002

Leppänen, J. M., (2006). Emotional information processing in mood disorders: a review of behavioral and neuroimaging findings. Current Opinion In Psychiatry, 19(1), 34. doi:10.1097/01.yco.0000191500.46411.00

Little, T. D., Card, N. A., Bovaird, J. A., Preacher, K. J., & Crandall, C. S. (2007). Structural equation modeling of mediation and moderation with contextual factors. In T. D. Little, J. A. Bovaird, & N. A. Card (Eds.), *Modeling Contextual Effects in Longitudinal Studies* (Vol. 1, pp. 207-230). Mahwah, New Jersey: Psychology Press.

Luna, N., Horton, G., Newman, D., & Malloy, T. (2016). An empirical study of attachment dimensions and mood disorders in inpatient substance abuse clients: The mediating role of spirituality. *Addiction Research & Theory, 24*(3), 248-260. doi:10.3109/16066359.2015.1119267

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, 66-104. doi:10.2307/3333827

Melrose, S. (2015). Seasonal affective disorder: an overview of assessment and treatment approaches. *Depression Research and Treatment, 2015*. doi:10.1155/2015/178564

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in Adulthood: Structure, Dynamics, and Change*. New York: Guilford Press.

Mikulincer, M., & SHAVER, P. R. (2012). An attachment perspective on psychopathology. *World Psychiatry, 11*(1), 11-15. doi:10.1016/j.wpsyc.2012.01.003

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Medicine, 6*(7), e1000097. doi:10.1371/journal.pmed.1000097

Onishi, M., Gjerde, P. F., & Block, J. (2001). Personality implications of romantic attachment patterns in young adults: A multi-method, multi-informant study. *Personality and Social Psychology Bulletin, 27*(9), 1097-1110. doi:10.1177/0146167201279003

Overall, J. E., & Gorham, D. R. (1962). The brief psychiatric rating scale. *Psychological Reports, 10*(3), 799-812. doi:10.2466/pr0.1962.10.3.799

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401. doi:10.1177/014662167700100306

Roisman, G. I., Holland, A., Fortuna, K., Fraley, R. C., Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology, 92*(4), 678-697. doi:10.1037/0022-3514.92.4.678

Scharfe, E., & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships, 1*(1), 23-43. doi:10.1111/j.1475-6811.1994.tb00053.x

Shaver, P. R., Schachner, D. A., & Mikulincer, M. (2005). Attachment style, excessive reassurance seeking, relationship processes, and depression. *Personality and Social Psychology Bulletin, 31*(3), 343-359. doi:10.1177/0146167204271709

Sibley, C. G., Fischer, R., & Liu, J. H. (2005). Reliability and validity of the revised experiences in close relationships (ECR-R) self-report measure of adult romantic attachment. *Personality and Social Psychology Bulletin, 31*(11), 1524-1536. doi:10.1177/0146167205276865

Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology, 59*(5), 971. doi:10.1037/0022-3514.59.5.971

Simpson, J. A., & Rholes, W. S. (2002). Fearful-avoidance, disorganization, and multiple working models: Some directions for future theory and research. *Attachment & Human Development, 4*(2), 223-229. doi:10.1080/14616730210154207

Smith, M. L. (1980). Publication bias and meta-analysis. *Evaluation in Education, 4*, 22-24. doi:10.1016/0191-765X(80)90004-X

Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. *Child Development*, 1184-1199. doi:10.2307/1128475

Tasca, G. A., Szadkowski, L., Illing, V., Trinneer, A., Grenon, R., Demidenko, N., . . . Bissada, H. (2009). Adult attachment, depression, and eating disorder symptoms: The mediating role of affect regulation strategies. *Personality and Individual Differences, 47*(6), 662-667. doi:10.1016/j.paid.2009.06.006

Wayment, H. A., & Vierthaler, J. (2002). Attachment style and bereavement reactions. *Journal of Loss &Trauma, 7*(2), 129-149. doi:10.1080/153250202753472291

Wei, M., Russell, D. W., Mallinckrodt, B., & Zakalik, R. A. (2004). Cultural equivalence of adult attachment across four ethnic groups: Factor structure, structured means, and associations with negative mood. *Journal of Counseling Psychology, 51*(4), 408-417. doi:10.1037/0022-0167.51.4.408

Wei, M., Russell, D. W., Mallinckrodt, B., & Zakalik, R. A. (2004). Cultural equivalence of adult attachment across four ethnic groups: Factor structure, structured means, and associations with negative mood. *Journal of Counseling Psychology, 51*(4), 408-417. doi:10.1037/0022-0167.51.4.408

Wolkenstein, L., Schoenenberg, M., Schirm, E., & Hautzinger, M. (n.d). I can see what you feel, but I can't deal with it: Impaired theory of mind in depression. Journal of Affective Disorders, 132(1-2), 104-111. doi: 10.1016/j.jad.2011.02.010

World Health Organisation. (2017). *Depression and Other Common Mental Disorders: Global Health Estimates*. Retrieved from http://apps.who.int/iris/bitstream/10665/254610/1/WHO-MSD-MER-2017.2-eng.pdf

Table 1

Anxious/avoidant dimensions based on Brennan et al. (1998) factor analysis results

Measure	Sub-scales	Anxious Attachment	Avoidant Attachment
ASQ	Discomfort with closeness		**.90**
	Need for approval	.62	
	Preoccupation with relationships	**.86**	
	Viewing relationships as secondary		.61
	Self-confidence		-.70
AAS/RAAS	Comfort with closeness		**-.84**
	Comfort with depending on others		-.79
	Anxious concern about abandonment	**.74**	
RSQ	Secure	-.30	-.69
	Preoccupied	**.79**	
	Fearful		**.82**
	Dismissing	-.42	.50
MAQ	Security		-.70
	Avoidant		**.86**
	Ambivalence/worry	**.76**	
	Ambivalence/merger	.66	

Note. Bold factors are highest factor loading and hence most preferred factor loading for use in meta-analysis. ASQ=Attachment Style Questionnaire (Feeney et al., 1994); AAS=Adult Attachment Scale (Collins & Read, 1990); RAAS=Revised Adult Attachment Scale (Collins, 1996); RSQ= Relationship Scales Questionnaire (Griffin & Bartholomew, 1994); MAQ= Measure of Attachment Qualities (Carver, 1997)

Table 2

Main characteristics of studies included in the meta-analysis

Description	Value
Attachment Measure	
AAQ	7
AAS	18
ASQ	5
ECR	34
ECR-R	20
ECR-SF	4
MAQ	1
RAAS	9
RSQ	8
Depression measure	
BDI	22
BDI II	10
CES-D	31
DASS-21	8
EPDS	3
IDD	3
MASQ	3
PHQ-9	6
SCL-90	6
Other	14
Gender	
Male	12035
Female	17208
Unknown	2673

Country	
Australia	5
Canada	9
China	4
Germany	3
Iran	3
Turkey	5
UK	5
USA	62
Other	10
Populations	
Community	19
Medical patients	9
Mental Health	16
Pregnant/fertility treatment	7
University students	43
Other	12

Note. AAQ = Adult Attachment Questionnaire; AAS = Adult Attachment Scale; ASQ = Attachment Style Questionnaire; ECR = Experiences in Close Relationships; ECR-R = Experiences in Close Relationships Revised; ECR-SF = Experiences in Close Relationships Short Form; MAQ = Measure of Attachment Qualities; RAAS = Revised- Adult Attachment Scale; RSQ = Relationship Scales Questionnaire; BDI = Beck Depression Inventory; BDI II = Beck Depression Inventory II; CES-D = Center for Epidemiologic Studies Depression Scale; DASS-21 = Depression Anxiety and Stress Scale; EPDS = Edinburgh Postnatal Depression Scale; IDD = The Inventory to Diagnose Depression; MASQ = Mood and Anxiety Symptom Questionnaire; PHQ-9 = Patient Health Questionnaire-9; SCL-90 = Symptom Checklist 90.

Table 3

Main Analysis Results

Attachment Dimension	Effect Size	Confidence Interval 95%	Number of Studies	Q value / *p* value	I^2
Secure	-.283	-.365 - -.197	28	296.044/≤.000	90.542%
Avoidant	.274	.247 - .301	102	625.929/≤.000	83.385%
Anxious	.400	.379 - .420	104	424.300/≤.000	75.018%

Table 4

Sub-Group Analysis for Secure Attachment

Sub-Groups	Effect Size	Confidence Interval 95%	Number of Studies	*p* value	Significant (alpha 0.05)
Moderators					
Female	-.185	-.345 - -.013	9	.340	N/S
Male	-.318	-.510 - -.095	5		
Moderators					
RSQ	-.386	-.571 - -.165	4	.308	N/S
Other	-.265	-.353 - -.173	25		
Moderators					
Clinical	-.270	-.389 - -.143	15	.774	N/S
Non-clinical	-.295	-.408 - -.173	14		
Moderators					
Depressed	-.184	-.502 - -.179	3	.593	N/S
Other	-.287	-.431 - -.129	12		
Moderator					
Student	-.225	-.395 - -.040	7	.461	N/S
Non-student	-.301	-.396 - -.201	22		
Moderator					
English	-.335	-.405 - -.261	23	.002	Significant
Translated	-.228	-.216 - .103	6		

Table 5

Sub-Group Analysis for Avoidant Attachment

Sub-Groups	Effect Size	Confidence Interval 95%	Number of Studies	*p* value	Significant (alpha 0.05)
Moderators					
Female	.280	.198 - .359	28	.740	N/S
Male	.254	.120 - .380	11		
Moderators					
ECR family	.267	.231 - .302	61	.523	N/S
Other	.285	.242 - .328	44		
Moderators					
ECR	.273	.234 - .311	35	.615	N/S
ECR-R	.257	.206 - .306	21		
Moderators					
RSQ	.411	.304 - .508	6	.011	Significant
Other	.266	.238 - .293	99		
Moderators					
Clinical	.291	.249 - .332	50	.305	N/S
Non-clinical	.262	.225 - .298	55		
Moderators					
Depressed	.253	.058 - .428	5	.665	N/S
Other	.295	.240 - .348	45		
Moderator					

Student	.235	.190 - .279	38	.025	Significant
Non-student	.299	.264 - .333	67		
Moderator					
English	.291	.260 - .321	78	.038	Significant
Translated	.228	.175 - .279	27		

Note. AAQ = Adult Attachment Questionnaire; AAS = Adult Attachment Scale; ASQ = Attachment Style Questionnaire; ECR = Experiences in Close Relationships; ECR-R = Experiences in Close Relationships Revised; ECR-SF = Experiences in Close Relationships Short Form; MAQ = Measure of Attachment Qualities; RAAS = Revised- Adult Attachment Scale; RSQ = Relationship Scales Questionnaire

Table 6

Sub-Group Analysis for Anxious Attachment

Sub-Groups	Effect Size	Confidence Interval 95%	Number of Studies	*p* value	Significant (alpha 0.05)
Moderators					
Female	.424	.390 - .458	29	.913	N/S
Male	.421	.367 - .472	12		
Moderators					
ECR family	.409	.382 - .435	61	.294	N/S
Other	.386	.353 - .419	46		
Moderators					
ECR	.418	.385 - .450	36	.583	N/S
ECR-R	.403	.359 - .445	21		
Moderators					
RSQ	.324	.240 - .404	8	.055	N/S
Other	.405	.384 - .426	99		
Moderators					
Clinical	.399	.367 - .431	51	.965	N/S
Non-clinical	.400	.373 - .427	56		
Moderators					
Depressed	.381	.197 - .539	4	.830	N/S
Other	.400	.360 - .440	47		
Moderator					

Student	.395	.362 - .428	38	.723	N/S
Non-student	.403	.376 - .429	69		
Moderator					
English	.406	.382 - .430	79	.328	N/S
Translated	.383	.343 - .422	28		

Note. AAQ = Adult Attachment Questionnaire; AAS = Adult Attachment Scale; ASQ = Attachment Style Questionnaire; ECR = Experiences in Close Relationships; ECR-R = Experiences in Close Relationships Revised; ECR-SF = Experiences in Close Relationships Short Form; MAQ = Measure of Attachment Qualities; RAAS = Revised- Adult Attachment Scale; RSQ = Relationship Scales Questionnaire

