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### **Attachment Dimensions and Forgiveness of Others: A Meta-Analysis**

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**Abstract**

Forgiveness, as a response to interpersonal transgressions, has multiple societal and individual benefits. Individual differences in attachment have been identified as a predictor not only of forgiveness, but of state responses frequently associated with forgiveness. The current meta-analysis is the first systematic analysis of the effect of attachment dimensions (i.e., anxiety and avoidance) on forgiveness of others. Analysis of published and unpublished studies ( $k=26$ ) identified significant, small to medium effects of attachment anxiety ( $r= -.25$ ) and attachment avoidance ( $r= -.18$ ) on forgiveness of others. No significant difference was obtained between measures of state and trait forgiveness. The moderating effects of study paradigm, attachment measure, publication type, and sample population were also investigated. The findings of a stable negative effect of insecure attachment dimensions on forgiveness of others provide a base for future research that may focus on reducing attachment anxiety and avoidance to support forgiveness.

### **Attachment Dimensions and Forgiveness of Others: A Meta-Analysis**

High quality, mutually beneficial close relationships are a key component of communal societies and are vital for individuals' well-being. Despite the multitude of benefits that close relationships engender, they also put individuals at risk of transgressions, such as exploitation and betrayal, by relationship partners. Forgiveness is a prosocial mechanism that allows individuals to mitigate the stress and negative consequences that may occur as a result of relational transgressions and promotes relationship maintenance. Forgiveness involves a motivational shift from negative to positive emotions, cognitions, and behaviours (McCullough, Worthington, & Rachal, 1997) and influences interpersonal relationship management. But how can we understand what makes an individual more or less likely to forgive? Attachment theory is a strong candidate as a framework for understanding when and why people may respond to a transgression with forgiveness, because not only is it fundamental to our understanding of how we negotiate interpersonal relationships, but also predicts state variables associated with forgiveness.

Although studies have shown an association between secure attachment and forgiveness (e.g., Davidson, 2000), there has been no systematic assessment of the effect of attachment dimensions on forgiveness. Hence, it is unclear whether both attachment anxiety and avoidance inhibit forgiveness, or whether individual differences in attachment are equally associated with both state and trait forgiveness. The number and diversity of measures used to assess forgiveness in the literature also makes synthesis of findings difficult. These issues raise questions as to the nature and size of the attachment-forgiveness relationship. To date, two published meta-analyses have examined predictors of forgiveness. One focused on correlates of forgiveness of a single other, and identified the strongest correlates as state empathy, state anger, and apology (Fehr, Gelfand, & Nag, 2010). The second meta-analysis focused on a range of distal (e.g., trait empathy, personality) and proximal (e.g., state

empathy, rumination, apology) predictors and consequences of forgiveness (Riek & Mania, 2012). However, neither of these meta-analyses included attachment orientation. The present meta-analysis systematically assesses and quantifies the effect of attachment dimensions on forgiveness of others, examining the role of key moderator variables, and in so doing addresses conceptual and methodological concerns about the existing literature.

### **Forgiveness**

Forgiveness is a pro-social construct that serves to maintain social relationships and by proxy social cohesion (McCullough, 2001). Forgiveness can prevent or ameliorate destructive responses to interpersonal transgressions, such as revenge and avoidance (Burnette et al., 2012). Forgiveness is associated with a host of positive physical and mental health outcomes, such as reduced stress responses, lower resting heart rate, and greater life satisfaction (for a comprehensive review see Toussaint, Worthington, & Williams, 2015). Although reconciliation is not the sole objective, forgiveness also has a positive impact on relationship functioning, such as increased commitment (Riek & Mania, 2012), perceived relationship quality (Roloff et al., 2001), and relational satisfaction (Braithwaite, Selby, & Fincham, 2011). Accordingly, understanding the factors that can support or impede forgiveness after a transgression is a worthwhile goal.

The extent to which an individual forgives, or not, following a transgression has been shown to be influenced by a number of factors, which can be organised into distinct categories. *Features of the offence* include the severity of the offence (Boon & Sulsky, 1997) and whether an apology was provided (McCullough et al., 1998). *Socio-cognitive reactions* to the offence include empathy for the transgressor (McCullough et al., 1997), rumination about the offence (McCullough, Bono, & Root, 2005), and attributions about the offender's responsibility (Fincham, Paleari, & Regalia, 2002). *Relationship variables* include pre-existing closeness and commitment (Finkel et al., 2002). There are also *stable individual*

*differences* that predict forgiveness, such as agreeableness and neuroticism (Berry et al., 2005), and religiosity (Davis, Worthington, Hook, & Hill, 2013). The strength of these variables' relationships with forgiveness is thought to be hierarchical: personality variables act as the most distal predictors of forgiveness, whereas socio-cognitive state variables are more proximal predictors (McCullough, 2001). Indeed, a meta-analysis of antecedents and consequences reported that state socio-cognitive variables had the strongest association with forgiveness (e.g., state empathy  $r=.50$ ; rumination  $r=-.37$ ; Riek & Mania, 2012). Although informative, this collection of variables lacks a coherent theoretical model, and it may not be useful to rely on state variables when seeking to develop practical applications to support forgiveness. Hence, a framework that relies on stable variables but that also predicts such powerful state reactions may both allow for greater theoretical insight into the mechanisms and motivations that underpin forgiveness and also inform interventions. Here, we turn to attachment theory.

### **Attachment Orientation and Prosocial Behaviour**

An individual's attachment orientation develops in childhood based upon child-caregiver interactions, specifically how successful the infant is in their proximity-seeking behaviour in times of threat (Bowlby, 1969). These early interactions result in relatively positive or negative mental representations of self and other, and are theorised to influence how one regulates affect and approaches future relationships (Mikulincer, Shaver, & Pereg, 2003). Early research, which focused on children's attachment to their primary caregivers, conceptualised attachment as a categorical variable (e.g., secure, avoidant, anxious-ambivalent) (Ainsworth, Blehar, Waters, & Wall, 1978). However, adult attachment research suggests that individual differences are naturally continuous, rather than categorical (Fraley & Waller, 1998). Specifically, attachment orientations are conceptualised as two near-orthogonal dimensions that indicate how comfortable one is with closeness (avoidance) and

how fearful one is of rejection (anxiety) (Brennan, Clark, & Shaver, 1998). High scores on either or both dimensions indicate an insecure attachment orientation.

Positive mental representations of self and other, as found in attachment security, are thought to support prosocial responses and behaviours, such as empathy, compassion, and altruism (Mikulincer & Shaver, 2015). For example, secure (compared to insecure) attachment has been associated with greater caregiving to relationship partners and relationship satisfaction (Carnelley, Pietromonaco, & Jaffe, 1996). Secure attachment is also associated with greater empathy in children (Kim & Kochanska, 2017), parents (Kazmierczak, 2015), and empathic responses to a confederate in need (Kunce & Shaver, 1994). Priming studies have also found that experimentally activating feelings of attachment security results in increased prosocial behaviours, such as reduced negative reactions to a potentially threatening outgroup and increased compassion (Boag & Carnelley, 2012; Mikulincer & Shaver, 2001).

