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The Associations Between Early Maladaptive Schemas and Adult Attachment Styles: A Meta-Analysis

Gery C. Karantzas¹, Rita Younan^{2, 3}, and Pamela D. Pilkington³

¹ School of Psychology, Deakin University

² Schema Therapy Institute Australia, Melbourne, Australia

³ School of Behavioural and Health Sciences, Australian Catholic University

This article reports on the first meta-analysis into the relationships between attachment styles and early maladaptive schemas (EMS). Fifteen studies were included. All associations were estimated using a random-effects model. Overall, insecure attachment styles were significantly positively associated with EMS (anxious attachment $r = .36$, avoidant attachment $r = .22$, fearful attachment $r = .28$) and significantly negatively associated with secure attachment ($r = -.13$). Subgroup analyses revealed differences in the magnitude of the associations between attachment styles and specific EMS. Anxious attachment demonstrated larger associations with EMS (compared to avoidant attachment) within the schema domains of disconnection/rejection ($r = .49$ vs. $r = .31$) and other-directedness ($r = .32$ vs. $r = .12$). The findings have important implications for the advancement of theory, research, and clinical practice in the fields of adult attachment and schema therapy.

Public Health Significance Statement

This study is the first quantitative review into the state of the field regarding the associations between adult attachment styles and early maladaptive schemas. The integration of adult attachment styles with early maladaptive schemas as part of this meta-analysis provides an important organizational framework regarding the maladaptive mental representations that insecure individuals harbor regarding their views of themselves and others. The findings provide therapists with an understanding of the maladaptive schemas that can feature in the presentation of clients who differ in attachment styles and how to tailor therapy to address the maladaptive schemas and coping patterns for different forms of attachment insecurity.


Keywords: schema therapy, early maladaptive schemas, attachment theory, attachment styles, internal working models

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Schema therapy has become one of the most widely used therapeutic approaches for working with individuals who experience pervasive mental health problems and are unresponsive to traditional cognitive behavioral therapy (Young et al., 2003). According to the schema therapy model, chronic mental health problems

are associated with individuals harboring maladaptive mental representations of the self and others that have origins in negative early life experiences. These mental representations are termed *early maladaptive schemas* (EMS) and reflect dysfunctional themes or patterns relating to oneself and one's relationships and are conceptualized as consisting of memories, emotions, cognitions, and bodily sensations (Young et al., 2003). It is important to note that although the term EMS implies that these maladaptive schemas form early in life, EMS reflect current (i.e., adult) mental states. That is, the idea that maladaptive schemas begin to develop "early" is a theoretical assumption of the schema therapy model that requires empirical validation.

The concept of EMS described in schema therapy shares many parallels with the concept of *internal working models* described in attachment theory, which refers to the positive and negative schemas that individuals hold about the self and others (Bowlby, 1969/1982; Gillath et al., 2016; Mikulincer & Shaver, 2016). These parallels exist somewhat by design. Young and colleagues (2003) drew upon the concept of attachment internal working models to

Gery C. Karantzas  <https://orcid.org/0000-0002-1503-2991>

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Correspondence concerning this article should be addressed to Gery C. Karantzas, School of Psychology, Deakin University, 221 Burwood Highway, Burwood, VIC 3125, Australia. Email: gery.karantzas@deakin.edu.au

inform the conceptual development of EMS (i.e., cognitions that entail representations of the self and other) and how experiences with the primary caregiver early in life (i.e., attachment figure) shape the cognitive content of various EMS. Indeed, attachment theory can be considered a foundational theoretical framework that underpins various aspects of the schema therapy model (see Young et al., 2003).

Given that Young and colleagues derived the concept of EMS by integrating aspects of attachment theory, and that EMS are thought to underpin any number of characterological problems, research into the association between individual differences in adult attachment (i.e., attachment styles) and EMS can provide important insights into the cognitive architecture of people who experience attachment insecurity in adulthood. This type of research is significant in terms of advancing theory, research, and clinical practice. Although narrative reviews suggest that the content of attachment working models is multifaceted in that they entail memories, beliefs, expectations, and alike (Collins & Read, 1994; Gillath et al., 2016), research is typically framed at the broad level of model of self and model of other. As a result, there has been no programmatic research into the cognitive facets or substrates regarding models of self and other that differentiate adult attachment styles. In terms of clinical practice, understanding the associations between EMS and attachment styles is useful for therapists working with clients characterized by pervasive relationship issues in adulthood. First, therapists can use knowledge about a client's attachment style to organize case formulation regarding relationship problems. Second, knowledge about a client's attachment style can help generate hypotheses/predictions as to the EMS that underpin the chronic and problematic cognitions harbored by clients with different attachment styles. Third, therapists can then tailor therapy to target the EMS that are relevant to different styles of attachment insecurity.

The current article reports on the first meta-analysis into the associations between EMS and adult attachment styles. In doing so, this quantitative synthesis advances theoretical and empirical understanding as to the cognitive content and structure of adult attachment styles and, in particular, attachment insecurity, a widely studied characterological problem that underpins many of the relationship problems that people experience across the romantic, familial, and peer contexts.

Schema Domains and Early Maladaptive Schemas

According to Young and colleagues (2003), EMS first form in childhood as result of early life experiences with significant others (especially primary caregivers) but are elaborated and reinforced in adolescence and adulthood when events perceived to be schema-congruent trigger intense negative affect and maladaptive coping behaviors (Carr & Francis, 2010; Rafaeli et al., 2010). Meta-analytic findings support the contention that schemas are associated with adverse early life experiences, particularly the absence of maternal warmth and responsiveness (Pilkington et al., 2020). EMS are inherently self-preserving because of the drive for cognitive consistency but can be altered by experiences that challenge existing beliefs (Rafaeli et al., 2010).