Table 7

Summary effect sizes for attachment measures

	Effect Size	Confidence Interval 95%	Number of Studies
Secure Attachment			
AAQ	-.251	-.509 - -.049	2
AAS	-.182	-.301 - -.058	11
ASQ	-.524	-.670 - -.338	3
ECR	-.420	-.701 - -.027	1
MAQ	-.200	-.525 - -.176	1
RAAS	-.246	-.384 - -.098	7
RSQ	-.386	-.545 - -.201	4
Avoidant Attachment			
AAQ	.350	.235 - .455	7
AAS	.245	.176 - .311	18
ASQ	.307	.161 - .439	4
ECR	.270	.223 - .316	36
ECR-R	.260	.199 - .319	21
ECR-SF	.278	.144 - .403	4
MAQ	.140	-.140 - .399	1
RAAS	.238	.134 - .337	8
RSQ	.411	.302 - .510	6
Anxious Attachment			

AAQ	.419	.327 - .503	7
AAS	.383	.331 – 433	17
ASQ	.490	.388 - .580	4
ECR	.418	.384 - .451	36
ECR-R	.403	.358 - .446	21
ECR-SF	.366	.267 - .458	4
MAQ	.620	.464 - .739	1
RAAS	.366	.259 - .409	9
RSQ	.325	.242 - .403	8

Note. AAQ = Adult Attachment Questionnaire; AAS = Adult Attachment Scale; ASQ = Attachment Style Questionnaire; ECR = Experiences in Close Relationships; ECR-R = Experiences in Close Relationships Revised; ECR-SF = Experiences in Close Relationships Short Form; MAQ = Measure of Attachment Qualities; RAAS = Revised- Adult Attachment Scale; RSQ = Relationship Scales Questionnaire

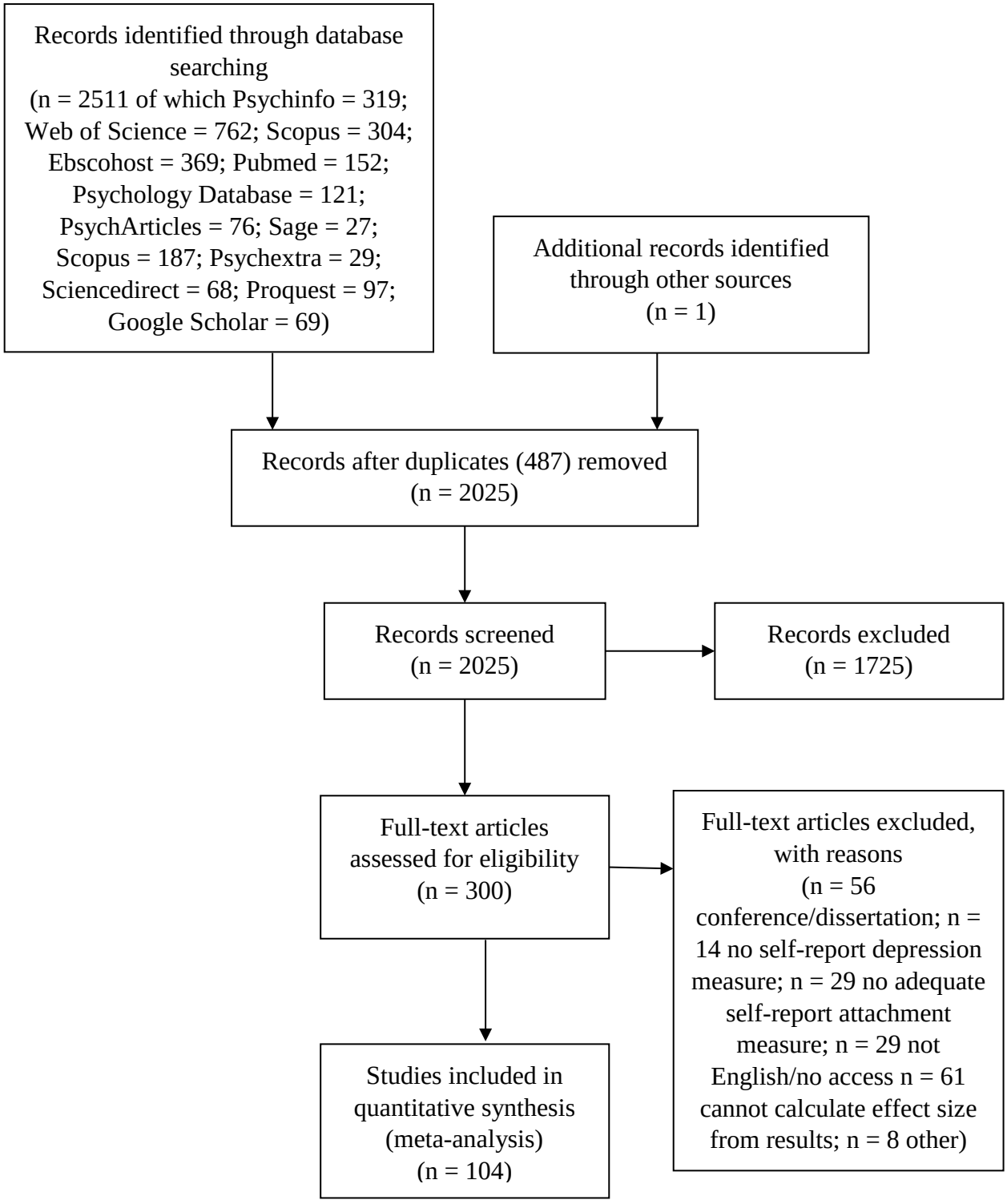


Figure 1. PRISMA Diagram (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group, 2009): Summary of search strategy

Appendix A

Key details of included studies across all three meta-analysis

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Aarts et al. (2015)	105	N/R	.370	.340	18 - 60	ECR-R	HADS	Netherlands
Aarts, Hinnen, Gerdes, Acherman & Brandjes (2014)	250	N/R	.350	.410	43.90	ECR-R	HADS	Netherlands
Abaied (2016)	86	N/R	.360	.500	18 - 25	AAQ	MASQ	U. S
Adellund, Jensen, Gilsa, Elklit & Mogensen (2016)	102	N/R	.240	.330	20 - 75	RAAS	MDI	Denmark
Ançel & Kabakçi (2009)	400	N/R	.250	.430	17 - 35	ECR-R	BDI	Turkey
Besharat, Issazadegan, Etemadinia, Golssanamlou & Abdolmanafi (2014)	300	.170	.070	.200	19.71	RAAS	CES-D	Iran
Besser & Neria (2010)	135	N/R	.080	.360	23.85	ECR-R	PHQ-9	Israel
Brown & Symons (2016)	73	N/R	.100	.100	17 - 26	ECR-R	CED-D	Canada
Caldwell, Shaver, Li & Minzenberg (2011)	76	N/R	.390	.500	18 - 44	ECR	SCL-90-R	U. S
Cantazaro & Wei (2010)	424	N/R	.250	.400	18 - 32	ECR	SDS	U. S
Carmichael & Reis (2005)								
Males	78	N/R	.220	.400	38.25	ECR-R	CES-D	U. S
Females	78	N/R	.560	.560	38.25	ECR-R	CES-D	U. S
Cheng, McDermott & Lopez (2015)	1682	N/R	.260	.370	18 - 25	ECR-SF	PHQ-9	U. S
Chi, Zhang, Wu, Wang (2016)	550	.160	-.330	.580	23	AAS	CES-D	China
Ciesla, Roberts & Hewitt (2004)	48	-.280	.250	.300	37	AAS	IDD	U. S

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Davila (2001)	220	-.260	.330	.430	18 – 49	RAAS	BDI	U. S
Difilippo & Overholser (2002)	84	N/R	.200	.370	21 – 66	ECR	BDI	U. S
Dodd, Driver, Warren, Riggs & Clark (2015)	106	N/R	.370	.400	43.80	ECR	PHQ-9	U. S
Donges et al. (2012)	109	N/R	N/R	.240	35.50	RSQ	BDI	Germany
Donges, Zeitschel, Kersting & Suslow (2015)	153	N/R	.260	.230	18 – 38	ECR	BDI	Germany
Doron, Moulding, Kyrios, Nedeljkovic & Mikulincer (2009)	467	N/R	.250	.420	21.30	ECR	BDI II	Australia
Elwood & Williams (2007)	287	N/R	.380	.650	20.20	ECR	BDI	U. S
Flair, Bradshaw, Mendelson & Campbell (2015)	215	N/R	.320	.490	39.70	ECR-R	CES-D	U. S
Forsythe, Romano, Jensen & Thorn (2012)	181	-.380	.390	.230	49.40	RSQ	CES-D	U. S
Fraley, Fazzari, Bonanno & Dekel (2006)	45	N/R	.270	.350	23 – 59	RSQ	CES-D	U. S
Franz et al. (2011)	1226	N/R	.380	.480	51 – 60	ECR	CES-D	U. S
Garrison, Khan, Sauer & Florczak (2012)	121	N/R	.280	.550	18 – 44	ECR	IDAS	U. S
Gilbert, McEwan, Catarino, Baiao & Palmeira (2014)	52	-.150	.240	.270	21 – 70	AAS	DASS-21	U. K
Gilbert, McEwan, Matos & Rivis (2011)	222	-.210	.230	.430	18 – 59	AAS	DASS-21	U. K
Gillath et al. (2011)								
Old	26	N/R	.310	.370	58 – 85	ECR	CES-D	U. S
Young	74	N/R	.280	.310	18 - 25	ECR	BDI	U. S
Givertz & Safford (2011)	126	N/R	.340	.430	18 – 35	ECR-R	BDI	U. S
Gnilka, Ashby & Noble (2013)	180	N/R	.170	.370	18 – 46	ECR-R	KDS	U. S
Gormley & McNiel (2010)	109	N/R	.210	.240	18 – 84	AAS	BDI	U. S

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Grunebaum et al. (2010)	136	N/R	.370	N/R	39.2	AAS	BDI	U. S
Gudjonsson, Sigurdsson, Lydsdottir & Olafsdottir (2008)	377	N/R	.490	.460	18 - 44	ECR	DASS-21	Iceland
Gulum & Dag (2014)								
Males	294	N/R	.140	.340	18 – 29	ECR-R	BDI	Turkey
Females	581	N/R	.090	.380	17 - 29	ECR-R	BDI	Turkey
Hankin, Kassel & Abela (2005)	187	N/R	.220	.350	17 - 24	AAS	IDD	U. S
Heene, Buysse & van Oost (2005)								
Males	415	-.080	.290	.390	19 – 69	AAS	SCL-90	Belgium
Females	415	-.270	.360	.400	19 - 71	AAS	SCL-90	Belgium
Heidari, Lewis, Allahyari, Azadfallah & Bertino (2013)	20	-.120	-.090	.560	19 - 24	AAS	DASS-21	Iran
Iannantuono & Tylka (2012)	249	N/R	.240	.420	18 – 28	ECR	BDI II	U. S
Jinyao et al. (2012)	662	N/R	.310	.450	18 – 23	ASQ	MASQ	China
Kazarian & Taher (2012)	418	N/R	.210	.360	33.93	ECR-R	CES-D	Lebanon
Keleher, Wei & Liao (2010)	163	N/R	.290	.400	18 – 63	ECR-SF	DASS-21	U. S
Kim, Carver, Deci & Kasser (2008)	321	-.200	.140	.620	56.5	MAQ	CES-D	U. S
Kohlhoff & Barnett (2013)	83	N/R	.007	.270	22 – 47	ASQ	EPDS	Australia
Koohsar & Bonab (2011)	460	N/R	.040	.330	18 – 25	RAAS	SCL-90-R	Iran
Kowal et al. (2015)	235	N/R	.300	.420	21 – 73	ECR-R	PHQ-9	Canada
Kowal, Wilson, McWilliams, Peloquin & Duong (2012)	238	N/R	.260	.380	21 – 73	ECR-R	PHQ-9	Canada
Kruse, Hagerty, Byers, Gatien & Williams (2014)	443	-.540	N/R	N/R	19.8	ASQ	BDI II	U. S
Kuscu et al. (2008)	100	-.310	.330	.440	29	AAS	EPDS	Turkey

