



UNIVERSITÀ DEGLI STUDI DI PADOVA

Dipartimento di Psicologia dello Sviluppo e della Socializzazione

**Corso di laurea in SCIENZE PSICOLOGICHE DELLO SVILUPPO, DELLA
PERSONALITÀ E DELLE RELAZIONI INTERPERSONALI**

Tesi di laurea triennale

**The effectiveness and efficacy of different intervention or therapy or
treatment for adults with insecure attachment: a systematic review**

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Anno accademico 2023/2024

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Abstract

Background: Insecure attachment is associated with physical, relational and financial costs, while people with secure attachment experience various benefits and are more likely to thrive in their life. This systematic review aimed to investigate effectiveness and efficacy of different interventions treating adults with insecure attachment style.

Methods: The review was conducted following PRISMA guidelines. The search of records on PubMed and PsycINFO was completed on October 1st 2023. Records were included if they conducted intervention or therapy or treatment to treat adults with insecure attachment, if they assessed the attachment style of participants through standardized instruments or through self-report questionnaire and if they measured outcome and presented original data. Studies were excluded if they were not written in English or in Italian, or were not published articles or issued in books.

Results: Based on 8 studies (pooled N = 285), all the interventions reported positive changes or statistically significant results. However there were differences in the detail and in the magnitude of the effects.

Limitations: There were personal bias of the reviewer and several factors that resulted in the heterogeneity of the included articles.

Conclusions: The effectiveness of interventions treating adults with insecure attachment style needs further investigation. Future research should conduct studies with bigger sample size, examining subgroup analyses and short- and long-term effects.

1. Theoretical introduction

The attachment theory was originated and developed by John Bowlby (1958), who discovered instinctual behavioral patterns in human infants with the purpose of maintaining proximity to their primary caregiver. The quality of attachment is structured through the convergence between attachment behaviors in infants and the responsiveness and sensitivity in caretaking of their attachment figure. Different attachment styles result from differences in the quality of infant—caregiver interactions (e.g., Ainsworth, 1979; Bartholomew, 1990). From relational patterns, a child develops internal representations that form internal working models (IWM) which extend to encompass beliefs and expectations about self-worth, the nature of relationships, the availability of others in one's current and future relationships (Bowlby, 1973).

Mary Ainsworth (1970) developed an assessment tool, called the Strange Situation, in which infants' attachment system is activated under stressful situations, by using structured observation researchers can classify infant attachment into three categories: securely attached or insecurely attached with two subtypes, avoidant and resistant/ambivalent. Later Mary Main defined the fourth category, which was insecure, disorganized/disoriented type. Corresponding to the classification of attachment style in infants, Main and Hesse identified four types of adult attachment with the development of Adult Attachment Interview (AAI; Hesse, 1999).

To summarize the basic pattern of each insecure attachment prototype and their etiology:

1) Avoidant children and dismissing adults manifest a deactivation of attachment behavior, exaggerated exploratory behavior, and are unlikely to seek social support. Such pattern is largely the result of consistent rejection of the child's attachment behaviors by the primary caregiver (Ainsworth et al., 1978; Cassidy & Kobak, 1988; Lopez, 2009; Mikulincer, Shaver, & Pereg, 2003).

2) Ambivalent/resistant children and anxious-preoccupied adults show a hyperactivation of attachment behavior and diminished exploratory behavior, which result from the inconsistency of responsiveness from the attachment figure who over-

involved the child in their state of mind (Brown et al., 2016).

3) Disorganized children and disorganized or fearful adults show contradictory hyperactivating and deactivating attachment styles, they tend to have high levels of dissociative behaviors. These manifestations are due to frightening and frightened parental behavior and unresolved trauma or loss in a parent (Main & Hesse, 1990, 1992).

Even though one's attachment style and IWM are relatively stable over the course of life, by means of exposure to a healthy attachment figure or an effective psychotherapy, the establishment of "earned security" could take place, in which an insecure IWM can be transformed into a stable, secure IWM (Main & Goldwyn, 1984a; Main, Goldwyn, & Hesse, 2002).

There are several treatments for insecure adult attachment, starting with Bowlby's Attachment-Based Psychotherapy, to Psychoanalytic Approaches and Attachment-Informed Psychotherapy. More recently, with the development of research and integration of theories, appeared new forms of Attachment-Informed Treatment, Intersubjectivity-Based Treatment, Metacognitive Attachment-Informed Psychotherapies and the Three Pillars Treatment Model (Brown et al., 2016).

This systematic review aims to assess the effectiveness and efficacy of attachment intervention or therapy or treatment for adults with insecure attachment style. Therefore, the goal of this review is threefold: 1) examine whether the interventions are effective; 2) investigate whether the effectiveness within these interventions varies across insecure attachment styles and different attachment figures; 3) explore detailed effects on other dimensions of participants related to attachment.

2. Methods

A systematic review on treatments for adults with insecure attachment was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 (PRISMA 2020) statement (Page et al., 2021).

2.1 Search strategy

A systematic search of the databases PubMed, PsycINFO was conducted on October 1st 2023, using the search strategy “(insecure attachment) AND (intervention or therapy or treatment)”. The search limits included age limit (adults >18) and language limit (in English or in Italian).

2.2 Eligibility criteria

Studies were supposed to meet the following inclusion criteria: (a) involved adults aged above 18 years old, with an assessment of insecure attachment through standardized instruments or through self-report questionnaire; (b) measured outcome; and (c) issued in books or as published articles. Studies were excluded if they did not present original data.

2.3 Selection process and data extraction

The titles and abstracts of all identified articles were screened by one reviewer using an automation tool, Rayyan (Ouzzani et al., 2016) according to the eligibility criteria. Two reviewers screened independently the full texts of these articles for inclusion. After the full-text screening the final collection of articles was selected, and the reasons for exclusion were recorded.