Greater insight into the effects of attachment on prosocial behaviours has been gained by examining attachment dimensions. For example, correlational studies have found that comfort with closeness (i.e., low avoidance) is associated with empathic concern, whilst anxiety is positively associated with personal distress (Joireman, Needham, & Cummings, 2002) – two different aspects of empathy. This effect is reproduced in experimental studies: Mikulincer et al. (2001) found that attachment avoidance was negatively associated with empathic concern and attachment anxiety was positively associated with personal distress, whereas attachment security priming boosted empathic concern and buffered against personal distress.

### **Attachment Dimensions and Functioning in Interpersonal Relationships**

Because of the different mechanisms that underlie being high in attachment anxiety or attachment avoidance, the two dimensions result in distinct patterns of functioning in

interpersonal relationships (Mikulincer et al., 2003). Individuals high in attachment anxiety engage in hyperactivating attachment strategies (e.g., reducing distance, elevated threat detection) to retain contact with their relationship partner and rely on others to help regulate their affect. For example, attachment anxiety correlates with low trust and high jealousy (Rodríguez, DiBello, Overup, & Neighbours, 2015), and with rumination about a partner's behaviours (Saffrey & Ehrenberg, 2007). Attachment anxiety has also been linked to compulsive caregiving (Julal & Carnelley, 2013) and high neuroticism (Gallo, Smith, & Ruiz, 2003).

In contrast, those high in attachment avoidance engage in deactivating attachment strategies (e.g., reduced affect recognition; avoiding intimacy) to maintain both emotional and physical distance from their relationship partner. These responses can manifest in low empathy (Mikulincer et al., 2001), reduced empathic accuracy (Simpson et al., 2011), and unresponsive or negative reactions to caregiving (Julal & Carnelley, 2013; Nelson-Coffey, 2017). More generally, avoidance correlates with greater expectation of relationship failure (Birnie-Porter, McClure, Lydon, & Holmberg, 2009), and reduced commitment in relationships, as well as relationship destructive behaviours (Tran & Simpson, 2009).

Given these patterns of relationship dynamics, both attachment anxiety and avoidance may undermine healthy and prosocial reactions to relationship threats or transgressions. Indeed, attachment anxiety and avoidance relate to several variables known to predict forgiveness. As mentioned, attachment avoidance is predictive of reduced empathy (Mikulincer et al., 2001), but also of indicators of reduced motivation to maintain a relationship (such as commitment and relationship satisfaction, e.g., Birnie-Porter et al., 2009). Conversely, attachment anxiety is predictive of rumination and negative attributions (Mikulincer et al., 2003). Therefore, we can expect that attachment dimensions might influence forgiveness, perhaps directly, but also through these key socio-cognitive mediators.



### **Research on Attachment Categories and Forgiveness**

Several studies have used categorical measures of attachment alongside dispositional measures of forgiveness. These have reliably found that secure individuals are more forgiving than those categorised as insecure (e.g., Davidson, 2000; Shahidi, Zaal, & Mazaheri, 2012). Davidson (2000) found that secure participants reported higher overall forgiveness than those in the three insecure attachment categories (i.e., preoccupied, fearful, dismissive). Similarly, Webb et al. (2006) found that secure participants reported greater dispositional forgiveness towards self, other, and situation compared to those in the three insecure categories. Further, participants in the preoccupied and fearful (i.e., high-anxious) categories reported similarly reduced forgiveness of self, other and situation, whereas participants in the dismissive (i.e., high-avoidant) category only reported reduced forgiveness of other. These findings indicate that associations with forgiveness are more complex than just differences between secure and insecure, and that insecure attachment patterns may play different roles.

### **Research on Attachment Dimensions and Forgiveness**

Although the positive effect of secure attachment on forgiveness seems reliable, categories are known to be an inaccurate reflection of the underlying individual differences (Fraley & Shaver, 1998). Fraley and Hefferman (2015) suggest that although categorical conceptualisations of attachment can be useful in relationship-specific contexts, dimensions are more appropriate for global or abstract representations of close others. To better understand the effect of insecure attachment on forgiveness, attachment dimensions must be considered. Thus far, studies that have measured attachment using anxiety and avoidance dimensions, or working models of self and other, have produced mixed results for the association between both dimensions and forgiveness. Some studies find an association between both anxiety and avoidance and forgiveness (e.g., Burnette et al., 2009), whereas others find no association between attachment avoidance and forgiveness (e.g., Blount-

Matthews, 2005), or only an association with a negative self-model (analogous with attachment anxiety) (e.g., Kachadourian, Fincham, & Davila, 2004). Given that attachment avoidance and anxiety are based on different mental representations of self and other it is likely that they are associated with forgiveness through different mechanisms. However, the literature does not seem to paint a clear picture of what these are or how large the resultant effects may be. Such clarification is the primary goal of the current meta-analysis. Moreover, the picture is further muddied by a series of methodological issues and idiosyncrasies, some stemming from the complexity of forgiveness as a construct, which make it difficult to compare studies. We consider each of these as a potential moderator in the current meta-analysis and introduce each below.

### **Methodological Issues**

First, there is extensive variability in the way that forgiveness is operationalised and measured across studies. How forgiveness is operationally defined may influence relations between attachment and forgiveness. Forgiveness can be variously conceptualised as a decision that one makes and/or an emotional response to a transgression (e.g., Worthington, Witliev, Pietrini, & Miller, 2007); as a reduction in negative responses but no increase in positive responses (such as when forgiving a stranger; Worthington, 2005); or as a reduction in negative responses alongside an increase in positive responses (McCullough et al., 1998). These different conceptualisations of forgiveness have resulted in multiple measures being developed. Different measures are also typically used to assess trait and state forgiveness. In a recent meta-analysis, Card (2018) identified nine forgiveness measures that are most commonly used in the literature. All of these measures had good internal reliability, but were all developed based upon differing conceptualisations of forgiveness. Hence, it may be difficult to compare their usefulness. This problem may be exacerbated when researchers develop their own idiosyncratic measures. Because of the complex nature of forgiveness, it is

important to understand exactly what type of forgiveness is being measured, and whether this matches the authors' conceptualisation of forgiveness. Therefore, the current meta-analysis examines whether the type of forgiveness measure used influences the relationship between attachment and forgiveness. We also examine the role of attachment measures, although the literature is more consistent because the dominant measure, the Experiences in Close Relationships scale (Brennan et al., 1998) was derived from all measures that preceded it (e.g., the Adult Attachment scale; Simpson et al, 1990).

Second, studies adopt varying paradigms. Research largely utilises three key approaches to investigate forgiveness: recall of previous transgression, hypothetical transgression scenarios, and as a disposition (Card, 2018). The recall paradigm has potential memory bias implications. For example, individuals high in attachment anxiety have heightened access to negative memories whereas those high in attachment avoidance are thought to defensively exclude negative memories, especially relational ones (Mikulincer & Orbach, 1995). This carries the risk of recall paradigm studies producing inflated effect sizes for attachment anxiety and smaller effect sizes for avoidance. Thus, the current meta-analysis compares recall studies to other forgiveness paradigms.