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Kuscu et al. (2009)	51	-.190	.310	.620	18>	AAS	BDI II	Turkey
La Flair, Bradshaw, Mendelson & Campbell (2015)	215	N/R	.320	.490	39.7	ECR-R	CES-D	U. S
Li, Li & Dai (2008)	100	N/R	.220	.460	29 – 78	ECR	BDI	China
Lopez & Fons-Scheyd (2008)	446	N/R	.290	.460	20.8	ECR	CES-D	U. S
Luna, Horton, Newman & Malloy (2016)	305	N/R	.290	.330	33.7	ECR-R	MCMI-III	U. S
Lyvers, Thorberg, Dobie, Huang & Reginald (2008)	219	-.260	.380	.250	28.1	RAAS	DASS-21	Australia
Mak, Bond, Simpson & Rholes (2010)								
Hong Kong	150	N/R	.260	.450	20.4	ECR	CES-D	H. K
U. S	209	N/R	.220	.400	19	ECR	CES-D	U. S
Marchand (2004)								
Males	64	-.240	.310	.370	28 – 77	AAS	CES-D	U. S
Females	64	.060	.200	.320	26 - 53	AAS	CES-D	U. S
Marchand-Reilly (2009)	110	-.460	.510	.560	18 – 20	AAS	CES-D	U. S
Marganska, Gallagher & Miranda (2013)	284	-.430	.460	.360	18 – 48	RSQ	BDI II	U. S
Mauder, Hunter & Lancee (2011)	131	N/R	.160	.330	25 – 63	ECR-R	K10	Canada
Mauder, Lancee, Hunter, Greenberg & Steinhart (2005)	146	N/R	.420	.610	42.7	ECR-R	CES-D	Canada
McCarthy (1999)	40	-.140	.380	.240	25 – 44	AAQ	BDI	U. K
McDermott et al. (2015)	2644	N/R	.340	.410	22.5	ECR-SF	CCAPS-62	U. S
Meij et al. (2007)	926	N/R	.340	.330	26 – 68	AAS	SCL-90-R	Netherlands
Meredith, Strong & Feeney (2007)	99	-.310	N/R	.250	18 – 82	RSQ	DASS-21	Australia
Monin, Zhou & Kershaw (2014)	77	N/R	.170	.410	65.9	ECR	CES-D	U. S

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Monk, Leight & Fang (2008)	56	-.420	.510	.270	18 – 40	RSQ	CES-D	U. S
Monti & Rudolph (2014)	417	N/R	.560	.490	37.8	RSQ	MASQ	U. S
Neumann, Sattel, Gundel, Henningsen & Kruse (2015)	202	N/R	.280	.410	18 – 77	ECR	PHQ-9	Germany
Ng & Hou (2017)	284	N/R	.080	.270	18 – 37	ECR-R	BDI II	China
Oliver & Whiffen (2003)	76	-.640	N/R	.550	40	RAAS	BDI	Canada
Onishi, Gjerde & Block (2001)	89	-.420	.380	.290	23	ECR	GBI	U. S
Owens et al. (2014)	133	N/R	.200	.240	51.3	ECR-SF	CES-D	U. S
Parker, Tambling & Campbell (2013)	223	N/R	.360	.370	18- 66	ECR	MDI	U. S
Pearson, Watkins, Mullan & Moberly (2010)	103	N/R	.550	.500	45.9	ECR-R	BDI II	U. K
Reinecke & Rogers (2001)	54	-.260	.350	.400	18 – 76	RAAS	BDI	U. S
Rholes, Simpson & Friedman (2006)	212	N/R	.330	.350	28.5	AAQ	CES-D	U. S
Rholes et al. (2011)	387	N/R	.280	.260	27.6	ECR	CES-D	U. S
Riggs & Kaminski (2010)	285	N/R	.060	.130	21.7	ECR	HSCL	U. S
Riggs, Vosvick & Stallings (2007)	288	N/R	.240	.310	19 – 68	ECR	CES-D	U. S
Roberts, Gotlib & Kassel (1996)	337	-.190	.280	.380	17 – 49	AAS	IDD	U. S
Rosenthal, Somers, Fleming & Walsh (2014)	105	N/R	.300	.520	20 -30	ECR-R	BDI	U. K
Sabuncuoglu & Berkem (2006)	80	N/R	.570	.500	28.6	AAQ	EPDS	Turkey
Scott & Cordova (2002)								
Males	91	-.330	.340	.340	19 – 78	AAQ	BDI	U. S
Females	91	-.310	.090	.300	20 - 72	AAQ	BDI	U. S
Segel-Karpas, Bamberger & Bacharach (2013)	257	N/R	.120	.230	58	ECR	CES-D	U. S

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Shaver, Schachner & Mikulincer (2005)								
Study 1	144	N/R	.160	.530	17 – 32	ECR	CES-D	U. S
Study 2	122	N/R	.220	.610	17 - 28	ECR	CES-D	U. S
Simonelli, Ray & Pincus (2004)	1040	N/R	.240	.350	N/R	AAS	BDI	U. S
Simpson, Rholes, Campbell, Tran & Wilson, 2003)								
Males	53	N/R	.270	.290	29	AAQ	CES-D	U. S
Females	53	N/R	.400	.430	28	AAQ	CES-D	U. S
Smith, Breiding & Papp (2012)	55	N/R	.260	.670	34.7	AAQ	BDI	U. S
Strodl & Noller (2003)	142	-.630	.490	.610	N/R	ASQ	BDI	Australia
Tasca et al. (2009)	310	N/R	.420	.410	26.3	ECR	PAI	Canada
Vilchinsky, Dekel, Revenson, Liberman & Mosseri (2015)	111	N/R	.460	.400	39 – 74	ECR	BSI	Israel
Wang & Ratanasiripong (2010)	112	N/R	.180	.500	18 – 30	ECR	BDI II	U. S
Wayment & Vierthaler (2002)	91	-.360	.340	.580	21 – 86	ASQ	SCL-90	U. S
Wei, Heppner & Mallinckrodt (2003)	515	N/R	.320	.290	18 – 41	AAS	BDI	U. S
Wei, Russel, Mallinckrodt & Zakalik (2004)								
African American	176	N/R	.090	.230	18 – 59	ECR	DASS-21	U. S
Asian American	196	N/R	.200	.510	18 – 59	ECR	DASS-21	U. S
Caucasian	296	N/R	.330	.390	18 – 59	ECR	DASS-21	U. S
Hispanic American	163	N/R	.260	.400	18 – 59	ECR	DASS-21	U. S
Whiffen (2005)								

Study	N	Secure Attachment	Avoidant Attachment	Anxious Attachment	Age Range/ Mean Age	Attachment measure	Depression measure	Country
Males	149	N/R	.090	.410	34.8	ECR	CESD-R	Canada
Females	229	N/R	.100	.420	33	ECR	CESD-R	Canada
Whiffen, Aube, Thompson & Cambell (2000)								
Males	54	-.250	.330	.390	35 -45	RAAS	BDI	Canada
Females	54	-.140	.240	.430	35 - 45	RAAS	BDI	Canada
Widom, Czaja, Kozakowski & Chauhan (2017)	650	N/R	.220	.300	32 – 49	RSQ	CES-D	U. S
Wijngaards-de Meij et al. (2007)	463	N/R	.330	.310	26 – 68	AAS	SCL-90	Netherlands
Actor								
Partner	463	N/R	.130	.090	26 - 68	AAS	SCL-90	Netherlands
Williams & Risking (2004)	291	N/R	.180	.450	18 – 49	ECR	BDI II	U. S
Woodward et al. (2013)	134	-.280	.280	.220	18 – 66	RAAS	BDI II	U. S
You et al. (2015)								
Hong Kong	153	N/R	.220	.420	20.4	ECR	CES-D	H. K
U. S	214	N/R	.220	.400	19	ECR	CES-D	U. S
Zakalik & Wei (2006)	234	N/R	.300	.580	18 – 80	ECR	CES-D	U. S

Note. AAS = Adult Attachment Scale; AAQ = Adult Attachment Questionnaire; ASQ = Attachment Style Questionnaire; ECR = Experiences in Close Relationships; ECR-R = Experiences in Close Relationships Revised; ECR-SF = Experiences in Close Relationships Short Form; MAQ = Measure of Attachment Qualities; RAAS = Revised- Adult Attachment Scale; RSQ = Relationship Scales Questionnaire; BDI = Beck Depression Inventory; BDI II = Beck Depression Inventory II; BSI = Brief Symptom Inventory- depression subscale; CCAPS-62 = Counselling Centre Assessment of Psychological Symptoms-depression scale; CES-D = Centre for Epidemiological Studies Depression Scale; DASS-21 = Depression Anxiety and Stress Scales-21-depression scale; EPDS = Edinburgh Postnatal Depression Scale; GBI = General Behaviour Inventory; HADS = Hospital Depression and Anxiety Scale-depression subscale; HSCL = Hopkins Symptom Checklist-depression scale; IDAS = Inventory

of Depression and Anxiety Symptoms-depression scale; IDD = The Inventory to Diagnose Depression; K10 = Kessler Psychological Distress Scale-depression items; KDS = The Kandel Depression Scale; MASQ = Mood and Anxiety Symptoms Questionnaire-anhedonic depression subscale; MCMI-III = Millon Clinical Multiaxial Inventory III-dysthymia, major depressive disorder and bipolar subscales; MDI = Major Depression Inventory; PAI = Personality Assessment Inventory-depression subscales; PHQ-9 = Patient Health Questionnaire; SDS = Self-Rating Depression Scale; SCL-90 = Symptom Checklist 90 Revised-depression scale; N/R = Not reported.

Appendix B

Reference list for articles included in meta-analysis

Aarts, F., Geenen, R., Gerdes, V. E. A., van de Laar, A., Brandjes, D. P. M., & Hinnen, C. (2015). Attachment Anxiety Predicts Poor Adherence to Dietary Recommendations: an Indirect Effect on Weight Change 1 Year After Gastric Bypass Surgery. *Obesity Surgery, 25*(4), 666-672. doi:10.1007/s11695-014-1423-7

Aarts, F., Hinnen, C., Gerdes, V. E. A., Acherman, Y., & Brandjes, D. P. M. (2014). Psychologists' Evaluation of Bariatric Surgery Candidates Influenced by Patients' Attachment Representations and Symptoms of Depression and Anxiety. *Journal of Clinical Psychology in Medical Settings, 21*(1), 116-123. doi:10.1007/s10880-014-9385-4

Abaied, J. L. (2016). Skin conductance level reactivity as a moderator of the link between parent depressive symptoms and psychosocial adjustment in emerging adults. *Journal of Social and Personal Relationships, 33*(4), 534. doi:10.1177/0265407515583170

Adellund Holt, K., Jensen, P. T., Gilsa Hansen, D., Elklit, A., & Mogensen, O. (2016). Rehabilitation of women with gynaecological cancer: the association between adult attachment, post-traumatic stress disorder and depression. *Psychooncology, 25*(6), 691-698. doi:10.1002/pon.3996

Ançel, G., & Kabakçi, E. (2009). Psychometric Properties of the Turkish Form of Codependency Assessment Tool. *Archives of Psychiatric Nursing, 23*(6), 441-453. doi:10.1016/j.apnu.2008.10.004

Besharat, M. A., Issazadegan, A., Etemadinia, M., Golssanamlou, S., & Abdolmanafi, A. (2014). Risk factors associated with depressive symptoms among undergraduate students. *Asian Journal of Psychiatry, 10*, 21-26. doi:10.1016/j.ajp.2014.02.002

Besser, A., & Neria, Y. (2010). The effects of insecure attachment orientations and perceived social support on posttraumatic stress and depressive symptoms among civilians exposed to the 2009 Israel–Gaza war: A follow-up Cross-Lagged panel design study. *Journal of Research in Personality, 44*(3), 335-341. doi:10.1016/j.jrp.2010.03.004

Brown, O. K., & Symons, D. K. (2016). "My pet has passed": Relations of adult attachment styles and current feelings of grief and trauma after the event. *Death Studies, 40*(4), 247-255. doi:10.1080/07481187.2015.1128499