The data of the included articles were extracted into a Microsoft Excel spreadsheet. The extracted data contained descriptive characteristics of the studies, their sample,

interventions, and measures used to assess participants' attachment style and other outcomes.

2.4 Quality assessment

The methodological quality of 8 included articles was assessed using the CASP Randomized Controlled Trial Standard Checklist (Critical Appraisal Skills Programme, 2021). This assessment tool contains 11 questions to assess research question, process of study, results, and effect with response options of yes, no or can't tell. As this is an undergraduate thesis, the last two questions in the original form of the checklist were excluded due to their low applicability.

3. Results

3.1 Study selection

In total 1869 records were identified from two databases. Among these, 289 duplicates were removed using an automation tool, SR-accelerator (Clark et al., 2020), and 30 records were considered eligible according to their titles and abstracts. In full-text screening, 8 articles were included. The screening process is presented in Fig.1.

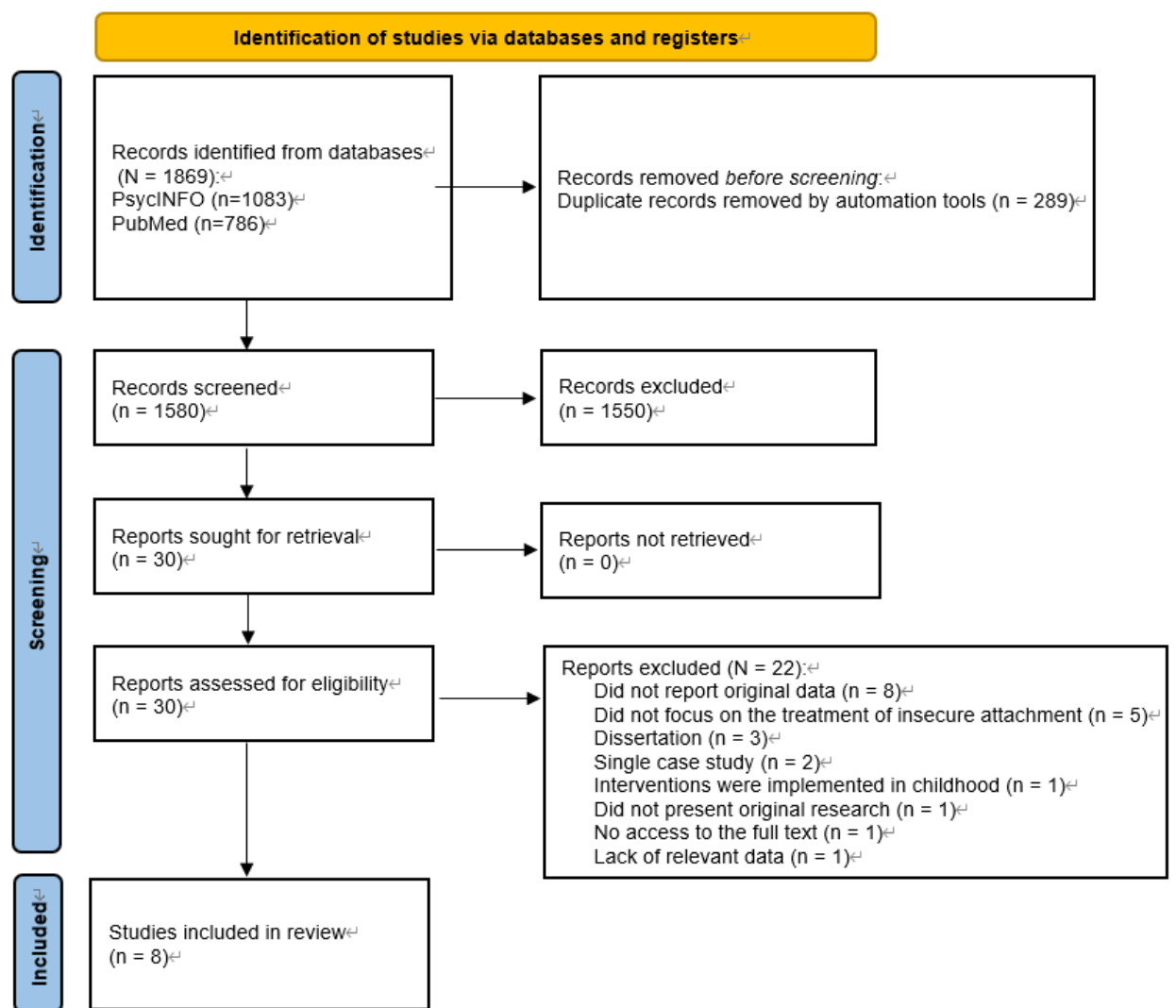


Fig. 1. PRISMA 2020 flow diagram for systematic reviews.

Note. From Page et al. (2021).

3.2 Description of included studies

3.2.1 Study characteristics

As is shown in Table 1, the included studies were published between 1999 and 2021. Six randomized controlled trials (RCT) ($n = 6$) and two quasi-experimental studies ($n = 2$) were included. The study locations were United States ($n = 4$), Germany ($n = 1$), Belgium ($n = 1$), Australia ($n = 1$), and Taiwan, China ($n = 1$).