Third, challenges arise from relying on trait individual differences in predicting state responses such as state forgiveness. Although it is assumed that trait variables are useful for predicting behaviours, research suggests that variables such as trait empathy and trait religiosity are poor predictors of their corresponding state expressions (Mischel, 2004). In the case of forgiveness, this issue may even explain a gap in responses to trait and state forgiveness measures (e.g., Brown & Phillips, 2005). An example of this is the religion-forgiveness discrepancy (Tsang, McCullough, & Hoyt, 2005), which refers to the pattern whereby individuals high in trait religiosity respond positively to measures of trait forgiveness, but when confronted with an offensive incident are more influenced by socio-

cognitive factors and respond with lower state forgiveness. Indeed, Riek and Mania's (2012) meta-analysis found trait forgiveness, along with other trait variables (e.g., empathy, agreeableness, neuroticism) to be weaker predictors of forgiveness than state and socio-cognitive variables, such as state empathy, anger, and rumination. Although attachment dimensions are considered a trait variable, attachment may be the exception to this rule in that it can consistently predict not only trait forgiveness, but also the state responses that determine likelihood of state forgiveness (e.g., empathy, rumination, attributions). Thus, attachment might provide a valuable framework for understanding both trait and state forgiveness. To examine this proposal, the current meta-analysis will compare the size of the associations between attachment orientation and trait vs. state forgiveness.

### **The Current Study**

The aim of the present study was to provide the first meta-analytic evaluation of the effects of attachment anxiety and attachment avoidance on forgiveness of others. Although forgiveness is most commonly conceptualised in terms of forgiving an external other following a perceived transgression, research has also investigated more abstract constructs such as forgiveness of self (Maltby, MacAskill, & Day, 2001), forgiveness of groups (Hewstone, Cairns, Voci, Hamberger, & Niens, 2006), and forgiveness of God (Exline & Martin, 2005). As social relationships start at their most basic level as interpersonal relationships between two individuals, the current meta-analysis focuses on forgiveness as positive and negative motivations, cognitions, affect, and behaviours *towards an individual other*.

We also examine the moderating effects of the four key issues identified in the extant literature examining the association between attachment and forgiveness: measures of forgiveness, measures of attachment, forgiveness paradigm, and trait vs. state forgiveness; as well as sample characteristics. We hypothesised that studies that utilised a recall paradigm

would produce inflated effect sizes for participants high in anxiety, and smaller effect sizes for those high in avoidance, compared to studies that used a global or hypothetical paradigm. The analyses of samples and measures were exploratory.

## Method

### Literature Search and Selection of Studies

**Criteria.** Studies needed to meet the following criteria to be included in the meta-analysis: a) employ a quantitative methodology, b) measure dimensions of attachment anxiety and/or attachment avoidance, c) include a measure of forgiveness of others, and d) report an  $r$  effect size between at least one of the attachment dimensions and forgiveness. For studies that met criteria a, b, and c, we contacted the authors for effect sizes, and included the study if the authors provided the relevant data.

**Sources.** A literature search was conducted across three databases on 21 September 2018, after which no papers were considered for inclusion. The Psychology Cross Search ( $n=228$ ), Psychology & Behavioural Sciences Collection ( $n=23$ ), and Web of Science ( $n=108$ ) databases were searched, using the keywords '*forgiv\**' and '*attachment*' in the title and abstracts. We also sought relevant grey literature (i.e., that which has not been peer-reviewed; Hopewell, Clarke, & Mallett, 2006) to reduce the risk of relying too heavily on studies with statistically significant findings and over-inflating effect sizes (Conn, Valentine, Cooper, & Rantz, 2003). To identify relevant unpublished studies, a call for data was submitted to the October 2016 International Association of Relationship Research (IARR) newsletter requesting published and unpublished data from members ( $n=1$ ). IARR conference abstracts (2016, 2018) were also searched and authors emailed for further information ( $n=1$ ).

### Coding Study Characteristics

Studies were categorised based on four primary characteristics: attachment measure used, forgiveness measure used, conceptualisation of forgiveness (i.e., state or trait), and

forgiveness paradigm (i.e., recall, hypothetical, or global). Recall studies asked participants to reflect on a past transgression of their choosing; hypothetical paradigms asked participants to rate their likely responses to one or more hypothetical transgression scenarios; and global paradigms asked participants to complete self-report measures with no specific target in mind. Most of the studies that employed a global forgiveness paradigm ( $n=17$ ) measured forgiveness as a trait; only three measured state forgiveness.

### **Study Characteristics**

Twenty published (77%) and six unpublished (23%) studies were included in the meta-analytic dataset (Table 1). The studies were published between 2005 and 2018. Sample sizes ranged from  $n=40$  to  $n=1008$  ( $N=6528$ ;  $M=251.08$ ), and comprised students (65%), community (27%), and clinical population (8%) participants. Fifteen studies reported age information (*Range* 19-82;  $M_{age}=29.87$ ). Eighteen studies reported gender demographics, which we used to calculate the percentage of females in a sample (*Range* = 49%-88%;  $M=74.04\%$ ). Seven studies reported relationship demographics indicating whether participants were in a relationship (66%), single (17%), or divorced (17%).

Five different measures of attachment orientation and twelve measures of forgiveness were used across the studies. Seven studies measured forgiveness only as a state response (27%), 14 measured forgiveness only as a trait response (54%), and four measured both state and trait forgiveness using the same sample (19%). The studies utilised global (58%), recall (32%), and hypothetical forgiveness paradigms (10%). Two studies contained an alternative experimental component. One utilised attachment anxiety priming and a hypothetical transgression scenario, to assess whether experimentally induced attachment anxiety would reduce forgiveness (Finkel, Burnette, & Scissors, 2007). However, the authors also assessed and supplied data based on trait measures of attachment anxiety and avoidance, so it is categorised as such in the analysis. The second experimental study aimed to test a

psychoeducational intervention to promote forgiveness in a clinical sample; only the baseline global forgiveness and trait attachment data were included in the meta-analysis (Sandage et al., 2015).

### **Determining Eligibility**

Once duplicates were removed ( $n=92$ ), the first author screened article titles, excluded inappropriate articles, and then read all remaining abstracts before assessing full text articles for suitability. Articles were deemed inappropriate if they did not employ a quantitative methodology, measure dimensions of attachment anxiety and/or attachment avoidance, and/or measure forgiveness of others. This process yielded 25 articles, which included 26 independent studies for inclusion in the meta-analysis (Figure 1). For eight of the papers that appeared to include appropriate measures but did not report the relevant data (e.g., used a dimensional attachment measure but reported results only for attachment categories; did not report an  $r$  statistic), authors were contacted for further information. Five authors responded with information about six studies, which were included in analyses (Burnette et al., 2007; Dwiwardini et al., 2014; Finkel, et al., 2007; Gassin & Lengel, 2011; Yarnoz Yaben, 2009). Papers were excluded if authors did not respond to requests for data ( $n=2$ ).

Two papers were identified that used revenge as a measure of (lack of) forgiveness and one paper that used grudge holding (Edwards, 2012; Reis, 2018; Sandage, 2015). This represents inadequate power to assess the effect of attachment on these outcomes, and so they were not included in the current analyses. Finally, effect sizes included in the meta-analysis came from zero-order correlations so there was no effect of covariates to consider.