Caldwell, J. G., Shaver, P. R., Li, C.-S., & Minzenberg, M. J. (2011). Childhood Maltreatment, Adult Attachment, and Depression as Predictors of Parental Self-Efficacy in At-Risk Mothers. *Journal of Aggression, Maltreatment & Trauma, 20*(6), 595-616. doi:10.1080/10926771.2011.595763

Cantazaro, A., & Wei, M. (2010). Adult attachment, dependence, self-criticism, and depressive symptoms: a test of a mediational model. *Journal of Personality, 78*(4), 1135-1162. doi:10.1111/j.1467-6494.2010.00645.x

Carmichael, C. L., & Reis, H. T. (2005). Attachment, Sleep Quality, and Depressed Affect. *Health Psychology*, *24*(5), 526-531. doi:10.1037/0278-6133.24.5.526

Cheng, H.-L., McDermott, R. C., & Lopez, F. G. (2015). Mental health, self-stigma, and help-seeking intentions among emerging adults: An attachment perspective. *The Counseling Psychologist, 43*(3), 463-487. doi:10.1177/0011000014568203

Chi, X., Zhang, P., Wu, H., & Wang, J. (2016). Screening for postpartum depression and associated factors among women in China: A cross-sectional study. *Frontiers in Psychology Vol 7 2016.* doi: 10.3389/fpsyg.2016.01668

Ciesla, J. A., Roberts, J. E., & Hewitt, R. G. (2004). Adult Attachment and High-Risk Sexual Behavior Among HIV-Positive Patients. *Journal of Applied Social Psychology, 34*(1), 108-124. doi:10.1111/j.1559-1816.2004.tb02539.x

Davila, J. (2001). Refining the association between excessive reassurance seeking and depressive symptoms: The role of related interpersonal constructs. *Journal of Social and Clinical Psychology, 20*(4), 538-559. doi:10.1521/jscp.20.4.538.22394

Difilippo, J. M. P. D., & Overholser, J. C. P. D. (2002). Depression, Adult Attachment, and Recollections of Parental Caring During Childhood. *Journal of Nervous & Mental Disease, 190*(10), 663-669. doi:10.1097/01.NMD.0000034741.47929.0D

Dodd, Z., Driver, S., Warren, A. M., Riggs, S., & Clark, M. (2015). Effects of Adult Romantic Attachment and Social Support on Resilience and Depression in Individuals with Spinal Cord Injuries. *Topics in Spinal Cord Injury Rehabilitation, 21*(2), 156-165. doi:10.1310/sci2102-156

Donges, U.-S., Kugel, H., Stuhrmann, A., Grotegerd, D., Redlich, R., Lichev, V., . . . Dannlowski, U. (2012). Adult attachment anxiety is associated with enhanced automatic neural response to positive facial expression. *Neuroscience, 220*, 149-157. doi:10.1016/j.neuroscience.2012.06.036

Donges, U.-S., Zeitschel, F., Kersting, A., & Suslow, T. (2015). Adult attachment orientation and automatic processing of emotional information on a semantic level: A masked affective priming study. *Psychiatry Research, 229*(1–2), 174-180. doi:10.1016/j.psychres.2015.07.045

Doron, G., Moulding, R., Kyrios, M., Nedeljkovic, M., & Mikulincer, M. (2009). Adult attachment insecurities are related to obsessive compulsive phenomena. *Journal of Social and Clinical Psychology, 28*(8), 1022-1049. doi:10.1521/jscp.2009.28.8.1022

Elwood, L. S., & Williams, N. L. (2007). PTSD-Related Cognitions and Romantic Attachment Style as Moderators of Psychological Symptoms in Victims of Interpersonal Trauma. *Journal of Social and Clinical Psychology, 26*(10), 1189-1209.

Flair, L., Bradshaw, C., Mendelson, T., & Campbell, J. (2015). Intimate Partner Violence and Risk of Psychiatric Symptoms: the Moderating Role of Attachment. *Journal of Family Violence, 30*(5), 567-577. doi:10.1007/s10896-015-9681-2

Forsythe, L. P., Romano, J. M., Jensen, M. P., & Thorn, B. E. (2012). Attachment Style Is Associated With Perceived Spouse Responses and Pain-Related Outcomes. *Rehabilitation Psychology, 57*(4), 290-300.

Fraley, R., Fazzari, D. A., Bonanno, G. A., & Dekel, S. (2006). Attachment and Psychological Adaptation in High Exposure Survivors of the September 11th Attack on the World Trade Center. *Personality and Social Psychology Bulletin, 32*(4), 538-551. doi:10.1177/0146167205282741

Franz, C. E., York, T. P., Eaves, L. J., Prom-Wormley, E., Jacobson, K. C., Lyons, M. J., . . . Jimenez, E. (2011). Adult romantic attachment, negative emotionality, and depressive symptoms in middle aged men: A multivariate genetic analysis. *Behavior genetics, 41*(4), 488-498.

Garrison, A. M., Kahn, J. H., Sauer, E. M., & Florczak, M. A. (2012). Disentangling the effects of depression symptoms and adult attachment on emotional disclosure. *Journal of Counseling Psychology, 59*(2), 230-239. doi:10.1037/a0026132

Gilbert, P., McEwan, K., Catarino, F., Baiao, R., & Palmeira, L. (2014). Fears of happiness and compassion in relationship with depression, alexithymia, and attachment security in a depressed sample. *British Journal of Clinical Psychology*, *53*(2), 228-244. doi:0.1111/bjc.12037

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: Development of three self-report measures. *Psychology & Psychotherapy: Theory, Research & Practice, 84*(3), 239-255. doi:10.1348/147608310X526511

Gillath, O., Johnson, D. K., Selcuk, E., & Teel, C. (2011). Comparing Old and Young Adults as They Cope with Life Transitions: The Links between Social Network Management Skills and Attachment Style to Depression. *Clinical Gerontologist, 34*(3), 251-265. doi:10.1080/07317115.2011.554345

Givertz, M., & Safford, S. (2011). Longitudinal Impact of Communication Patterns on Romantic Attachment and Symptoms of Depression. *Current Psychology, 30*(2), 148-172. doi:10.1007/s12144-011-9106-1

Gnilka, P. B., Ashby, J. S., & Noble, C. M. (2013). Adaptive and Maladaptive Perfectionism as Mediators of Adult Attachment Styles and Depression, Hopelessness, and Life Satisfaction. *Journal of Counseling & Development, 91*(1), 78-86. doi:10.1002/j.1556-6676.2013.00074.x

Gormley, B., & McNiel, D. E. (2010). Adult attachment orientations, depressive symptoms, anger, and self-directed aggression by psychiatric patients. *Cognitive Therapy and Research, 34*(3), 272-281. doi:10.1007/s10608-009-9267-5

Grunebaum, M. F., Galfalvy, H. C., Mortenson, L. Y., Burke, A. K., Oquendo, M. A., & Mann, J. (2010). Attachment and social adjustment: Relationships to suicide attempt and major depressive episode in a prospective study. *Journal of Affective Disorders, 123*(1-3), 123-130. doi:10.1016/j.jad.2009.09.010

Gudjonsson, G. H., Sigurdsson, J. F., Lydsdottir, L. B., & Olafsdottir, H. (2008). The relationship between adult romantic attachment and compliance. *Personality and Individual Differences, 45*(4), 276-280. doi:10.1016/j.paid.2008.04.010

Gulum, I., & Dag, I. (2014). The mediator role of the cognitive features in the relationship between adult attachment patterns and psychopathology symptoms: The locus of control and repetitive thinking. *Turkish Journal of Psychiatry, 25*(4), 244-252.

Hankin, B. L., Kassel, J. D., & Abela, J. R. (2005). Adult Attachment Dimensions and Specificity of Emotional Distress Symptoms: Prospective Investigations of Cognitive Risk and Interpersonal Stress Generation as Mediating Mechanisms. *Personality and Social Psychology Bulletin, 31*(1), 136-151. doi:10.1177/0146167204271324

Heene, E. L. D., Buysse, A., & van Oost, P. (2005). Indirect pathways between depressive symptoms and marital distress: the role of conflict communication, attributions, and attachment style. *Family Process, 44*(4), 413-440.

Heidari, S., Lewis, A. J., Allahyari, A., Azadfallah, P., & Bertino, M. D. (2013). A pilot study of brief psychodynamic psychotherapy for depression and anxiety in young Iranian adults: The effect of attachment style on outcomes. *Psychoanalytic Psychology, 30*(3), 381-393. doi:10.1037/a0033503

Iannantuono, A. C., & Tylka, T. L. (2012). Interpersonal and intrapersonal links to body appreciation in college women: An exploratory model. *Body Image, 9*(2), 227-235. doi:10.1016/j.bodyim.2012.01.004

Jinyao, Y., Xiongzhao, Z., Auerbach, R. P., Gardiner, C. K., Lin, C., Yuping, W., & Shuqiao, Y. (2012). Insecure attachment as a predictor of depressive and anxious symptomology. *Depression and Anxiety, 29*(9), 789-796. doi:10.1002/da.21953

Kazarian, S. S., & Taher, D. (2012). Adult attachment styles in a Lebanese community sample: A brief Arabic Experiences in Close Relationships Scale. *Arab Journal of Psychiatry, 23*(1), 74-79.

Keleher, J., Wei, M., & Liao, K. Y.-H. (2010). Attachment, Positive Feelings about Being a Lesbian, Perceived General Support, and Well-Being. *Journal of Social & Clinical Psychology, 29*(8), 847-873. doi:10.1521/jscp.2010.29.8.847

Kim, Y., Carver, C. S., Deci, E. L., & Kasser, T. (2008). Adult Attachment and Psychological Well-Being in Cancer Caregivers: The Mediational Role of Spouses' Motives for Caregiving. *Health Psychology,* 27(2), S144-S154.

Kohlhoff, J., & Barnett, B. (2013). Parenting self-efficacy: Links with maternal depression, infant behaviour and adult attachment. *Early Human Development, 89*(4), 249-256. doi:10.1016/j.earlhumdev.2013.01.008

Koohsar, A. A. H., & Bonab, B. G. (2011). Relation Among Quality of Attachment, Anxiety and Depression in College Students. *Procedia - Social and Behavioral Sciences, 30*, 212-215. doi:10.1016/j.sbspro.2011.10.042

Kowal, J., McWilliams, L. A., Peloquin, K., Wilson, K. G., Henderson, P. R., & Fergusson, D. A. (2015). Attachment insecurity predicts responses to an interdisciplinary chronic pain rehabilitation program. *Journal of Behavioral Medicine, 38*(3), 518-526. doi:10.1007/s10865-015-9623-8

Kowal, J., Wilson, K. G., McWilliams, L. A., Peloquin, K., & Duong, D. (2012). Self-perceived burden in chronic pain: relevance, prevalence, and predictors. *Pain, 153*(8), 1735-1741. doi:10.1016/j.pain.2012.05.009

Kruse, J. A., Hagerty, B. M., Byers, W. S., Gatien, G., & Williams, R. A. (2014). Considering a relational model for depression in Navy recruits. *Military Medicine, 179*(11), 1293-1300. doi:10.7205/MILMED-D-14-00116

Kuscu, M., Akman, I., Karabekiroglu, A., Yurdakul, Z., Orhan, L., Ozdemir, N., . . . Ozek, E. (2008). Early adverse emotional response to childbirth in Turkey: The impact of maternal attachment styles and family support. *Journal of Psychosomatic Obstetrics & Gynecology, 29*(1), 33-38. doi:10.1080/01674820701535480

Kuscu, M., Dural, U., Onen, P., Yasa, Y., Yayla, M., Basaran, G., . . . Bekiroglu, N. (2009). The association between individual attachment patterns, the perceived social support,

and the psychological well-being of Turkish informal caregivers. *Psycho-Oncology, 18*(9), 927-935. doi:10.1002/pon.v18:910.1002/pon.1441

La Flair, L. N., Bradshaw, C. P., Mendelson, T., & Campbell, J. (2015). Intimate partner violence and risk of psychiatric symptoms: The moderating role of attachment. *Journal of Family Violence, 30*(5), 567-577. doi:10.1007/s10896-015-9681-2