3.2.2 Sample characteristics

The pooled sample size was 285 participants, among which the range of the study samples was between 3 and 80 participants (Mean = 35.62, Median = 32.5). Less than half of the studies recruited male and female participants ($n = 3$; Doolan et al., 2021; Lin et al., 2012; Wesselmann & Potter, 2009), two of the studies recruited only male participants ($n = 2$; Bernaerts et al., 2017; Buchheim et al., 2009), two studies did not report the percentage of the gender ($n = 2$; Kilmann et al., 2006; Travis et al., 2001), and the remaining one study recruited females only ($n = 1$; Kilmann et al., 1999). Most of the participants were young adults ($n = 6$; Bernaerts et al., 2017; Buchheim et al., 2009; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Lin et al., 2012). Three studies recruited individuals from the clinical population ($n = 3$; Lin et al., 2012; Travis et al., 2001; Wesselmann & Potter, 2009), whilst five studies had participants from the general population ($n = 5$; Bernaerts et al., 2017; Buchheim et al., 2009; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006). Most of the studies included exclusively participants who were categorized with insecure attachment styles in pretreatment ($n = 7$; Buchheim et al., 2009; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Lin et al., 2012; Travis et al., 2001; Wesselmann & Potter, 2009), only one study did not report this inclusion criterion ($n = 1$; Bernaerts et al., 2017).

3.2.3 Intervention characteristics

There were 6 studies that included both a treatment group and a control group ($n = 6$; Bernaerts et al., 2017; Buchheim et al., 2009; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Lin et al., 2012), whilst two studies did not contain a control group ($n = 2$; Travis et al., 2001; Wesselmann & Potter, 2009). The duration of the interventions varied from three days to one year. Only one study reported an additional intervention for their treatment group ($n = 1$; Wesselmann & Potter, 2009).

Two studies used exogenous administration of the neuropeptide oxytocin for their treatment group ($n = 2$; Bernaerts et al., 2017; Buchheim et al., 2009), and their purpose of intervention was to promote the experience of attachment on perceptive and behavioral level. The other six studies ($n = 6$; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Lin et al., 2012; Travis et al., 2001; Wesselmann & Potter, 2009), with their distinct types of intervention, were all aimed at affecting the internal working model of the participants. Among these 6 studies, two of them were conducted by the same main author and both used Attachment-focused intervention to treat participants with insecure attachment ($n = 2$; Kilmann et al., 1999; Kilmann et al., 2006). As for the remaining four studies, one utilized Cognitive Bias Modification (CBM) to shift attachment-related interpretative biases ($n = 1$; Doolan et al., 2021), one tried to desensitize participants' relationship memories through Eye Movement Desensitization and Reprocessing (EMDR) ($n = 1$; Wesselmann & Potter, 2009), one focused on reframing participants' image of an attachment figure who treated them unfairly by means of Forgiveness intervention ($n = 1$; Lin et al., 2012), and the last one targeted clients' maladaptive interpersonal patterns in Time-limited dynamic psychotherapy ($n = 1$; Travis et al., 2001).

3.2.4 Assessment characteristics

In attachment assessment section, three of the studies used clinician-rated (CR) methods ($n = 3$; Buchheim et al., 2009; Travis et al., 2001; Wesselmann & Potter, 2009),

including Adult Attachment Interview (AAI), Adult Attachment Projective Picture System (AAP), and Bartholomew Attachment Rating Scale. The study that used AAI measured participants' attachment styles to their mother and father, whilst the other two studies did not report explicitly their target attachment figure (Buchheim et al., 2009; Travis et al., 2001). Five studies (Bernaerts et al., 2017; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Lin et al., 2012) conducted attachment assessment based on self-report (SR) methods, the two studies led by the same main author both utilized Relationship Scales Questionnaire (RSQ) that measured attachment style in close (romantic) relationships ($n = 2$). One of these studies assessed participants' attachment to their mother using Relationship Questionnaire (RQ) ($n = 1$), another study used Experiences in Close Relationships Scale (ECR) to measure participants' attachment styles to a person they considered close to them ($n = 1$). Only one study assessed both state and trait attachment to participants' peers, parents and significant others ($n = 1$), using the State Adult Attachment Measure (SAAM) and the Inventory of Parent and Peer Attachment (IPPA).

Seven out of eight studies utilized other scales to enrich the assessment outcomes of their participants ($n = 7$; Bernaerts et al., 2017; Buchheim et al., 2009; Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Lin et al., 2012; Travis et al., 2001).

Table 1
Characteristics of included studies.

Number	Title	Author and year	Country	Study design	Sample size	Female %	Age, M (SD)/Range	Sample type	Sample description
1	Change in adult attachment status following treatment with EMDR: Three case studies	Wesselmann and Potter (2009)	United States	Quasi-experimental study	3	33.33	38-45	Clinical	Adults categorized with an insecure or disorganized attachment status at pretreatment and presented with symptoms of depression and anxiety
2	A forgiveness intervention for Taiwanese young adults with insecure attachment	Lin et al. (2012)	Taiwan	Randomised controlled trial	36	89	21	Clinical	University students with insecure attachment to their mother, and evidence of psychological difficulty operationalized as high levels of depression and anxiety with low levels of forgiveness
3	Modifying insecure attachment style with cognitive bias modification	Doolan et al. (2021)	Australia	Randomised controlled trial	80	71.25	Treatment group: 19.26 (1.59) Control group: 19.60 (2.80)	General	Undergraduate students whose scores were high in attachment anxiety using a shortened version of the Experiences in Close Relationships Scale
4	Oxytocin enhances the experience of attachment security	Buchheim et al. (2009)	Germany	Randomised controlled trial	26	0	21-33	General	Healthy male adults classified with an insecure attachment pattern using Adult Attachment Projective Picture System
5	Long-term oxytocin administration enhances the experience of attachment	Bernaerts et al. (2017)	Belgium	Randomised controlled trial	40	0	Treatment group: 20.70 (2.72) Control group: 21.55 (2.39)	General	Healthy young adults
6	Effects of an Attachment-Focused Group Preventive Intervention on Insecure Women	Kilmann et al. (1999)	United States	Randomised controlled trial	23	100	21	General	Undergraduate students who had never been married, nor engaged, nor had children, and reported an insecure attachment pattern on the Relationship Scales Questionnaire (RSQ)
7	Changes in clients' attachment styles over the course of time-limited dynamic psychotherapy	Travis et al. (2001)	United States	Quasi-experimental study	29	NR	24-64	Clinical	Clients were classified as insecure in pretreatment attachment ratings and satisfied minimal requirements for outpatient psychotherapy.
8	Effects of attachment-focused versus relationship skills-focused group interventions for college students with insecure attachment patterns	Kilmann et al. (2006)	United States	Randomised controlled trial	48	NR	Treatment group: 20.6 (2.0) Control group: 19.8 (1.1) No-intervention group: 20.5 (1.4)	General	Undergraduate students who had never been married, nor engaged, nor had children, and reported an insecure attachment pattern on the Relationship Scales Questionnaire (RSQ)