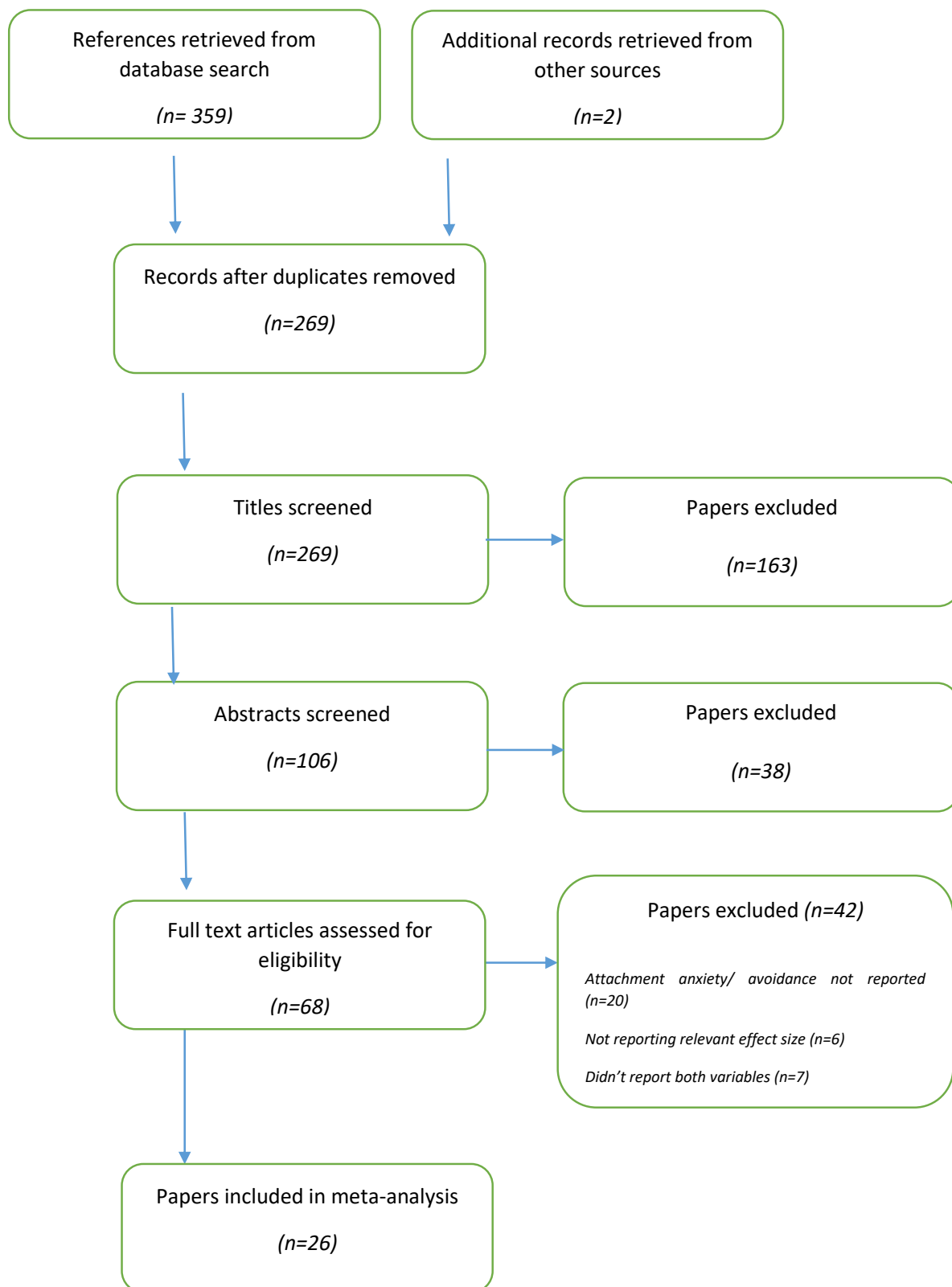
Table 1. Studies included in the meta-analyses

| Study                               | N    | A'ment<br>measure | F'ness<br>measure | Outcome | Study<br>design | Reported ES |           |
|-------------------------------------|------|-------------------|-------------------|---------|-----------------|-------------|-----------|
|                                     |      |                   |                   |         |                 | Anxiety     | Avoidance |
| Beck et al. (2017)                  | 257  | ECR-S             | MOSF              | S       | G               | -.30        | -.31      |
| Blount-Matthews (2005)              | 70   | ECR               | EFI               | S       | R               | .05         | -.06      |
| Blount-Matthews (2005)              | "    | "                 | WTF               | T       | H               | -.12        | .11       |
| Brown & Phillips (2005)             | 200  | ECR               | Multiple          | S       | R               | -.12        | -.10      |
| Brown & Phillips (2005)             | "    | "                 | "                 | T       | G               | -.26        | -.20      |
| Burnette et al. (2007)a             | 213  | ECR               | TFS               | T       | G               | -.27        | .30       |
| Burnette et al. (2007)b             | 218  | ECR               | TFS               | T       | G               | -.17        | -.25      |
| Burnette et al. (2009)              | 221  | ECR-R             | TFS               | T       | G               | -.40        | -.16      |
| Christensen (2018)                  | 223  | ECR-R             | TFS               | T       | G               | -.45        | -.44      |
| Chung (2014)                        | 208  | ECR               | TFS               | T       | G               | -.37        | -.33      |
| Dwiwardani et al. (2014)            | 245  | ECR-R             | HFS               | T       | G               | -.38        | -.30      |
| Finkel, Burnette, & Scissors (2007) | 145  | ECR               | AO                | T       | H               | -.08        | .34       |
| Gassin & Lengel (2011)              | 47   | ECR               | EFI               | S       | R               | -.33        | -.35      |
| Guzman & Santelices (2015)          | 647  | ECR               | TRIM              | S       | R               | -.10        | -.19      |
| Guzman (In Pub)                     | 1008 | ECR               | TRIM              | S       | R               | -.29        | -.14      |
| Hainlen et al. (2015)               | 209  | ECR               | DFS               | T       | G               | -.41        | -.27      |
| Jankowski & Sandage (2011)          | 211  | ECR               | DFS               | T       | G               | -.41        | -.27      |
| Kimmes & Durtchsi (2016)            | 171  | ECR-R             | AO                | S       | R               | -.32        | -.41      |
| Liao & Wei (2015)                   | 403  | ECR               | HFS               | T       | G               | -.26        | -.20      |
| Martin et al. (2012)                | 288  | ECR               | HFS               | T       | G               | -.03        | -.18      |
| Mikulincer, Shaver, & Slav (2009)   | 140  | ECR               | TFS               | T       | R               | .08         | -.34      |
| Northart (2015)                     | 88   | ECR-R             | EFI               | S       | G               | -.04        | -.11      |
| Pope (2009)                         | 66   | ECR-R             | AO                | S       | R               | -.29        | -.36      |
| Pope (2009)                         | "    | "                 | "                 | T       | "               | -.30        | .04       |
| Reis (Unpub)                        | 723  | ECR               | TRIM              | T       | G               | -.11        | -.18      |
| Sandage et al. (2015)               | 40   | ECR-S             | TFS               | S       | G               | -.30        | .09       |
| Sandage et al. (2015)               | "    | "                 | "                 | T       | "               | -.46        | .18       |
| Wade et al. (2018)                  | 162  | ECR-S             | TFS               | T       | R               | -.38        | -.30      |
| Wang (2008)*                        | 285  | AAS               | RFS               | S       | R               | -.42        | -         |
| Wang (2008)*                        | "    | "                 | FLS               | T       | H               | -.28        | -         |
| Yarnoz Yaben (2009)                 | 40   | RQ                | EFI               | S       | G               | .09         | .18       |