Li, T., Li, J., & Dai, Q. (2008). Adult attachment, social support, and depression level of poststroke patients. *Social Behavior and Personality, 36*(10), 1341-1352. doi:10.2224/sbp.2008.36.10.1341

Lopez, F. G., & Fons-Scheyd, A. (2008). Role balance and depression among college students: The moderating influence of adult attachment orientations. *Journal of College Counseling, 11*(2), 133-146. doi:10.1002/j.2161-1882.2008.tb00030.x

Luna, N., Horton, G., Newman, D., & Malloy, T. (2016). An empirical study of attachment dimensions and mood disorders in inpatient substance abuse clients: The mediating role of spirituality. *Addiction Research & Theory, 24*(3), 248-260. doi:10.3109/16066359.2015.1119267

Lyvers, M., Thorberg, F., Dobie, A., Huang, J., & Reginald, P. (2008). Mood and interpersonal functioning in heavy smokers. *Journal of Substance Use, 13*(5), 308-318. doi:10.1080/14659890802040807

Mak, M. C., Bond, M. H., Simpson, J. A., & Rholes, W. (2010). Adult attachment, perceived support, and depressive symptoms in Chinese and American cultures. *Journal of Social and Clinical Psychology, 29*(2), 144-165. doi:10.1521/jscp.2010.29.2.144

Marchand, J. F. (2004). Husbands' and wives' marital quality: The role of adult attachment orientations, depressive symptoms, and conflict resolution behaviors. *Attachment & Human Development, 6*(1), 99-112. doi:10.1080/1461673031000165957 5

Marchand-Reilly, J. F. (2009). Depressive Symptoms in Young Adults: The Role of Attachment Orientations and Romantic Relationship Conflict. *Journal of Adult Development, 16*(1), 31-38. doi:10.1007/s10804-009-9049-z

Marganska, A., Gallagher, M., & Miranda, R. (2013). Adult attachment, emotion dysregulation, and symptoms of depression and generalized anxiety disorder. *American Journal of Orthopsychiatry, 83*(1), 131-141. doi:10.1111/ajop.12001

Maunder, R. G., Hunter, J. J., & Lancee, W. J. (2011). The impact of attachment insecurity and sleep disturbance on symptoms and sick days in hospital-based health-care workers. *Journal of Psychosomatic Research, 70*(1), 11-17. doi:10.1016/j.jpsychores.2010.09.020

Maunder, R. G., Lancee, W. J., Hunter, J. J., Greenberg, G. R., & Steinhart, A. H. (2005). Attachment insecurity moderates the relationship between disease activity and depressive symptoms in ulcerative colitis. *Inflammatory Bowel Diseases, 11*(10), 919-926. doi:10.1097/01.mib.0000179468.78876.2d

McCarthy, G. (1999). Attachment style and adult love relationships and friendships: a study of a group of women at risk of experiencing relationship difficulties. *British Journal of Medical Psychology, 72*, 305-321.

McDermott, R. C., Cheng, H.-L., Wright, C., Browning, B. R., Upton, A. W., & Sevig, T. D. (2015). Adult attachment dimensions and college student distress: The mediating role of hope. *The Counseling Psychologist, 43*(6), 822-852. doi:10.1177/0011000015575394

Meij, L. W.-d., Stroebe, M., Schut, H., Stroebe, W., van den Bout, J., van der Heijden, P., & Dijkstra, I. (2007). Neuroticism and attachment insecurity as predictors of bereavement outcome. *Journal of Research in Personality, 41*(2), 498-505. doi:10.1016/j.jrp.2006.06.001

Meredith, P. J., Strong, J., & Feeney, J. A. (2007). Adult attachment variables predict depression before and after treatment for chronic pain. *European Journal of Pain, 11*(2), 164-170. doi:10.1016/j.ejpain.2006.01.004

Monin, J. K., Zhou, L., & Kershaw, T. (2014). Attachment and psychological health in older couples coping with pain. *GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry, 27*(3), 115-127. doi:10.1024/1662-9647/a000110

Monk, C., Leight, K. L., & Fang, Y. X. (2008). The relationship between women's attachment style and perinatal mood disturbance: implications for screening and treatment. *Archives of Womens Mental Health, 11*(2), 117-129. doi:10.1007/s00737-008-0005-x

Monti, J. D., & Rudolph, K. D. (2014). Emotional awareness as a pathway linking adult attachment to subsequent depression. *Journal of Counseling Psychology, 61*(3), 374-382. doi:10.1037/cou0000016

Neumann, E., Sattel, H., Gundel, H., Henningsen, P., & Kruse, J. (2015). Attachment in romantic relationships and somatization. *Journal of Nervous and Mental Disease, 203*(2), 101-106. doi:10.1097/NMD.0000000000000241

Ng, S. M., & Hou, W. K. (2017). Contentment duration mediates the associations between anxious attachment style and psychological distress. *Frontiers in Psychology Vol 8 2017, ArtID 258, 8*. doi: 10.3389/fpsyg.2017.00258

Oliver, L. E., & Whiffen, V. E. (2003). Perceptions of parents and partners and men's depressive symptoms. *Journal of Social and Personal Relationships, 20*(5), 621-635.

Onishi, M., Gjerde, P. F., & Block, J. (2001). Personality implications of romantic attachment patterns in young adults: A multi-method, multi-informant study. *Personality and Social Psychology Bulletin, 27*(9), 1097-1110.

Owens, G. P., Held, P., Blackburn, L., Auerbach, J. S., Clark, A. A., Herrera, C. J., . . . Stuart, G. L. (2014). Differences in Relationship Conflict, Attachment, and Depression in Treatment-Seeking Veterans With Hazardous Substance Use, PTSD, or PTSD and Hazardous Substance Use. *Journal of Interpersonal Violence, 29*(7), 1318-1337. doi:10.1177/0886260513506274

Parker, M., Tambling, R. B., & Campbell, K. (2013). Dyadic adjustment and depressive symptoms: The mediating role of attachment. *The Family Journal, 21*(1), 28-34. doi:10.1177/1066480712456674

Pearson, K. A., Watkins, E. R., Mullan, E. G., & Moberly, N. J. (2010). Psychosocial correlates of depressive rumination. *Behaviour Research and Therapy, 48*(8), 784-791. doi:10.1016/j.brat.2010.05.007

Reinecke, M. A., & Rogers, G. M. (2001). Dysfunctional attitudes and attachment style among clinically depressed adults. *Behavioural and Cognitive Psychotherapy, 29*(2), 129-141. doi:10.1017/S1352465801002016

Rholes, W. S., Simpson, J. A., & Friedman, M. (2006). Avoidant attachment and the experience of parenting. *Personality and Social Psychology Bulletin, 32*(3), 275-285. doi:10.1177/0146167205280910

Rholes, W. S., Simpson, J. A., Kohn, J. L., Wilson, C. L., Martin, A. M., III, Tran, S., & Kashy, D. A. (2011). Attachment Orientations and Depression: A Longitudinal Study of New Parents. *Journal of Personality & Social Psychology, 100*(4), 567-586. doi:10.1037/a0022802

Riggs, S. A., & Kaminski, P. (2010). Childhood Emotional Abuse, Adult Attachment, and Depression as Predictors of Relational Adjustment and Psychological Aggression. *Journal of Aggression, Maltreatment & Trauma, 19*(1), 75-104. doi:10.1080/10926770903475976

Riggs, S. A., Vosvick, M., & Stallings, S. (2007). Attachment style, stigma and psychological distress among HIV+ adults. *Journal of Health Psychology, 12*(6), 922-936. doi:10.1177/1359105307082457

Roberts, J. E., Gotlib, I. H., & Kassel, J. D. (1996). Adult Attachment Security and Symptoms of Depression: The Mediating Roles of Dysfunctional Attitudes and Low Self-Esteem. *Journal of Personality & Social Psychology, 70*(2), 310-320. doi: 10.1037//0022-3514.70.2.310

Rosenthal, H. E., Somers, N., Fleming, P., & Walsh, J. (2014). The contributions of interpersonal attachment and friendship group identification to depressive symptoms in a nonclinical sample. *Journal of Applied Social Psychology, 44*(6), 409-414. doi:10.1111/jasp.12232

Sabuncuoglu, O., & Berkem, M. (2006). Relationship between attachment style and depressive symptoms in postpartum women: Findings from Turkey. *Turkish Journal of Psychiatry, 17*(4), 252-258.

Scott, R. L., & Cordova, J. V. (2002). The influence of adult attachment styles on the association between marital adjustment and depressive symptoms. *Journal of Family Psychology, 16*(2), 199-208. doi:10.1037//0893-3200.16.2.199

Segel-Karpas, D., Bamberger, P. A., & Bacharach, S. B. (2013). Income Decline and Retiree Well-Being: The Moderating Role of Attachment. *Psychology & Aging, 28*(4), 1098-1107. doi:10.1037/a0034672

Shaver, P. R., Schachner, D. A., & Mikulincer, M. (2005). Attachment style, excessive reassurance seeking, relationship processes, and depression. *Personality and Social Psychology Bulletin, 31*(3), 343-359. doi:10.1177/0146167204271709

Simonelli, L. E., Ray, W. J., & Pincus, A. L. (2004). Attachment Models and Their Relationships with Anxiety, Worry, and Depression. *Counseling & Clinical Psychology Journal, 1*(3), 107-118.

Simpson, J. A., Rholes, W. S., Campbell, L., Tran, S., & Wilson, C. L. (2003). Adult Attachment, the Transition to Parenthood, and Depressive Symptoms. *Journal of Personality & Social Psychology, 84*(6), 1172-1187. doi:10.1037/0022-3514.84.6.1172

Smith, D. A., Breiding, M. J., & Papp, L. M. (2012). Depressive Moods and Marital Happiness: Within-Person Synchrony, Moderators, and Meaning. *Journal of Family Psychology, 26*(3), 338-347. doi:10.1037/a0028404

Strodl, E., & Noller, P. (2003). The relationship of adult attachment dimensions to depression and agoraphobia. *Personal Relationships, 10*(2), 171-185. doi:10.1111/1475-6811.00044

Tasca, G. A., Szadkowski, L., Illing, V., Trinneer, A., Grenon, R., Demidenko, N., . . . Bissada, H. (2009). Adult attachment, depression, and eating disorder symptoms: The mediating role of affect regulation strategies. *Personality and Individual Differences, 47*(6), 662-667. doi:10.1016/j.paid.2009.06.006

Vilchinsky, N., Dekel, R., Revenson, T. A., Liberman, G., & Mosseri, M. (2015). Caregivers' Burden and Depressive Symptoms: The Moderational Role of Attachment Orientations. *Health Psychology, 34*(3), 262-269. doi:10.1037/hea0000121

Wang, C.-C. D., & Ratanasiripong, P. (2010). Adult attachment, cultural orientation, and psychosocial functioning of Chinese American college students. *Cultural Diversity and Ethnic Minority Psychology, 16*(2), 101. doi:10.1037/a0018634

Wayment, H. A., & Vierthaler, J. (2002). Attachment style and bereavement reactions. *Journal of Loss & Trauma, 7*(2), 129-149. doi:10.1080/153250202753472291

Wei, M., Heppner, P., & Mallinckrodt, B. (2003). Perceived coping as a mediator between attachment and psychological distress: A structural equation modeling approach. *Journal of Counseling Psychology, 50*(4), 438-447. doi:10.1037/0022-0167.50.4.438

Wei, M., Russell, D. W., Mallinckrodt, B., & Zakalik, R. A. (2004). Cultural Equivalence of Adult Attachment Across Four Ethnic Groups: Factor Structure, Structured Means, and Associations With Negative Mood. *Journal of Counseling Psychology, 51*(4), 408-417. doi:10.1037/0022-0167.51.4.408

Whiffen, V. E. (2005). The role of partner characteristics in attachment insecurity and depressive symptoms. *Personal Relationships, 12*(3), 407-423.