Table 1 (continued)

Number	Intervention and Comparisons:					
	Treatment group			Control group (if present)		
Type of intervention	Purpose of intervention	Duration/Frequency	Additional intervention	Type of intervention	Duration/Frequency	Additional intervention
1 Eye Movement Desensitization and Reprocessing (EMDR)	Desensitize early relationship memories and recent relationship events, link them to more adaptive information, and make positive impact on the patients' internal working model	10 to 15 EMDR sessions over the course of approximately 1 year	Talk therapy	Absent	Absent	Absent
2 Forgiveness intervention	Re-evaluate and reconstruct one's image of an attachment figure and thus reframe one's internal working model	one time per week for 12- weeks	Absent	Social-perspective taking and communication intervention	one time per week for 12- weeks	Absent
3 Secure Cognitive Bias Modification (CBM-I)	Shift attachment-related interpretative biases and alter unhelpful internal working models	One session	Absent	Insecure Cognitive Bias Modification (CBM-I)	One session	Absent
4 Intranasal administration of oxytocin before the first experiment and intranasal administration of placebo before the second experiment	Enhance the subjective perception of attachment security	Twice within a 3-week interval (crossover)	Absent	Intranasal administration of placebo before each experiment and intranasal administration of oxytocin before the second experiment	Twice within a 3-week interval (crossover)	Absent
5 Daily intranasal oxytocin (OT) administration	Affect trust and attachment behavior and promote the experience of attachment	Two weeks	Absent	Daily intranasal placebo (PL) administration	Two weeks	Absent
6 Attachment-Focused Intervention	Teach participants realistic information about relationships, greater self-awareness about their attachment issues, knowledge of relationship interaction patterns, and relationship skills	17 hours in three consecutive days	Absent	no-intervention controls	Absent	Absent
7 Time-limited dynamic psychotherapy (TLDP)	Targets clients' maladaptive interpersonal patterns and formulates the possibility of client internalization of the client therapist interpersonal activity	One year	Absent	Absent	Absent	Absent
8 Attachment-Focused Intervention	Teach participants realistic information about relationships, greater self-awareness about their attachment issues, and knowledge of relationship interaction patterns	15 hours in three consecutive days	Absent	Control group 1: relationship skills-focused (RS) group Control group 2: no-intervention control condition	Control group 1: 15 hours in three consecutive days Control group 2: absent	Control group 1: Absent Control group 2: Absent

Table 1 (continued)

Number	Attachment assessment			Other scales
	Measure	Method	Target attachment figure	
1	Adult Attachment Interview (AAI)	CR	Mother and father	Absent
2	Relationship Questionnaire (RQ)	SR	Mother	1. Enright Forgiveness Inventory 2. The Trait Anxiety Scale 3. The Trait Anger Scale 4. Depression Scale 5. The Self-Esteem Inventory 6. Hope Scale
3	Experiences in Close Relationships Scale (ECR)	SR	A person they considered close to them rather than a romantic partner	1. Depression Anxiety Stress Scales 21 2. Positive and Negative Affect Schedule
4	Adult Attachment Projective Picture System (AAP)	CR	NR	Multidimensional Mood Questionnaire
5	State Adult Attachment Measure (SAAM) and Inventory of Parent and Peer Attachment (IPPA)	SR	Peers, parents and significant others	1. Profile of Mood States (POMS) 2. Social Responsiveness Scale (SRS) – adult version 3. World Health Organization Quality of Life (WHOQOL)
6	Relationship Scales Questionnaire (RSQ)	SR	Attachment style in close (romantic) relationships	1. The Relationship Beliefs Inventory 2. The Preparation for Marriage Inventory 3. The Rosenberg Self-Esteem Inventory 4. The Anger-Trait Scale 5. The Anger Expression Scale 6. The Inventory of Interpersonal Problems
7	Bartholomew Attachment Rating Scale	CR	NR	1. Symptom Checklist-90-Revised (SCL-90-R) 2. Global Assessment Scale (GAS)
8	Relationship Scales Questionnaire (RSQ)	SR	Attachment style in close (romantic) relationships	1. The Relationship Beliefs Inventory (RBI) 2. The Rosenberg Self-Esteem Inventory (RSEI) 3. The Anger-Trait Scale (ATS) 4. The Anger Expression Scale (AES) 5. The Inventory of Interpersonal Problems (IIP) 6. The Preparation for Marriage (PREP-M)

Note. NR = not reported; CR = clinician-rated; SR = self-reported.

3.3 Quality assessment

Table 2 summarized the methodological quality of the 8 studies based on CASP RCT checklist. All studies addressed a clearly focused research question. 6 studies' assignment of participants to intervention was randomized, while the other two were quasi-experimental studies in which the assignment was not randomized. In seven studies all the participants that entered the study were accounted for at its conclusion. Three studies had their participants blind to intervention they were given, four studies kept the investigators 'blind' to the intervention that they were giving to participants, whilst only one study made the people who assessed outcomes 'blinded'. Study groups in three articles were similar at the start of the randomized controlled trial. In five studies each study group was treated equally. All studies reported the effects of intervention comprehensively. None of the studies reported the precision of the estimate (Confidence Intervals) of the intervention or treatment effect. In most of the studies, the benefits of the experimental intervention outweigh the harms and costs.