Note: \*All studies reported ES for both attachment anxiety and avoidance, except for Wang (2008) which only reported ES for attachment anxiety. AAS=Adult Attachment Scale (Collins & Read, 1990); AO=Authors Own (i.e., developed for the study in question); DFS=Decisional Forgiveness Scale (Worthington, Hook, et al., 2007); ECR=Experiences in Close Relationships (Brennan et al., 1998); ECR-R=Experiences in Close Relationships-Revised (Fraley, Waller, & Brennan, 2000);EFI=Enright Forgiveness Scale (Enright & Rique, 2004); FLS=Forgiveness Likelihood Scale (Rye et al., 2001); HFS=Heartland Forgiveness Scale (Yamhure-Thompson et al., 2005); MOSF=Marital Offense Specific Forgiveness RFS=Rye Forgiveness Scale (Rye et al., 2001); RQ=Relationship Questionnaire (Bartholomew & Horowitz, 1991); TFS=Trait Forgiveness Scale (Berry et al., 2005); TRIM=Transgression Related Interpersonal Motivations (McCullough et al., 1998); WTF= Willingness to Forgive Scale (DeShea, 2003); G= Global forgiveness paradigm; H=Hypothetical forgiveness paradigm; ES=Effect Size; R=Recall forgiveness paradigm; S=State forgiveness; T=Trait forgiveness



Figure 1. PRISMA systematic review checklist



## Statistical Methods

For the meta-analysis we used a random-effects model using Comprehensive Meta-Analysis (CMA) Version 3 software (Borenstein et al., 2009). A random-effects model does not assume a true effect size (Borenstein et al., 2009). Therefore, as well as the error seen in fixed-effect models, there is an additional error of sampling from a super-population (Field & Gillet, 2010). Data such as that collected in psychological studies, which include variability in methods, are suited to analysis in random-effects models (Field, 2003).

We conducted separate meta-analyses using each of the two attachment dimensions as a predictor variable. Separate meta-analyses for attachment anxiety and avoidance were necessary because studies utilised the same participant sample to measure both attachment anxiety and avoidance, which means that the resultant effect sizes were not independent. An alternative way to control for dependency would be to create a mean synthetic summary effect for attachment anxiety and avoidance (Borenstein, Hedges, Higgins, & Rothstein, 2009). However, attachment anxiety and avoidance, although mildly correlated, are separate constructs. Cameron, Finegan, and Morry (2012) conducted a meta-analysis of 242 studies that used the Experiences in Close Relationships (ECR) and ECR-Revised (ECR-R) and found a summary effect size for the correlation between attachment anxiety and-avoidance of .20 (95% CI= .18-.22). Given this modest correlation and the theoretical importance of their separate effects, it would be inappropriate to create a mean synthetic summary effect for attachment avoidance and anxiety.

We conducted a moderator analysis to test whether the effect varied across studies that focused on state forgiveness or trait forgiveness. We conducted further moderator analyses to test the effects of categorical variables (i.e., forgiveness paradigm, forgiveness measures, attachment measures, and whether participant samples were community, students, or clinical populations) on the effect size for each attachment dimension. For the moderator

analyses, we used a random-effects categorical model, in which predictors were dummy-coded by the software.

### **Studies with Multiple Effect Sizes**

Four studies (Blount-Matthews, 2005; Brown & Phillips, 2005; Pope, 2009; Sandage et al., 2015) reported effects between both attachment dimensions and both state and trait forgiveness. One study (Wang, 2008) reported effects between attachment anxiety (but not avoidance) and state and trait forgiveness. Further, three studies reported effect sizes using two different measures of state (Blount-Matthews, 2005; Sandage et al., 2015) or trait (Brown & Phillips, 2005) forgiveness. Because the same participant sample was utilised for all forgiveness measures in these cases, the effect sizes cannot be considered statistically independent. For all of these studies, a summary effect was created (Borenstein et al., 2009) and this single effect used in analysis.

## **Results**

### **Main Effect Sizes: Attachment Dimensions and Forgiveness**

Collapsing across state forgiveness, trait forgiveness, and the synthetic mean, a small to medium negative association between attachment anxiety and forgiveness was identified ( $r = -.25, p < .001$ ; 95% CI [-0.304 to -0.193]) (see Figure 2 for the forest plot). A small to medium negative association between attachment avoidance and forgiveness was also identified ( $r = -.18, p < .001$ ; 95% CI [-0.246 to -0.108]) (Figure 3).

Figure 2. Attachment anxiety meta-analysis forest plot

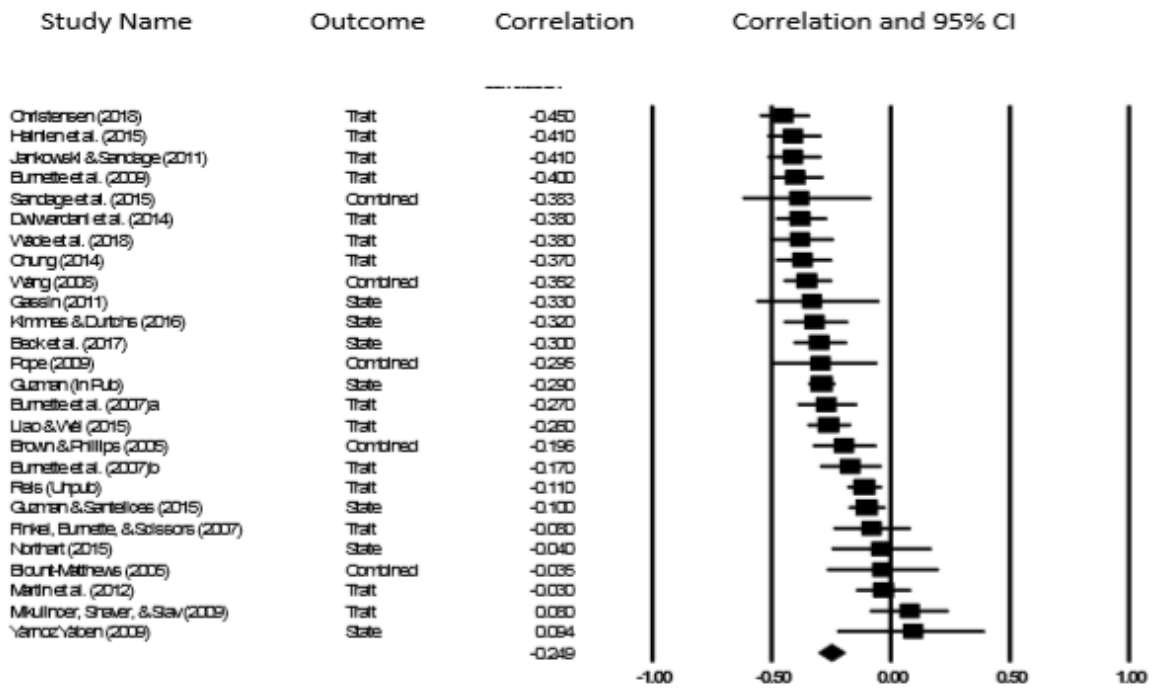
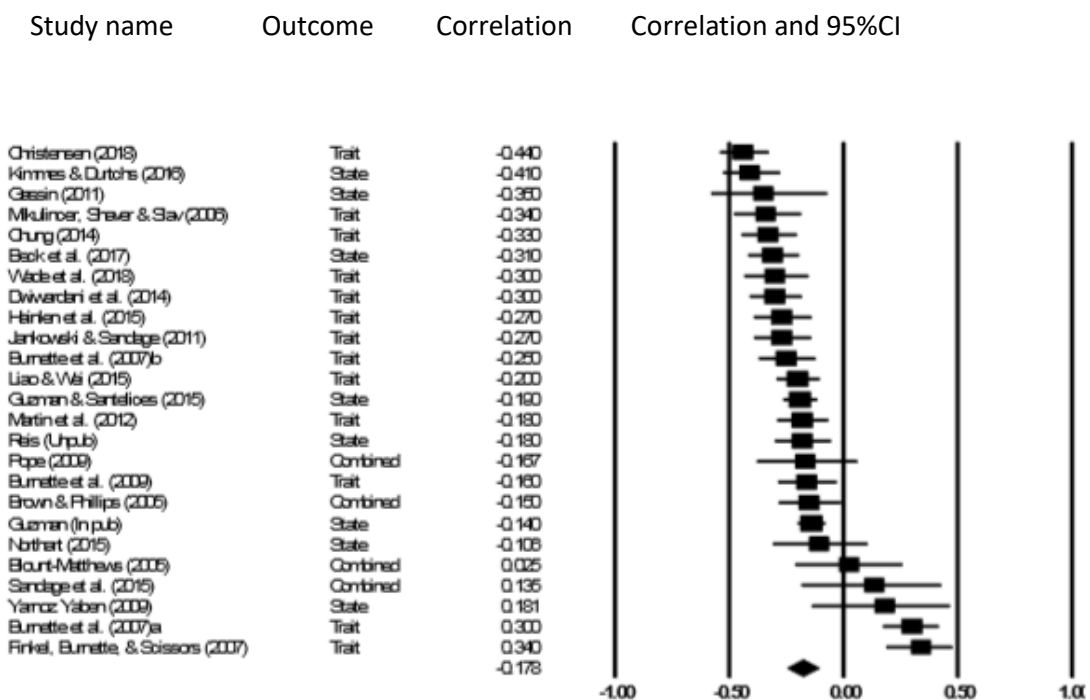