Whiffen, V. E., Aube, J. A., Thompson, J. M., & Campbell, T. L. (2000). Attachment Beliefs and Interpersonal Contexts Associated with Dependency and Self-Criticism. *Journal of Social and Clinical Psychology, 19*(2), 184-205. doi:10.1521/jscp.2000.19.2.184

Widom, C. S., Czaja, S. J., Kozakowski, S. S., & Chauhan, P. Does adult attachment style mediate the relationship between childhood maltreatment and mental and physical health outcomes? *Child Abuse & Neglect*. doi:10.1016/j.chiabu.2017.05.002

Wijngaards-de Meij, L., Stroebe, M., Schut, H., Stroebe, W., van den Bout, J., van der Heijden, P. G., & Dijkstra, I. (2007). Patterns of Attachment and Parents' Adjustment to the Death of Their Child. *Personality and Social Psychology Bulletin, 33*(4), 537-548. doi:10.1177/0146167206297400

Williams, N. L., & Risking, J. H. (2004). Adult Romantic Attachment and Cognitive Vulnerabilities to Anxiety and Depression: Examining the Interpersonal Basis of Vulnerability Models. *Journal of Cognitive Psychotherapy, 18*(1), 7-24. doi:10.1891/jcop.18.1.7.28047

Woodward, M. J., Patton, S. C., Olsen, S. A., Jones, J. M., Reich, C. M., Blackwell, N., & Beck, J. G. (2013). How do attachment style and social support contribute to women's

psychopathology following intimate partner violence? Examining clinician ratings versus self-report. *Journal of Anxiety Disorders, 27*(3), 312-320. doi:10.1016/j.janxdis.2013.02.007

You, J., Huang, J. L., Ho, M. Y., Leung, H., Li, C., & Bond, M. H. (2015). Perceived support and relational conflict as mediators linking attachment orientations with depressive symptoms: A comparison of dating individuals from Hong Kong and the United States. *Personality and Individual Differences, 73*, 50-55. doi:10.1016/j.paid.2014.09.004

Zakalik, R. A., & Wei, M. (2006). Adult attachment, perceived discrimination based on sexual orientation, and depression in gay males: Examining the mediation and moderation effects. *Journal of Counseling Psychology, 53*(3), 302-313. doi:10.1037/0022-0167.53.3.302

Appendix C

The following information was drawn from the "Author Information Pack" for the Clinical Psychology Review as accessed at www.elsevier.com on the 4th Feb 2016.

Description (Scope)

Clinical Psychology Review publishes substantive reviews of topics germane to **clinical psychology**. Papers cover diverse issues including: psychopathology, psychotherapy, behavior therapy, cognition and cognitive therapies, behavioral medicine, community mental health, assessment, and child development. Papers should be cutting edge and advance the science and/or practice of clinical psychology. Reviews on other topics, such as psychophysiology, learning therapy, experimental psychopathology, and social psychology often appear if they have a clear relationship to research or practice in **clinical psychology**. Integrative literature reviews and summary reports of innovative ongoing clinical research programs are also sometimes published. Reports on individual research studies and theoretical treatises or clinical guides without an empirical base are not appropriate.

Article structure

Manuscripts should be prepared according to the guidelines set forth in the Publication Manual of the American Psychological Association (6th ed., 2009). Of note, section headings should not be numbered. Manuscripts should ordinarily not exceed 50 pages, *including* references and tabular material. Exceptions may be made with prior approval of the Editor in Chief. Manuscript length can often be managed through the judicious use of appendices. In general, the References section should be limited to citations actually discussed in the text. References to articles solely included in meta-analyses should be included in an appendix, which will appear in the on line version of the paper but not in the print copy. Similarly, extensive Tables describing study characteristics, containing material published elsewhere, or presenting formulas and other technical material should also be included in an appendix. Authors can direct readers to the appendices in appropriate places in the text. It is authors' responsibility to ensure their reviews are comprehensive and as up to date as possible (at least through the prior calendar year) so the data are still current at the time of publication. Authors are referred to the PRISMA Guidelines (http://www.prisma-statement.org/statement.htm) for guidance in conducting reviews and preparing manuscripts. Adherence to the Guidelines is not required, but is recommended to enhance quality of submissions and impact of published papers on the field.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly, for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible. Note: The title page should be the first page of the manuscript document indicating the author's names and affiliations and the corresponding author's complete contact information.

Author names and affiliations. Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the e-mail address of each author within the cover letter.

Corresponding author. Clearly indicate who is willing to handle correspondence at all stages of refereeing and publication, also post-publication. Ensure that telephone and fax numbers (with country and area code) are provided in addition to the e-mail address and the complete
postal address.

Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a "Present address"' (or "Permanent address") may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required (not exceeding 200 words). This should be typed on a separate page following the title page. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. References should therefore be avoided, but if essential, they must be cited in full, without reference to the reference list.

Graphical abstract

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 ×
13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. See **https://www.elsevier.com/graphicalabstracts** for examples.
Authors can make use of Elsevier's Illustration and Enhancement service to ensure the best presentation of their images and in accordance with all technical requirements.

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). See https://www.elsevier.com/highlights for examples.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page
of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first
mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word
processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

Appendix D

Department of Psychology **University of California Santa Barbara**

August, 2008

Dear Colleagues:

Thank you for your interest in the Adult Attachment Scale. In this document you will find a copy of the original and revised Adult Attachment Scales, along with information on scoring. You'll also find some general information about self-report measures of adult attachment style, and a list of references from our lab.

Please feel free to use the Adult Attachment Scale in your research and, if needed, to translate the scale into a different language. If you do translate the scale, I would greatly appreciate it if you could send me a copy of your translation so that I can (with your permission) make the translation available to future researchers.

Before choosing the Adult Attachment Scale for your research, please be sure to investigate other self-report measures of adult attachment. There have been many developments in the field since my original scale was published, and you may find that newer scales – such as Brennan, Clark, & Shaver's (1988) Experiences in Close Relationships scale (ECR) – are better suited to your needs. I have included some references that will help you locate information on these newer measures.

Thank you for your interest in our work, and good luck with your research.

Sincerely,

Nancy Collins

Professor, UCSB

ncollins@psych.ucsb.edu

Please read each of the following statements and rate the extent to which it describes your feelings about romantic relationships. Please think about all your relationships (past and present) and respond in terms of how you generally feel in these relationships. If you have never been involved in a romantic relationship, answer in terms of how you think you would feel.

Please use the scale below by placing a number between 1 and 5 in the space provided to the right of each statement.

1----------2----------3----------4----------5
Not at all characteristic of me — **Very characteristic of me**

(1) I find it relatively easy to get close to others. _____

(2) I do not worry about being abandoned. _____

(3) I find it difficult to allow myself to depend on others. _____

(4) In relationships, I often worry that my partner does not really love me. _____

(5) I find that others are reluctant to get as close as I would like. _____

(6) I am comfortable depending on others. _____

(7) I do not worry about someone getting too close to me. _____

(8) I find that people are never there when you need them. _____

(9) I am somewhat uncomfortable being close to others. _____

(10) In relationships, I often worry that my partner will not want to stay with me. _____

(11) I want to merge completely with another person. _____

(12) My desire to merge sometimes scares people away. _____

(13) I am comfortable having others depend on me. _____

(14) I know that people will be there when I need them. _____

(15) I am nervous when anyone gets too close. _____

(16) I find it difficult to trust others completely. _____

(17) Often, partners want me to be closer than I feel comfortable being. _____

(18) I am not sure that I can always depend on others to be there when I need them. _____

Scoring Instructions for the *Original* Adult Attachment Scale

The scale contains three subscales, each composed of six items. The three subscales are CLOSE, DEPEND, and ANXIETY. The CLOSE scale measures the extent to which a person is comfortable with closeness and intimacy. The DEPEND scale measures the extent to which a person feels he/she can depend on others to be available when needed. The ANXIETY subscale measures the extent to which a person is worried about being abandoned or unloved.

Original Scoring:

Average the ratings for the six items that compose each subscale as indicated below.

Scale	Items
CLOSE	1 7 9* 13 15* 17*
DEPEND	3* 6 8* 14 16* 18*
ANXIETY	2* 4 5 10 11 12

* Items with an asterisk should be reverse scored before computing the subscale mean.

Alternative Scoring:

If you would like to compute only *two* attachment dimensions – attachment *anxiety* (model of self) and attachment *avoidance* (model of other) – you can use the following scoring procedure:

Scale	Items
ANXIETY	2* 4 5 10 11 12
AVOID	1* 3 6* 7* 8 9 13* 14* 15 16 17 18

* Items with an asterisk should be reverse scored before computing the subscale mean.

Please read each of the following statements and rate the extent to which it describes your feelings about romantic relationships. Please think about all your relationships (past and present) and respond in terms of how you generally feel in these relationships. If you have never been involved in a romantic relationship, answer in terms of how you think you would feel.

Please use the scale below by placing a number between 1 and 5 in the space provided to the right of each statement.

1----------2----------3----------4----------5
Not at all characteristic of me **Very characteristic of me**

1)	I find it relatively easy to get close to people.	_____
2)	I find it difficult to allow myself to depend on others.	_____
3)	I often worry that romantic partners don't really love me.	_____
4)	I find that others are reluctant to get as close as I would like.	_____
5)	I am comfortable depending on others.	_____
6)	I don't worry about people getting too close to me.	_____
7)	I find that people are never there when you need them.	_____
8)	I am somewhat uncomfortable being close to others.	_____
9)	I often worry that romantic partners won't want to stay with me.	_____
10)	When I show my feelings for others, I'm afraid they will not feel the same about me.	_____
11)	I often wonder whether romantic partners really care about me.	_____
12)	I am comfortable developing close relationships with others.	_____
13)	I am uncomfortable when anyone gets too emotionally close to me.	_____
14)	I know that people will be there when I need them.	_____
15)	I want to get close to people, but I worry about being hurt.	_____
16)	I find it difficult to trust others completely.	_____
17)	Romantic partners often want me to be emotionally closer than I feel comfortable being.	_____
18)	I am not sure that I can always depend on people to be there when I need them.	_____

Scoring Instructions for the *Revised* Adult Attachment Scale

This scale contains three subscales, each composed of six items. The three subscales are CLOSE, DEPEND, and ANXIETY. The CLOSE scale measures the extent to which a person is comfortable with closeness and intimacy. The DEPEND scale measures the extent to which a person feels he/she can depend on others to be available when needed. The ANXIETY subscale measures the extent to which a person is worried about being rejected or unloved.

Original Scoring Instructions:

Average the ratings for the six items that compose each subscale as indicated below.

Scale	Items
CLOSE	1 6 8* 12 13* 17*
DEPEND	2* 5 7* 14 16* 18*
ANXIETY	3 4 9 10 11 15

* Items with an asterisk should be reverse scored before computing the subscale mean.

Alternative Scoring:

If you would like to compute only *two* attachment dimensions – attachment *anxiety* (model of self) and attachment *avoidance* (model of other) – you can use the following scoring procedure:

Scale	**Items**
ANXIETY	3 4 9 10 11 15
AVOID	1* 2 5* 6* 7 8 12* 13 14* 16 17 18

* Items with an asterisk should be reverse scored before computing the subscale mean.

Cronbach's alpha coefficient in 3 samples of undergraduates:

n	*Close*	*Depend*	*Anxiety*
173	.81	.78	.85
130	.80	.78	.85
100	.82	.80	.83

The following version of the scale has revised instructions and slightly reworded items to refer to "close" relationships rather than "romantic" relationships. The scoring for this scale is the same as the scoring on p.5

The following questions concern how you ***generally*** feel in ***important close relationships in your life***. Think about your past and present relationships with people who have been especially important to you, such as family members, romantic partners, and close friends. Respond to each statement in terms of how you ***generally*** feel in these relationships.

Please use the scale below by placing a number between 1 and 5 in the space provided to the right of each statement.