Table 2
Quality assessment.

Number	Article title	Q1. Did the study address a clearly focused research question?	Q2. Was the assignment of participants to interventions randomised?	Q3. Were all participants who entered the study accounted for at its conclusion?	Q4.		
					Were the participants 'blind' to intervention they were given?	Were the investigators 'blind' to the intervention they were giving to participants?	Were the people assessing/analysing outcome/s 'blinded'?
1	A forgiveness intervention for Taiwanese young adults with insecure attachment	Yes	Yes	Yes	Can't tell	No	Can't tell
2	Effects of an Attachment-Focused Group Preventive Intervention on Insecure Women	Yes	Yes	Yes	No	No	Can't tell
3	Effects of attachment-focused versus relationship skills-focused group interventions for college	Yes	Yes	Yes	Can't tell	Yes	Can't tell
4	Long-term oxytocin administration enhances the experience of attachment	Yes	Yes	Yes	Yes	Yes	No
5	Modifying insecure attachment style with cognitive bias modification	Yes	Yes	No	Yes	Yes	No
6	Oxytocin enhances the experience of attachment security	Yes	Yes	Yes	Yes	Yes	No
7	Change in adult attachment status following treatment with EMDR: Three case studies	Yes	No	Yes	No	No	No
8	Changes in clients' attachment styles over the course of time-limited dynamic psychotherapy	Yes	No	Yes	Can't tell	No	Yes

Table 2 (continued)

Number	Q5. Were the study groups similar at the start of the randomised controlled trial?	Q6. Apart from the experimental intervention, did each study group receive the same level of care (that is, were they treated equally)?	Q7. Were the effects of intervention reported comprehensively?	Q8. Was the precision of the estimate (CIs) of the intervention or treatment effect reported?	Q9. Do the benefits of the experimental intervention outweigh the harms and costs?
1	Yes	Yes	Yes	No	Can't tell
2	Yes	No	Yes	No	Yes
3	Can't tell	Yes	Yes	No	Can't tell
4	No	Yes	Yes	No	Yes
5	Yes	Yes	Yes	No	Yes
6	Can't tell	Yes	Yes	No	Yes
7	No	No	Yes	No	Yes
8	No	No	Yes	No	Yes

3.4 Data synthesis

According to the classification of study design in Table 1, there are 2 quasi-experimental studies and 6 randomized controlled trials (RCT). In the first quasi-experimental study (Wesselmann & Potter, 2009) using Eye Movement Desensitization and Reprocessing (EMDR; Shapiro, 2007) intervention, the effects on three clients were represented by their categorical changes of attachment style and the differences of net dimensional scores from pre-treatment to post-treatment. Based on categorical results of Adult Attachment Interview (AAI; Hesse, 1999) at pre-treatment, this intervention treated clients with “Cannot classify” (combination E2 and Ds2), F1/U/d, and Ds3/U/d. All of the three clients had positive change in their overall AAI category designation at post-treatment.

The second study (Travis et al., 2001) recruited patients with preoccupied, dismissive and fearful attachment style, they were treated after therapists completed Time-limited Dynamic Psychotherapy (TLDP; Strupp & Binder, 1984) training. 19 out of 29 (66%) patients changed their attachment style, among which 27% of clients with preoccupied attachment style, 19% of clients with fearful attachment style and 50% of dismissive clients at pretreatment, became secure at posttreatment. This difference in number of insecure or secure clients from pretest to posttest was statistically significant ($p < .05$), however the test-retest reliability was 34%, which was relatively low. As the study used Bartholomew Attachment Rating Scale, dimensional differences in clients' narrative about attachment themes were also revealed, among which there were a significant increase in secure attachment themes ($p < .05$) and a significant decrease of fearful attachment themes from pretest to posttest ($p < .05$).

All the 6 RCTs had at least one control group. The first RCT (Doolan et al., 2021) used Cognitive Bias Modification (CBM-I; Holmes, Mathews, & Dalgleish, 2006) to modify interpretative biases in anxiously-attached participants, who were randomly assigned to secure training group or insecure training group. At posttreatment, only in the secure training group was revealed a significant interaction ($p < .001$, $\eta_p^2 = 0.35$) between the cognitive bias modification training and interpretation change. However

for the participants in the secure training group, there were no main effects in their self-reported anxious and avoidance attachment scores ($p > .15$; $p = .80$).

There were two RCT studies that implemented oxytocin administration to promote participants' attachment experience. One study (Buchheim et al., 2009) recruited insecure participants assessed by Adult Attachment Projective Picture System (AAP; George and West, 2001), but did not specify their insecure attachment style. There were significant differences between the oxytocin versus placebo condition from pretest to posttest: 1) Oxytocin enhanced the scores of attachment security, with 18 participants (69%) out of 26 increased in rating "secure attachment" ($p = .038$). 2) Oxytocin lowered the ratings of attachment insecurity, with 18 participants (69%) out of 26 decreased their global insecurity scale ($p = .038$). 3) Among the three insecure attachment styles, oxytocin was most effective on the scale "preoccupied", with a decrease observed in 18 subjects ($p = .022$).

Another study (Bernaerts et al., 2017) examined effects of oxytocin administration from pre-intervention to post-intervention on healthy participants, who were randomly assigned to oxytocin or placebo group. In the results of trait attachment using Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), there was a significant increase in attachment towards peers in the oxytocin group ($p < 0.05$), not in the placebo group ($p = 0.27$; Cohen's $d = 0.75$, medium to large effect). In the assessment of state attachment using State Adult Attachment Measure (SAAM; Gillath et al., 2009), the results revealed a significant decrease in avoidance after the intervention in the oxytocin group ($p < 0.05$), but not in the placebo group ($p = 0.53$; Cohen's $d = 0.63$, medium effect).