Figure 3. Attachment avoidance meta-analysis forest plot



### **Publication Bias**

We examined the impact of publication bias on the size of the effects reported. Funnel plots were visually inspected to check for publication bias (Field & Gillet, 2010), and reflected a cluster of large sample studies around the population mean (see Figure 4a and 4b). We used two statistical indicators of likely publication bias. Orwin's Fail-safe N (1983) calculates the number of studies with a specified effect size that would need to exist before the observed effect becomes trivial. In the current meta-analytic set a total of 311 studies for attachment anxiety and 226 studies for attachment avoidance would be needed to make the effect size trivial. Duval and Tweedie's (2000) Trim and Fill method calculates the number of studies that are potentially missing based on asymmetry of studies on a funnel plot. Results indicated that there was one likely missing study for both the attachment anxiety and attachment avoidance analysis. Following the Trim and Fill procedure the estimated mean of the attachment anxiety and attachment avoidance effect sizes increased by  $r=.01$ . Together, these indicators suggest that the impact of publication bias on both meta-analyses is negligible and we can conclude that the effect found is unlikely to be the result of publication bias. Moreover, a categorical moderator analysis of publication type (i.e., published v. unpublished) indicated that there were no effects of publication type,  $Q(1)=0.28, p=.60$ , in the attachment anxiety meta-analysis based on whether studies were published or unpublished. Finally, there were no effects of publication type,  $Q(1)=0.01, p=.84$ , in the attachment avoidance meta-analysis based on whether studies were published or unpublished.

Table 4a. Publication bias for attachment anxiety meta-analysis

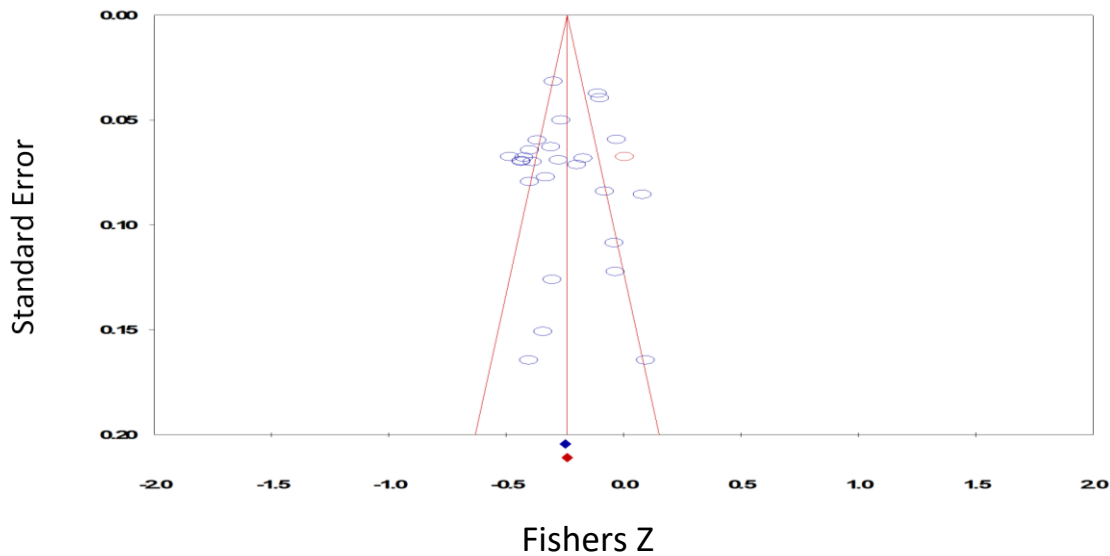
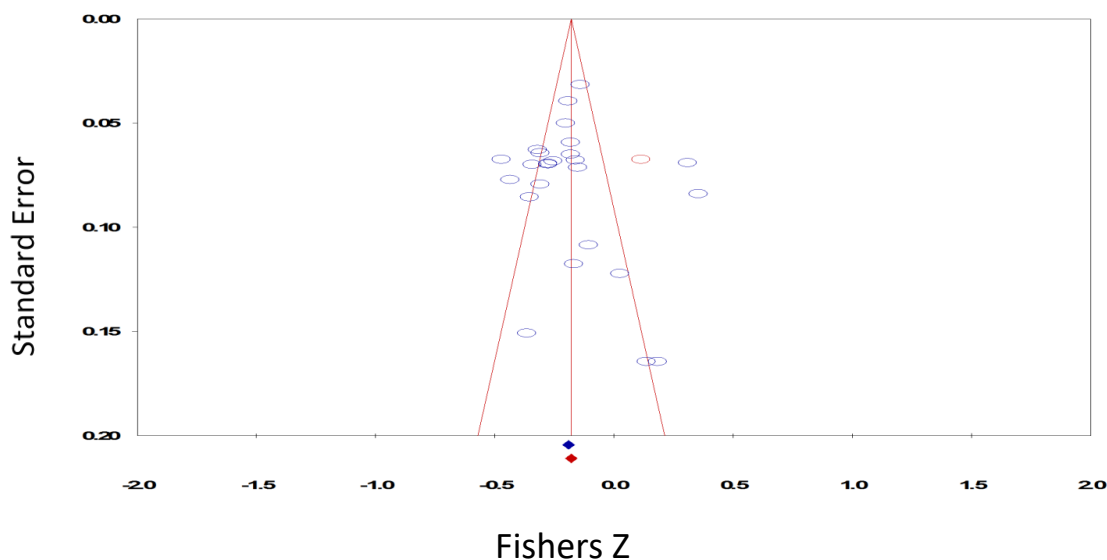


Table 4b. Publication bias for attachment avoidance meta-analysis



### Moderator Analyses

Based on Cochran's  $Q$  (Borenstein et al., 2009), there was significant heterogeneity in both the attachment anxiety,  $Q(25)=130.21, p<.001$ , and attachment avoidance,  $Q(24)=161.83, p<.001$ , estimates.  $I^2$  results indicated a large proportion of heterogeneity in the attachment anxiety ( $I^2=80.81$ ) and attachment avoidance ( $I^2=85.17$ ). Thus, the variance in effect sizes was produced by sampling error, suggesting moderating variables were likely to be present.