1----------2----------3----------4----------5
Not at all characteristic of me — **Very characteristic of me**

1) I find it relatively easy to get close to people. _____
2) I find it difficult to allow myself to depend on others. _____
3) I often worry that other people don't really love me. _____
4) I find that others are reluctant to get as close as I would like. _____
5) I am comfortable depending on others. _____
6) I don't worry about people getting too close to me. _____
7) I find that people are never there when you need them. _____
8) I am somewhat uncomfortable being close to others. _____
9) I often worry that other people won't want to stay with me. _____
10) When I show my feelings for others, I'm afraid they will not feel the same about me. _____
11) I often wonder whether other people really care about me. _____
12) I am comfortable developing close relationships with others. _____
13) I am uncomfortable when anyone gets too emotionally close to me. _____
14) I know that people will be there when I need them. _____
15) I want to get close to people, but I worry about being hurt. _____
16) I find it difficult to trust others completely. _____
17) People often want me to be emotionally closer than I feel comfortable being. _____
18) I am not sure that I can always depend on people to be there when I need them. _____

SPSS COMMANDS FOR CREATING FOUR ATTACHMENTS STYLES USING THE REVISED ADULT ATTACHMENT SCALE

The following SPSS commands will create Bartholomew's (1990) four attachment styles (secure, preoccupied, fearful, dismissing) based on scores on the three attachment dimensions (close, depend, anxiety). Please note that, at present, this method is quite exploratory and, in general, ***I do not recommend it*** (please see my note below). I have defined the styles in terms of theoretically expected profiles along the dimensions. For example, a secure person should score high on the close and depend dimensions, and low on the anxiety dimension. I define a "high" score as being above the midpoint on a 5-point scale, and a low score as below the midpoint. (Please note that this is NOT the same as performing a median split.) However, what this means is that individuals who score at the midpoint will be excluded from the sample. On the one hand, this method provides a more clear assessment of attachment style because we exclude individuals who appear to fall on the boundary of more than one style, or who don't clearly belong to any style. On the other hand, this is problematic because we lose important data points, and we have to worry whenever we remove any subjects from our sample. At present, we have used this procedure in only a handful of samples but we are finding that we lose about 7% of our sample. We are continuing to explore the validity of this method of scoring and we suggest that it be used with caution, and only in conjunction with the continuous measures that include the entire sample.

```
***** Reverse code the appropriate items ******.

RECODE      AT8 AT13 AT17 AT2 AT7 AT16 AT18
            (1=5) (2=4) (3=3) (4=2) (5=1)
            INTO AT8R AT13R AT17R AT2R AT7R AT16R AT18R.

**** Compute the three attachment dimensions ****.

COMPUTE     CLOSE = MEAN (AT1, AT6, AT8R, AT12, AT13R, AT17R).
COMPUTE     DEPEND = MEAN (AT2R, AT5, AT7R, AT14, AT16R, AT18R).
COMPUTE     ANXIETY = MEAN (AT3, AT4, AT9, AT10, AT11, AT15).

**** Combine the CLOSE and DEPEND dimensions into a single composite ****.

COMPUTE     CLOSDEP = MEAN(CLOSE,DEPEND).

*** Compute an attachment style variable by using cutoff scores above/below the midpoint ****.

IF      (CLOSDEP GT 3)   AND   (ANXIETY LT 3)    STYLE = 1.
IF      (CLOSDEP GT 3)   AND   (ANXIETY GT 3)    STYLE = 2.
IF      (CLOSDEP LT 3)   AND   (ANXIETY LT 3)    STYLE = 3.
IF      (CLOSDEP LT 3)   AND   (ANXIETY GT 3)    STYLE = 4.

VALUE LABELS        STYLE 1 'SECURE' 2 'PREOCC' 3 'DISMISS' 4 'FEARFUL'
```

An important note on data analysis: Although researchers often want to assign respondents to attachment style categories, a more appropriate statistical procedure is to conduct regression analyses using the *continuous* attachment dimensions and then, if desired, plot the predicted values corresponding to each of the four attachment prototypes. In this type of analysis, the Close and Depend dimensions of the AAS can be averaged (and then reverse scored) to form an overall index of attachment-related *avoidance*, and the Anxiety dimension of the AAS can be used as an index of attachment-related *anxiety*. The predicted means corresponding to each of the four attachment prototypes can then be easily plotted. For example, the mean for "secure" individuals can be obtained by computing the predicted value (of your dependent variable) at 1 standard deviation (SD) below the mean on Anxiety and 1 SD below the mean on Avoidance. Likewise, the predicted mean for "preoccupied" is obtained by computing the predicted value at 1 SD above the mean on anxiety and 1 SD below the mean on avoidance. Please see Collins & Feeney (2004) for an example of this procedure.

READING LIST: MEASURING INDIVIDUAL DIFFERENCES IN ADULT ATTACHMENT

As you may know, there are a number of unresolved measurement issues in the adult attachment field, and there are a variety of ways to conceptualize and measure individual differences in adult attachment patterns. As such, before you select an attachment style measure for your own research program, you may want to read the following articles and chapters. These papers describe a variety of self-report and interview measures of adult attachment style, and they also discuss a number of important measurement issues that are currently being debated in the field. Although I highly recommend *all* of these papers, the following two chapters may be especially useful. (1) Crowell, Fraley, & Shaver (1999) – This chapter provides an in-depth and up-to-date review of the current state of the field. It offers a broad overview of measurement issues and measurement tools, including *self-report* and *interview* measures of adult attachment. (2) Brennan, Clark, & Shaver (1998) – This chapter presents a *new self-report measure of attachment style* that is likely to become widely used in the field. If you know in advance that you will be using a *self-report* measure of attachment style, then you will want to be sure to read this chapter.

In addition, **please be sure to visit Dr. R. Chris Fraley's website** at the University of Illinois, Urban-Champaign. This website provides a very useful overview of self-report measures of adult attachment. www.psych.uiuc.edu/~rcfraley/measures/measures.html.

Bartholomew, K. & Shaver, P. R. (1998). Methods of assessing adult attachment: Do they converge? In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (p. 25-45). New York, NY: Guilford.

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

Collins, N. L., & Read, S. J. (1994). Cognitive representations of adult attachment: The structure and function of working models. In K. Bartholomew & D. Perlman (Eds.) *Advances in personal relationships, Vol. 5: Attachment processes in adulthood* (pp. 53-90). London: Jessica Kingsley, Inc.

Crowell, J. A., Fraley, R. C., & Shaver, P. R. (1999). Measurement of individual differences in adolescent and adult attachment. In J. Cassidy & P. R. Shaver, (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 434-465). New York, NY: Guilford.

Fraley, R. C., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (p. 77-114). New York, NY: Guilford.

Griffin, D. W. & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology, 67*, 430-445.

Hesse, E. (1999). The adult attachment interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver, (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 395-433). New York, NY: Guilford.

REFERENCES DESCRIBING ADULT ATTACHMENT RESEARCH IN OUR LAB

Kane, H. S., Jaremka, L. M., Guichard, A. C., Ford, M. B., Collins, N. L., & Feeney, B. C. (2007). Feeling supported and feeling satisfied: How one partner's attachment style predicts the other partner's relationship experiences. *Journal of Social and Personal Relationships, 24*, 535-555.

Collins, N. L., Ford, M. B., Guichard, A. C., & Allard, L. M. (2006). Working models of attachment and attribution processes in intimate relationships. *Personality and Social Psychology Bulletin, 32*, 201-219.

Collins, N. L., Ford, M. B., Guichard, A. C., & Feeney, B. C. (2006). Responding to need in intimate relationships: Normative processes and individual differences. In M. Mikulincer & G. Goodman (Eds.), *Dynamics of romantic love: Attachment, caregiving, and sex* (pp. 149-189). New York: Guilford Press.

Cooper, M. L., Pioli, M., Levitt, A., Taley, A., Micheas, L., & Collins, N. L. (2006). Attachment styles, sex motives, and sexual behavior: Evidence for gender-specific expressions of attachment dynamics. In M. Mikulincer & G. Goodman (Eds.). *Dynamics of romantic love: Attachment, caregiving, and sex* (pp. 243-274).New York: The Guilford Press.

Collins, N. L., & Feeney, B. C. (2004). Working models of attachment shape perceptions of social support: Evidence from experimental and observational studies. *Journal of Personality and Social Psychology, 87*, 363-383.

Collins, N. L. , Guichard, A. C., Ford, M. B., & Feeney, B. C. (2004). Working models of attachment: New developments and emerging themes. In W. S. Rholes & J. A. Simpson (Eds.), *Adult Attachment: Theory, Research, and Clinical Implications* (pp. 196-239). New York: Guilford.

Feeney, B. C., & Collins, N. L. (2004). Interpersonal safe haven and secure base caregiving processes in adulthood. In W. S. Rholes & J. A. Simpson (Eds.), *Adult Attachment: Theory, Research, and Clinical Implications* (pp. 300-338). New York: Guilford.

Collins, N. L. & Feeney, B. C. (2004). An attachment theory perspective on closeness and intimacy: Normative processes and individual differences (pp. 163-187). In D. Mashek & A. Aron (Eds.), *Handbook of Closeness and Intimacy*. Mahwah, NJ: Erlbaum.

Feeney, B. C., & Collins, N. L. (2003). Motivations for caregiving in adult intimate relationships: Influences on caregiving behavior and relationship functioning. *Personality and Social Psychology Bulletin, 29*, 950-968.

Collins, N. L., Cooper, M. L., Albino, A., & Allard, L. M. (2002). Psychosocial vulnerability from adolescence to adulthood: A prospective study of attachment style differences in relationship quality and partner choice. *Journal of Personality, 70*, 965-1008.

Feeney, B. C., & Collins, N. L. (2001). Predictors of caregiving in adult intimate relationships: An attachment theoretical perspective. *Journal of Personality and Social Psychology, 80*, 972-994.

function of working models. In G. Fletcher & M. Clark (Eds.), *Blackwell Handbook of Social Psychology: Vol. 2. Interpersonal Processes (pp. 60-85.* United Kingdom: Blackwell Publishers.

Collins, N. L., & Feeney, B. C. (2000). A safe haven: An attachment theory perspective on support-seeking and caregiving processes in intimate relationships. *Journal of Personality and Social Psychology, 78*, 1053-1073.

Cooper, M. L., Shaver, P. R., & Collins, N. L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology, 74*, 1380-1397.

Ognibene, T., & Collins, N. (1998). Adult attachment styles, perceived social support, and coping strategies. *Journal of Social and Personal Relationships, 15*, 323-345.

Collins, N. L. (1996). Working models of attachment: Implications for explanation, emotion, and behavior. *Journal of Personality and Social Psychology, 71*, 810-832.

Shaver, P., Collins, N. L., & Clark, C. (1996). Attachment theory and internal working models of self and relationship partners. In G. Fletcher & J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach* (pp. 25-61). Hillsdale, NJ: Erlbaum.

Collins, N. L., & Read, S. J. (1994). Cognitive representations of adult attachment: The structure and function of working models. In K. Bartholomew & D. Perlman (Eds.) *Advances in personal relationships, Vol. 5: Attachment processes in adulthood* (pp. 53-90). London: Jessica Kingsley, Inc.

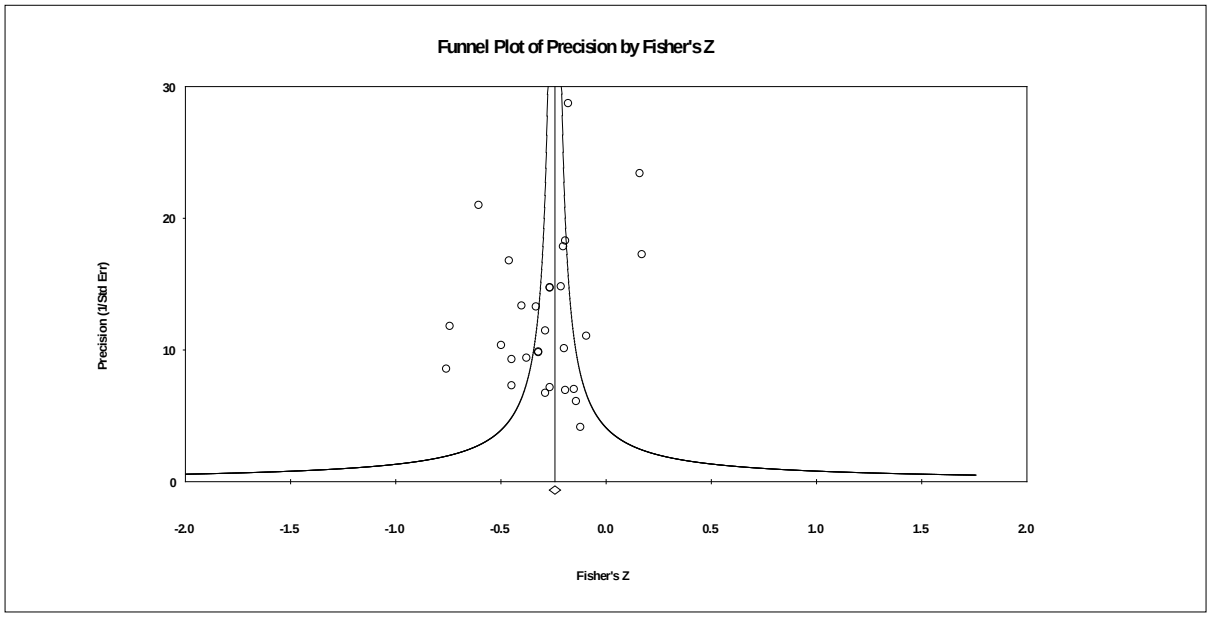
Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 54*, 644-663.