Different from the previous studies, the remaining three RCTs had three test times including pretest, posttest and follow-up. One study (Lin et al., 2012) investigated the effects of Forgiveness intervention on insecure participants, without specifying their insecure attachment style. In the results of statistical tests, there were no significant differences between the intervention group and the control group at posttest or at follow-up. As for the within-group change for both groups, the forgiveness group improved significantly on attachment security, forgiveness and three other dependent

variables from pretest to posttest (all the 5 p-values $\leq .007^1$), however the positive changes from pretest to posttest were not maintained after the 8-week follow-up. Whereas there were not any significant changes within the control group.

The last two studies both implemented Attachment-focused (AF) intervention and used identical assessment tools, including Relationship Scales Questionnaire (RSQ; Bartholomew & Griffin, 1994), Relationship Beliefs Inventory (RBI; Eidelson & Epstein, 1982), Inventory of Interpersonal Problems (IIP; Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988), Preparation for Marriage Inventory (PREP-M; Holman, Busby, & Larson, 1989), Rosenberg Self-Esteem Inventory (RSEI; Rosenberg, 1965), Anger-Trait Scale (ATS; Spielberger, Jacobs, Russell, & Crane, 1983) and Anger Expression Scale (AES; Spielberger, Johnson, Russell, Crane, Jacobs, & Worden, 1985). However there were differences in their assignment of control groups, the prior study had only no-intervention controls, while the other one had relationship skills-focused (RS; Kilmann, 1997) group and no-intervention control group.

In the prior study (Kilmann et al., 1999), the AF group was composed of participants with fearful-avoidant, dismissive-avoidant, fearful/dismissive avoidant, preoccupied/fearful avoidant and preoccupied attachment style. In the pre to posttest comparisons, AF group significantly improved in results on RBI and IIP (p-values $< .05$). Whereas more substantial effects were observed after the 6-month follow-up, not only most of the previous improvements were maintained, there were also significant changes in family perceptions in PREP-M and attachment security in RSQ (p-values $< .05$).

In the last study (Kilmann et al., 2006), the AF group contained participants with fearful-avoidant, dismissive-avoidant and preoccupied attachment style. At posttest there were no significant between-group differences among the three groups, while there were significant improvements within the AF group on RBI, RSEI, ATS and AES (p-values $< .05$). However in the pre-follow-up or post-follow-up comparisons, no significant changes were revealed for any of the three conditions.

¹ Significant after Bonferroni correction for multiple comparisons (Lin et al., 2012).

4. Discussion

This systematic review aimed to examine the evidence on the effectiveness of different interventions treating adults with insecure attachment style. All the 8 studies reported some effective results, however there were differences in the detail and in the magnitude of the effects. Except one study (Wesselmann & Potter, 2009) that did not parameterize outcomes but presented positive categorical changes of participants' attachment style, the other 7 studies analyzed the results using statistical tests and reported one or several significant changes (p -values $< .05$ or $\leq .007^2$) at posttest or at follow-up, while 4 studies reported effect size in their comparisons of results.

Significant improvements in assessment of attachment security were revealed in 2 studies (Buchheim et al., 2009; Lin et al., 2012) at posttest and in one study (Kilmann et al., 1999) at follow-up. Dimensional scores on attachment insecurity decreased significantly from pre to posttest in the 2 interventions using oxytocin administration, specifically the global insecurity scale and the scale "preoccupied" were lowered in one study (Buchheim et al., 2009), and a decrease in avoidance in the other study (Bernaerts et al., 2017). In addition, in the aforementioned intervention there was an increase in attachment trait toward peers. Furthermore, the results of 4 studies (Doolan et al., 2021; Kilmann et al., 1999; Kilmann et al., 2006; Travis et al., 2001) contained considerable changes in participants' discourse and cognitive functions related to attachment. In one of the AF intervention studies (Kilmann et al., 1999), there were notable differences in the results of participants' interpersonal aspects, including changes in interpersonal problems at posttest and changes in interpersonal problems and family perception at follow-up. Moreover, 2 studies (Kilmann et al., 2006; Lin et al., 2012) reported noteworthy changes in other individual aspects regarding forgiveness level, trait anxiety, hope, self-esteem, trait anger and anger expression.

With respect to the participants, 2 studies (Kilmann et al., 2006; Travis et al., 2001) treated participants with three different insecure attachment styles (i.e., fearful-avoidant,

² Significant after Bonferroni correction for multiple comparisons (Lin et al., 2012).

dismissive-avoidant and preoccupied), one study (Kilmann et al., 1999) had participants with not only the three insecure types but also mixed insecure styles, two studies (Buchheim et al., 2009; Lin et al., 2012) included insecurely-attached participants but did not specify their insecure style, one study (Doolan et al., 2021) only recruited anxiously-attached participants, another study (Wesselmann & Potter, 2009) treated participants with insecure or disorganized attachment status based on AAI classification, and the last study (Bernaerts et al., 2017) recruited healthy participants.

As a result of these differences in samples, in assessment tools and other factors, although some studies showed effects on distinct insecure attachment styles, it is inappropriate to be conclusive that one intervention would necessarily be effective on certain type of insecure attachment. Therefore, with regard to the variation in effectiveness across insecure attachment styles, it is plausible that TLDP may especially ameliorate narratives about fearful attachment themes, oxytocin administration may impact most on preoccupied attachment style or attachment avoidance in male adults, secure CBM-I training may elicit interpretation change in anxiously-attached adults, and EMDR may be applied in treatment for adults with insecure attachment style in general.