We conducted separate moderator analyses to examine the effects of type of forgiveness (i.e., state v. trait forgiveness), forgiveness paradigm, attachment measure, sample type (i.e., students v. community v. clinical populations) on the main associations. Not enough studies reported relationship status demographics to include this variable in the moderator analysis. We first analysed the effect of each moderator individually, then conducted meta-regressions to identify how much variance each one explained. The effect of gender (i.e., percent females in sample) was examined in the meta-regressions because it was a continuous variable.

**Attachment anxiety moderator analysis.** Results indicated that none of the moderators of the association between attachment and anxiety were significant. Studies that used a global forgiveness paradigm ( $r=-.27, p<.001$ ) or a recall forgiveness paradigm ( $r=-.22, p=.001$ ) reported descriptively larger negative effect sizes than those that used a hypothetical forgiveness paradigm design ( $r = -.08, p=.63$ ). However, this effect was not significant,  $Q(3)=1.76, p=.62$ . The effect of attachment measure was not significant,  $Q(5)=10.53, p=.06$ , when comparing studies that used the AAS ( $r=-.35; p=.005$ ), ECR ( $r=-.21, p<.001$ ), ECR-S ( $r=-.38, p=.001$ ), ECR-R ( $r=-.33, p<.001$ ), and RQ ( $r=.09, p=.64$ ). Finally, there were no effects of type of forgiveness,  $Q(1)= 10.75, p=.39$ , or participant sample,  $Q(2)=1.41, p=.49$ .

**Attachment avoidance moderator analysis.** Results showed that global ( $r=-.19, p<.001$ ) and recall ( $r=-.28, p<.001$ ) paradigms yielded a significant negative association between avoidance and forgiveness, whereas hypothetical paradigms ( $r=.34, p=.03$ ) yielded a significant positive association. This pattern was reflected in an overall significant moderation effect,  $Q(2)=13.09, p=.004$ . This pattern was unexpected and will be reflected on further in the discussion.

The effect of attachment measure was not significant,  $Q(2)=3.39, p=.18$ , when comparing studies that used the ECR ( $r=-.15, p<.001$ ), ECR-R ( $r=-.21, p=.04$ ) and RQ

( $r=.18$ ,  $p=.42$ ). Finally, there were no effects of type of forgiveness,  $Q(1)=0.03$ ,  $p=.86$ , or participant sample,  $Q(2)=3.13$ ,  $p=.54$ .

**Meta-regressions.** Meta-regressions were conducted for both attachment anxiety and avoidance as a means of quantitatively assessing the combined impact of multiple variables. The moderating predictor variables (i.e., forgiveness paradigm, publication type, and sample type) were entered simultaneously into a meta-regression along with the percentage of female participants (a continuous predictor). Attachment measure was included in the avoidance, but not anxiety, meta-regression as the anxiety model was unable to converge due to multicollinearity. Forgiveness measure was not included in either meta-regression, again due to multicollinearity.

For attachment anxiety, the model did not provide a good fit to the data,  $Q(6)=3.76$ ,  $p=.70$  ( $I^2=80.86\%$ ). This suggests that we cannot explain the between-study variance of the attachment anxiety effect using the moderator variables available to this meta-analysis. For avoidance, again the model did not fit the data,  $Q(9)=13.20$ ,  $p=.15$ . However, a second model excluding sample type, publication type, and gender, as these explained the least variance, was a good fit to the data,  $Q(5)=14.47$ ,  $p=.01$  ( $I^2=84.63\%$ ) and explained 25% of the variance ( $R^2=.25$ ). Only forgiveness paradigm had a significant effect. This supports the moderator analysis above and indicates that study paradigm moderates the effect of attachment avoidance on forgiveness.

### Discussion

The primary goal of this meta-analysis was to quantify the strength of the association between attachment dimensions, namely anxiety and avoidance, and forgiveness of others. As hypothesized, both relations were negative and of a small-to-medium size, with greater attachment anxiety and attachment avoidance reliably predicting lower forgiveness.

Moderator analyses also indicated that although studies included state and trait measures of



forgiveness, the effect sizes for attachment dimensions were relatively consistent across both. These findings are similar to studies that have found attachment security (vs. insecurity, or several insecure categories) to predict forgiveness (e.g., Davidson, 2000, Van Monsjou et al., 2015). They are also consistent with extensive evidence that attachment security is a predictor of prosocial behaviours (Mikulincer & Shaver, 2015). In relation to previous meta-analyses on predictors of forgiveness (i.e., Fehr et al., 2010; Riek & Mania, 2012) attachment anxiety and avoidance emerge as stronger predictors of forgiveness than trait variables such as extraversion and narcissism, and show similar effect sizes to variables such as transgression severity, trait empathy, and relationship commitment. Although attachment anxiety and avoidance are not as strong predictors as proximal situation-specific variables such as rumination and state empathy (as identified in prior meta-analyses; Fehr et al., 2010; Riek & Mania, 2012), the findings of the current study suggest attachment is a better predictor of forgiveness than other trait variables. In sum, the current meta-analysis highlights that there is a significant, stable, negative association between both attachment anxiety and attachment avoidance on forgiveness. This helps to clarify the literature, which has proven difficult to synthesise given a number of mixed findings, and implies that the non-significant effects of attachment avoidance obtained in some published studies may have been obtained by chance despite a reliable underlying effect.

### **Moderating Variables**

The only significant moderator identified was the forgiveness paradigm used. For attachment avoidance, studies that used a global (i.e., non-target specific) or recall paradigm obtained stronger negative associations with forgiveness. Studies that used a hypothetical paradigm found a significant positive effect for avoidance, implying that high-avoidant participants were more forgiving (Blount-Matthews, 2005; Finkel et al., 2005). Both hypothetical-transgression studies used versions of the ECR, so these findings cannot be

attributed to the attachment measure used. It is worth considering reasons why avoidance may behave in unexpected ways in such studies. The meta-analysis tentatively implies that in hypothetical experimental contexts, highly avoidant individuals do not report deficits in forgiveness of others, despite these effects being present in recall and correlational paradigms; however, more research is needed to assess the reliability of this effect. One possibility that may explain this finding is that insecure individuals are unable to accurately simulate their responses and over-estimate their likely forgiveness to hypothetical scenarios, which is then not borne out in real encounters. Alternatively, studies that rely on recall of a past transgression, and arguably also those that assess global or trait forgiveness (which rely on generalising across past experiences), may be influenced by attachment differences in memory bias.