Please note: *Information regarding the Adult Attachment Scale can be found in Collins & Read (1990) and Collins (1996). Please feel free to contact me if you would like copies of any unpublished manuscripts.*
ncollins@psych.ucsb.edu.

Appendix E

Funnel Plots and Publication Bias reports (reports and plots generated by CMA)

Secure Attachment and Depression (report generated from CMA)



Duval and Tweedie's Trim and Fill

If the meta-analysis had captured all the relevant studies we would expect the funnel plot to be symmetric. That is, we would expect studies to be dispersed equally on either side of the overall effect. Therefore, if the funnel plot is actually asymmetric, with a relatively high number of small studies (representing a large effect size) falling toward the right of the mean effect and relatively few falling toward the left, we are concerned that these left-hand studies may actually exist, and are missing from the analysis.

Duval and Tweedie developed a method that allows us to impute these studies. That is, we determine where the missing studies are likely to fall, add them to the analysis, and then recompute the combined effect.

The method is known as 'Trim and Fill' as the method initially trims the asymmetric studies from the right-hand side to locate the unbiased effect (in an iterative procedure), and then fills the plot by re-inserting the trimmed studies on the right as well as their imputed counterparts to the left the mean effect.

The program is looking for missing studies based on a random effects model, and is looking for missing studies only to the **left side of the mean** effect (these parameters are set by the user). Using these parameters the method suggests that **6 studies are missing**.

Under the fixed effect model the point estimate and 95% confidence interval for the combined studies is -0.23873 (-0.26374, -0.21339). Using Trim and Fill the imputed point estimate is -0.32633 (-0.34795, -0.30437).

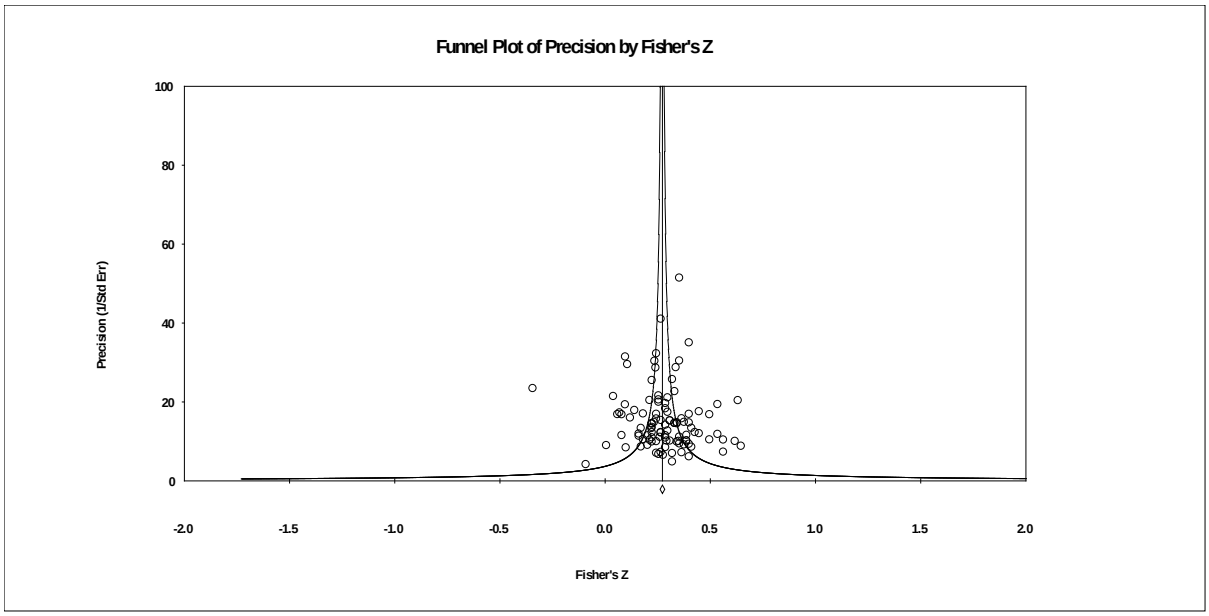
Under the random effects model the point estimate and 95% confidence interval for the combined studies is **-0.28303** (-0.36482, -0.19689). Using Trim and Fill the imputed point estimate is **-0.34330** (-0.43438, -0.24528).

The program is looking for missing studies based on a random effects model, and is looking for missing studies only to the **right side of the mean** effect (these parameters are set by the user). Using these parameters the method suggests that **no studies are missing**.

Under the fixed effect model the point estimate and 95% confidence interval for the combined studies is -0.23873 (-0.26374, -0.21339). Using Trim and Fill these values are unchanged.

Under the random effects model the point estimate and 95% confidence interval for the combined studies is -0.28303 (-0.36482, -0.19689). Using Trim and Fill these values are unchanged.

Avoidant Attachment and Depression (report generated from CMA)



Duval and Tweedie's Trim and Fill

If the meta-analysis had captured all the relevant studies we would expect the funnel plot to be symmetric. That is, we would expect studies to be dispersed equally on either side of the overall effect. Therefore, if the funnel plot is actually asymmetric, with a relatively high number of small studies (representing a large effect size) falling toward the right of the mean effect and relatively few falling toward the left, we are concerned that these left-hand studies may actually exist, and are missing from the analysis.

Duval and Tweedie developed a method that allows us to impute these studies. That is, we determine where the missing studies are likely to fall, add them to the analysis, and then recompute the combined effect.

The method is known as 'Trim and Fill' as the method initially trims the asymmetric studies from the right-hand side to locate the unbiased effect (in an iterative procedure), and then fills

the plot by re-inserting the trimmed studies on the right as well as their imputed counterparts to the left the mean effect.

The program is looking for missing studies based on a random effects model, and is looking for missing studies only to the **left side of the mean** effect (these parameters are set by the user). Using these parameters the method suggests that **27 studies are missing**.

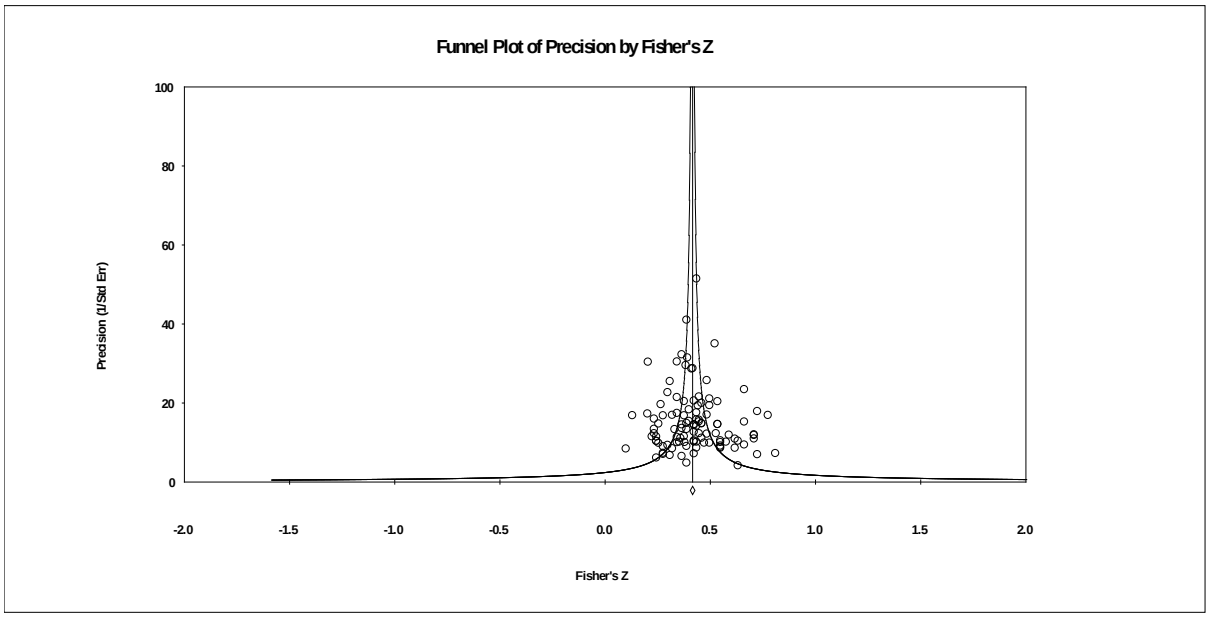
Under the fixed effect model the point estimate and 95% confidence interval for the combined studies is 0.26576 (0.25535, 0.27611). Using Trim and Fill the imputed point estimate is 0.22795 (0.21816, 0.23770).

Under the random effects model the point estimate and 95% confidence interval for the combined studies is **0.27444** (0.24700, 0.30143). Using Trim and Fill the imputed point estimate is **0.22261** (0.19373, 0.25111).

The program is looking for missing studies based on a random effects model, and is looking for missing studies only to the **right side of the mean** effect (these parameters are set by the user). Using these parameters the method suggests that **no studies are missing**.

Under the fixed effect model the point estimate and 95% confidence interval for the combined studies is 0.26576 (0.25535, 0.27611). Using Trim and Fill these values are unchanged.

Anxious Attachment and Depression (report generated from CMA)



Duval and Tweedie's Trim and Fill

If the meta-analysis had captured all the relevant studies we would expect the funnel plot to be symmetric. That is, we would expect studies to be dispersed equally on either side of the overall effect. Therefore, if the funnel plot is actually asymmetric, with a relatively high number of small studies (representing a large effect size) falling toward the right of the mean effect and relatively few falling toward the left, we are concerned that these left-hand studies may actually exist, and are missing from the analysis.

Duval and Tweedie developed a method that allows us to impute these studies. That is, we determine where the missing studies are likely to fall, add them to the analysis, and then recompute the combined effect.

The method is known as 'Trim and Fill' as the method initially trims the asymmetric studies from the right-hand side to locate the unbiased effect (in an iterative procedure), and then fills the plot by re-inserting the trimmed studies on the right as well as their imputed counterparts to the left the mean effect.

The program is looking for missing studies based on a random effects model, and is looking for missing studies only to the **left side of the mean** effect (these parameters are set by the user). Using these parameters the method suggests that **no studies are missing**.

Under the fixed effect model the point estimate and 95% confidence interval for the combined studies is 0.39346 (0.38400, 0.40283). Using Trim and Fill these values are unchanged.

Under the random effects model the point estimate and 95% confidence interval for the combined studies is 0.39989 (0.37920, 0.42018). Using Trim and Fill these values are unchanged.

The program is looking for missing studies based on a random effects model, and is looking for missing studies only to the **right side of the mean** effect (these parameters are set by the user). Using these parameters the method suggests that **13 studies are missing**.

Under the fixed effect model the point estimate and 95% confidence interval for the combined studies is 0.39346 (0.38400, 0.40283). Using Trim and Fill the imputed point estimate is 0.41223 (0.40333, 0.42105).

Under the random effects model the point estimate and 95% confidence interval for the combined studies is **0.39989** (0.37920, 0.42018). Using Trim and Fill the imputed point estimate is **0.42302** (0.40122, 0.44434).