As to whether treatment effectiveness varies across different attachment figures, there was an explicit evidence in one of the oxytocin administration interventions (Bernaerts et al., 2017) which reported increased attachment toward peers at posttest. However there are factors that need to be considered. Firstly, attachment changes were assessed with a number of instruments based on different underlying target attachment figures. Secondly, most of the included samples were young university students, thus their campus-based environment during the tests may influence their results associated with different attachment figures (Bernaerts et al., 2017).

To summarize, there are no conclusive statements about the threefold goal, whereas the results may generate the following suggestions: 1) all the interventions reported positive changes or statistically significant results, however the effects were elicited within different attachment-related aspects, and their magnitude differed. 2) There was no sufficient evidence for the variation of effectiveness regarding attachment

figure, while there were some results that suggest the effectiveness of interventions may vary in different insecure attachment styles. 3) Besides participants' changes in attachment security/insecurity in attachment assessment, the interventions also had effects on cognitive, interpersonal and other intrapersonal dimensions.

4.1 Limitations

There were some methodological limitations of the current review. Firstly, the assessment of the methodological quality of the included studies, and their data extraction were carried out by one reviewer, therefore, there was personal bias to be considered. Secondly, the total number of the included articles ($n = 8$) is relatively small, and so the evidence base was not large enough.

Further to the aforementioned limitations, there were also individual study limitations. In the first place, most studies had small sample sizes, which limited the potential to generalize the results. In the second place, the diversity of the samples, diverse measurement tools, and the methodological differences of the articles contributed to the heterogeneity among all studies, which further limited the generalizability of the results (Dostal & Pilkington, 2023).

4.2 Future directions

Due to limitations related to heterogeneity, future research should consider to conduct subgroup analyses to investigate differences in groups such as age, gender, sample type, insecure attachment subtype or target attachment figure. Future research may also limit the eligibility criteria to enhance the potential of generalizing the results, such as narrowing attachment assessment to gold-standard tools (Dostal & Pilkington, 2023).

Furthermore, future study can investigate to what kind of treatment goals different interventions can be best applied. Last but not the least, future researcher should conduct trials with bigger sample size examining the short- and long-term outcomes to

strengthen the evidence base (Philipp et al., 2019).

5. Conclusion

The evidence in this review suggests that all the included interventions are likely to be effective to some degree, however their effectiveness varies in the magnitude of effects and in the different dimensions regarding attachment. The effectiveness of interventions treating adults with insecure attachment style still needs to be studied. Future research should conduct studies with bigger sample size, investigating subgroup analyses and short- and long-term effects.

References

- Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.
- Ainsworth, M. S. (1979). *Infant–mother attachment*. *American Psychologist*, *34*(10), 932–937. <https://doi.org/10.1037/0003-066X.34.10.932>.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of youth and adolescence*, *16*(5), 427–454. <https://doi.org/10.1007/BF02202939>.
- Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships*, *7*(2), 147–178. <https://doi.org/10.1177/0265407590072001>.
- Bernaerts, S., Prinsen, J., Berra, E., Bosmans, G., Steyaert, J., & Alaerts, K. (2017). Long-term oxytocin administration enhances the experience of attachment. *Psychoneuroendocrinology*, *78*, 1-9. <https://doi.org/10.1016/j.psyneuen.2017.01.010>.
- Bowlby, J. (1973). *Attachment and loss, vol. 2: Separation: anxiety and anger*. New York: Basic Books.
- Brown, D. P., & Elliott, D. S. (2016). *Attachment disturbances in adults: Treatment for comprehensive repair*. WW Norton & Co. <https://doi.org/10.1080/00029157.2018.1544438>.
- Buchheim, A., Heinrichs, M., George, C., Pokorny, D., Koops, E., Henningsen, P., ... & Gündel, H. (2009). Oxytocin enhances the experience of attachment security. *Psychoneuroendocrinology*, *34*(9), 1417-1422. <https://doi.org/10.1016/j.psyneuen.2009.04.002>.
- Cassidy, J., & Kobak, R. R. (1988). Avoidance and its relation to other defensive processes. In J. Belsky & T. Nezworski (Eds.), *Clinical implications of attachment* (pp. 300–323). Lawrence Erlbaum Associates, Inc.
- Critical Appraisal Skills Programme (2021). CASP (Randomised Controlled Trial) Checklist. Available at: <https://casp-uk.net/casp-tools-checklists/>. Accessed: December

3rd 2023.

Doolan, E. L., & Bryant, R. A. (2021). Modifying insecure attachment style with cognitive bias modification. *Journal of behavior therapy and experimental psychiatry*, 73, 101664. <https://doi.org/10.1016/j.jbtep.2021.101664>.

Dostal, A. L., & Pilkington, P. D. (2023). Early maladaptive schemas and obsessive-compulsive disorder: A systematic review and meta-analysis. *Journal of Affective Disorders*, 336, 42–51. <https://doi.org/10.1016/j.jad.2023.05.053>.

Eidelson, R. J., & Epstein, N. (1982). Cognition and relationship maladjustment development of a measure of dysfunctional relationship beliefs. *Journal of consulting and clinical psychology*, 50(5), 715–720. <https://doi.org/10.1037//0022-006x.50.5.715>.

George, C., & West, M. (2001). The development and preliminary validation of a new measure of adult attachment: the adult attachment projective. *Attachment & human development*, 3(1), 30–61. <https://doi.org/10.1080/14616730010024771>.

Gillath, O., Hart, J., Nofle, E. E., & Stockdale, G. D. (2009). Development and validation of a state adult attachment measure (SAAM). *Journal of Research in Personality*, 43(3), 362–373. <https://doi.org/10.1016/j.jrp.2008.12.009>.