Research suggests that individuals with different attachment orientations differ in their availability of negative memories and resulting negative affect (Edelstein, 2006). Those high in attachment anxiety are quick to recall these negative memories, particularly those from childhood. They are also known to ruminate about negative events and make negative or threatening attributions about their causes (Collins, Ford, Guichard, & Allard, 2006; Pereg & Mikulincer, 2004). Thus, it is unsurprising that high-anxious individuals would recall interpersonal transgressions strongly and remain affected by them, inhibiting forgiveness. However, the present meta-analytic findings contrast with the literature showing that those high in attachment avoidance are slower to recall sad or anxious memories, and more likely to recall more recent memories (Mikulincer & Orbach, 1995). They are also thought to inhibit encoding of negative content in a defensive exclusion strategy (Fraley & Brumbaugh, 2007). Therefore, we might expect to find studies that used a recall paradigm to produce smaller effect sizes for avoidance. However, one issue with recall studies is that there is no standard time frame for when the transgression occurred. Therefore, high-avoidance

individuals may be recalling more recent events whilst high-anxiety individuals may be recalling more distant events. To overcome this, future research would benefit from standardising time frames for the recalled transgression, examining the content and affective strength of recalled transgressions, or assessing the effect of time in moderation analyses. It would also be useful to study the forgiveness process over time to disentangle memory and encoding of the transgression from forgiveness itself. The use of diary studies that measure forgiveness over time, or experimental studies which induce a real-time transgression, would help to achieve this.

No other moderator was able to significantly explain the differences between studies, and no moderating effect was found for the association between attachment anxiety and forgiveness. For attachment measures, this is not a surprising finding. All of the studies except for one (Yarnoz-Yarbon, 2009) used measures related to the ECR. The AAS was used to develop the ECR (Brennan et al., 1998), and the ECR-S (Wei, Russell, Mallinckrodt, & Vogel, 2007) and ECR-R (Fraley, Waller, & Brennan, 2000) are shorted and revised versions of the ECR. Thus we would expect for these measures to detect the effect of attachment on forgiveness with the same strength.

### **Limitations**

The current meta-analysis had a number of limitations relating to the availability of studies for inclusion. Only three studies were identified that assessed the association between insecure attachment and negative forgiveness responses (e.g., revenge, grudge) meaning that analysis of this association was not possible. More research should consider the full construct of forgiveness including both positive and negative post-transgression responses to address this dearth of evidence. There were several forgiveness measures, including multiple idiosyncratic measures of forgiveness. This is an issue within the literature at large, as the use of numerous measures of forgiveness risks a lack of clarity surrounding how forgiveness is

conceptualised (Gassin & Lengel, 2011). Indeed, this diversity prevented us from conducting effective moderator analysis, and further highlights the issue in the wider literature. The only significant moderator was forgiveness paradigm; however, as this effect relied on comparing groups with very different sizes (i.e., global paradigm  $n=14$ ; recall paradigm  $n=9$ ; hypothetical paradigm  $n=3$ ), with the smallest group driving the effect, any interpretation must be preliminary. Future research would benefit from more cohesion in how forgiveness is measured so that systematic analysis can be carried out with confidence. This also applies to all moderators included (or not included) in this analysis.

We were unable to assess other potentially relevant moderators because not all studies recorded similar data (e.g., relationship status, type of transgressor, severity of transgression, presence of apology). Relationship status and length of time in current relationship may influence how one is able to conceive of forgiveness in a close romantic relationship (e.g., through pre-existing closeness, McCullough et al., 1998). Future analysis would benefit from a more thorough analysis of the effects of such variables. We encourage forgiveness researchers to provide information on such key variables that might impact forgiveness, to aid interpretation and comparisons across studies. This may prove useful in identifying factors that could explain the remaining heterogeneity in the associations between attachment dimensions and forgiveness. Future meta-analyses on the subject will also benefit from the inclusion of more data. It is possible there might be additional unpublished or grey literature that was not identified in our searches. Nevertheless, there was no evidence of publication bias in the dataset, rendering it unlikely that non-significant findings exist that are systematically unpublished.

Finally, it is worth noting that most of the studies identified in this synthesis used correlational designs, and so the association between attachment dimensions and forgiveness may not be causal. For example, it is plausible that a third variable could partially account for

this association. Future studies seeking to better understand attachment differences in forgiveness might use longitudinal or experimental designs. Given that research has already found priming attachment security increases empathy towards others (Mikulincer et al., 2001) and prosocial values (Mikulincer & Shaver, 2007), future research may benefit from assessing whether security priming also causally increases forgiveness of others.

### **Implications for Future Research, Theory, and Practice**

The current findings have implications for how researchers conceptualise, measure and design future forgiveness studies. There is a clear need for a more cohesive conceptualisation of forgiveness, which must be reflected in the measures used (Gassin & Lengel, 2011). Moreover, researchers interested in forgiveness in relational contexts should bear in mind that whilst the use of state and trait measures of forgiveness must be compatible with the forgiveness stimuli used, the pairing of measurement and stimuli will have consequences for how participants high in attachment anxiety or avoidance respond.

Having established a reliable small-medium association between attachment orientation and forgiveness, it is important to examine mechanisms of this association. Based on the distinct patterns of affect regulation, memory, and interpersonal strategies associated with anxiety and avoidance, it seems likely that the low forgiveness of each dimension would be partly mediated by distinct mechanisms. Attachment dimensions have previously been found to predict variables more proximally associated with forgiveness, such as rumination, negative attributions, motivation to sustain the relationship, and empathy (e.g., Mikulincer, Shaver, & Pereg, 2003; Saffrey & Ehrenberg, 2007). Indeed, studies included in this meta-analysis have found that rumination mediates the relationship between attachment anxiety and forgiveness (Chung, 2013), whereas empathy mediates the relationship between attachment avoidance and forgiveness (Kimmes & Durtsch, 2016). However, there is a lack of systematic examination of these distinct pathways or of other mediators, with a few

notable exceptions (e.g., Burnette et al., 2007; Chung, 2014). Thus, the relationship between attachment dimensions and forgiveness may be better understood by examining the mediating effects of socio-cognitive responses to forgiveness. Adopting attachment theory as a framework for understanding reactions to transgressions could allow greater predictive power for state responses, and thus allow us to understand when individuals may forgive or not. Such understanding may inform interventions to support individuals in forgiving transgressions through increasing attachment security.

Finally, due to the deactivating strategies employed by individuals high in attachment avoidance, it is not only more difficult to recruit participants high in attachment avoidance but also to capture an authentic evaluation of their responses to relationship threats (Kumashiro & Arriaga, 2016). Researchers, thus, run the risk of analysing an incomplete picture of the effects of attachment dimensions on relationship-relevant variables. Future research may benefit from adapting their recruitment strategies (e.g., less focus on relationships or emotions in adverts). Researchers might also consider using more objective measures to index forgiveness responses. These could include behavioural observations or physiological measures (e.g., heart rate; Lawler-Row et al., 2006; skin conductance and breathing rate; Insko, 2003).

## **Conclusion**

The study of forgiveness is an important aspect of understanding how to sustain positive social relationships, which has wider implications for societal, and individual, health and wellbeing. The findings of the current meta-analysis suggest that the insecure attachment dimensions of anxiety and avoidance have a stable negative association with forgiveness. Future research might explore whether reducing attachment anxiety and avoidance may help to support forgiveness – with a view to improving societal and individual health and wellbeing.

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