Griffin, D. W., & Bartholomew, K. (1994). The metaphysics of measurement: The case of adult attachment. In K. Bartholomew & D. Perlman (Eds.), *Attachment processes in adulthood* (pp. 17–52). Jessica Kingsley Publishers.

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: Guilford Press.

Holman, T. B., Busby, D. M., & Larson, J. H. (1989). *PREPAration for Marriage (PREP-M)*. Provo, UT: Marriage Study Consortium.

Holmes, E. A., Mathews, A., & Dalgleish, T. (2006). Positive interpretation training: Effects of mental imagery versus verbal training on positive mood. *Behavior Therapy*, 37, 237–247. <https://doi.org/10.1016/j.beth.2006.02.002>.

Horowitz, L. M., Rosenberg, S. E., Baer, B. A., Ureño, G., & Villaseñor, V. S. (1988). Inventory of interpersonal problems: Psychometric properties and clinical applications. *Journal of Consulting and Clinical Psychology*, 56(6), 885–892.

<https://doi.org/10.1037/0022-006X.56.6.885>.

Kilmann, P. R. (1997). *Relationship – skills group preventive intervention*. Unpublished manual, University of South Carolina.

Kilmann, P. R., Laughlin, J. E., Carranza, L. V., Downer, J. T., Major, S., & Parnell, M. M. (1999). Effects of an attachment-focused group preventive intervention on insecure women. *Group Dynamics: Theory, Research, and Practice*, 3(2), 138. <https://doi.org/10.1037/1089-2699.3.2.138>.

Kilmann, P. R., Urbaniak, G. C., & Parnell, M. M. (2006). Effects of attachment-focused versus relationship skills-focused group interventions for college students with insecure attachment patterns. *Attachment & Human Development*, 8(01), 47-62. <https://doi.org/10.1080/14616730600585219>.

Lin, W. N., Enright, R. D., & Klatt, J. S. (2013). A forgiveness intervention for Taiwanese young adults with insecure attachment. *Contemporary Family Therapy*, 35, 105-120. <https://doi.org/10.1007/s10591-012-9218-2>.

Lopez, F. G. (2009). Clinical Correlates of adult attachment organization. In J. H. Obegi and E. Berant (Eds.), *Attachment theory and research in clinical work* (pp. 94–120). New York, NY: Guilford Press.

Main, M., & Goldwyn, R. (1984a). *Adult attachment scoring and classification system*. Unpublished manuscript, University of California, Berkeley.

Main, M., Goldwyn, R., & Hesse, E. (2002). *Adult attachment scoring and classification system, Manual in Draft: Version 7.1*. Unpublished manuscript, University of California, Berkeley.

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

Main, M., & Hesse, E. (1992). Disorganized/disoriented infant behavior in the Strange Situation, lapses in the monitoring of reasoning and discourse during the parent's Adult Attachment Interview, and dissociative states (translated into Italian). In M. Ammaniti

- & D. Stern (Eds.), *Attaccamento e psicoanalisi* (pp. 86–140). Rome, Italy: Laterza.
- Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion*, *27*(2), 77–102. <https://doi.org/10.1023/A:1024515519160>.
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E., Chou, R., Glanville, J., Grimshaw, J.M., Hr'objartsson, A., Lalu, M.M., Li, T., Loder, E.W., Mayo-Wilson, E., McDonald, S., McGuinness, L.A., Stewart, L.A., Thomas, J., Tricco, A.C., Welch, V.A., Whiting, P., Moher, D., 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Syst. Rev.* *10*, 89. <https://doi.org/10.1186/s13643-021-01626-4>.
- Philipp, R., Kriston, L., Lanio, J., Kuehne, F., Haerter, M., Moritz, S., & Meister, R. (2019). Effectiveness of metacognitive interventions for mental disorders in adults—A systematic review and meta-analysis (METACOG). *Clinical psychology & psychotherapy*, *26*(2), 227-240. <https://doi.org/10.1002/cpp.2345>.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Schafer, E., & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships*, *1*, 23 – 43. <https://doi.org/10.1111/j.1475-6811.1994.tb00053.x>
- Shapiro, F. (2007). EMDR and case conceptualization from an adaptive information processing perspective. In F. Shapiro, F. W. Kaslow, & L. Maxfield (Eds.), *Handbook of EMDR and family therapy processes* (pp. 3–34). Hoboken, NJ: Wiley.
- Spielberger, C. D., Jacobs, G., Russell, S., & Crane, R. S. (1983). Assessment of anger: The State – Trait Anger Scale. In J. N. Butcher & C. D. Spielberger (Eds.), *Advances In Personality Assessment*. Hillsdale, NJ: LEA.
- Spielberger, C. D., Johnson, B. A., Russell, S., Crane, R. S., Jacobs, G., & Worden, T. J. (1985). The experience and expression of anger: Construction and validation of an anger expression scale. In M. A. Chesney & R. H. Rosenman (Eds.), *Anger and hostility in cardiovascular and behavioral disorders*. New York: Hemisphere/McGrawHill.

Strupp, H. H., & Binder, J. L. (1984). *Psychotherapy in a new key*. New York: Basic Books.

Travis, L. A., Bliwise, N. G., Binder, J. L., & Horne-Moyer, H. L. (2001). Changes in clients' attachment styles over the course of time-limited dynamic psychotherapy. *Psychotherapy: Theory, Research, Practice, Training*, 38(2), 149. <https://doi.org/10.1037/0033-3204.38.2.149>.

Wesselmann, D., & Potter, A. E. (2009). Change in adult attachment status following treatment with EMDR: Three case studies. *Journal of EMDR Practice and Research*, 3(3), 178-191. <https://doi.org/10.1891/1933-3196.3.3.178>.