Theoretical and empirical work suggests that there are 18 EMS and that these EMS can be organized into a series of higher-order domains (Young et al., 2003). Originally, EMS were organized

into five domains, but recent psychometric evaluations of the Young Schema Questionnaire (Young, 2004)—the most widely used self-report assessment of EMS—have provided some support for a four-domain structure (Bach et al., 2018; Yalcin et al., 2020). Given that this meta-analysis includes research largely based on the original five-domain conceptualization, we focus our discussion of schema domains, and the EMS comprising each domain, with reference to the five-domain conceptualization. Below, we briefly describe each domain and the EMS associated with each schema domain. (Supplemental Table S1 provides a comprehensive description of each EMS and the schema domain under which it is theorized to align based on the original five-domain structure.)

The first schema domain is *disconnection/rejection* and includes EMS that relate to unmet needs for safety, belonging, and emotional nurturance. This domain consists of five EMS (abandonment/instability, mistrust/abuse, emotional deprivation, defectiveness/shame, and social isolation/alienation; see Table 1). Thus, people that endorse schemas in the disconnection/rejection domain expect that they will be neglected, abandoned, abused, and rejected by others. The second schema domain is *impaired autonomy/performance* and includes four EMS (dependence/incompetence, vulnerability to harm/illness, enmeshment/underdeveloped self, and failure; see Table 1). People who endorse schemas in this domain harbor views of the self as lacking competence and ability; maintain an unrelenting fear that some medical, emotional, or external catastrophe is imminent; and have an underdeveloped sense of agency as well as desire excessive closeness to others. The third schema domain is termed *impaired limits* and includes two EMS (entitlement/grandiosity and insufficient self-control/self-discipline; see Table 1). People who endorse schemas in this domain struggle with self-discipline, have difficulties controlling impulses, and hold grandiose views of the self. The fourth schema domain is termed *other-directedness* and includes three EMS (subjugation, self-sacrifice, and approval seeking/recognition seeking; see Table 1). People that endorse schemas in this domain privilege the opinions and wishes of others over those of the self and seek admiration and approval from others. The final schema domain is termed *overvigilance and inhibition* and includes four EMS (negativity/pessimism, emotional inhibition, unrelenting standards/hypercriticalness, and punitiveness; see Table 1). People who endorse schemas in this domain hold quite negative views about life, strive for excessive self-control, and place an overemphasis on morals and standards.

According to Young et al. (2003), individuals experience the chronic activation of a variety of EMS across multiple schema domains in different situations and contexts. Young and colleagues theorized that, to deal with schema activation, individuals enact three broad coping styles: overcompensation, avoidance, and surrender. *Overcompensation* is characterized by efforts to behave in a manner that is opposite to that of the activated EMS. For instance, an individual may overemphasize achievements and accomplishments to defend against schema activation regarding failure. *Avoidance* is characterized by efforts to avoid situations that are likely to activate EMS such that an individual may refuse to discuss a certain issue or minimize interactions with certain others to mitigate schema activation. *Surrender* is characterized by chronic endorsement of activated EMS such that the individual resigns themselves to the schemas by intensifying affect, cognitions, and behaviors that align with the activated EMS. The repeated use of these coping styles is regarded as central to schema perpetuation in adulthood across myriad interpersonal and noninterpersonal contexts (e.g.,

Table 1
Early Maladaptive Schema Domains and Definitions

Domain	Schema	Definition
Disconnection rejection	Abandonment	The perceived instability or unreliability of those available for support and connection
	Mistrust abuse	The expectation that others will hurt, abuse, humiliate, cheat, lie, manipulate, or take advantage
	Emotional deprivation	The expectation that one's desire for a normal degree of emotional support will not be adequately met by others
	Defectiveness/shame	The feeling that one is flawed, bad, inferior, or worthless and that one would be unlovable to others if exposed
	Social isolation/alienation	The feeling that one is isolated from the rest of the world, different from other people, and/or not part of any group or community
Impaired autonomy and performance	Dependence/incompetence	The belief that one is unable to handle one's everyday responsibilities in a competent manner without considerable help from others (e.g., take care of oneself, solve daily problems, exercise good judgment, tackle new tasks, make good decisions)
	Vulnerability to harm/illness	Exaggerated fear that imminent catastrophe will strike at any time and that one will be unable to prevent it
	Enmeshment	Excessive emotional involvement and closeness with one or more significant others (often parents) at the expense of full individuation or normal social development
	Failure	The belief that one has failed, will inevitably fail, or is fundamentally inadequate relative to one's peers in areas of achievement (school, career, sports, etc.)
Impaired limits	Entitlement/grandiosity	The belief that one is superior to other people, entitled to special rights and privileges, or not bound by the rules of reciprocity that guide normal social interaction
	Insufficient self-control/self-discipline	Pervasive difficulty or refusal to exercise sufficient self-control and frustration tolerance to achieve one's personal goals or to restrain the excessive expression of one's emotions and impulses
Other-directedness	Subjugation	Excessive surrendering of control to others because one feels coerced—submitting to avoid anger, retaliation, or abandonment
	Self-sacrifice	Excessive focus on voluntarily meeting the needs of others in daily situations at the expense of one's own gratification.
	Approval seeking/recognition	Excessive emphasis on gaining approval, recognition, or attention from other people or on fitting in at the expense of developing a secure and true sense of self
Overvigilance/inhibition	Negativity pessimism	A pervasive, lifelong focus on the negative aspects of life (pain, death, loss, disappointment, conflict, guilt, resentment, unsolved problems, potential mistakes, betrayal, things that could go wrong, etc.) while minimizing or neglecting the positive or optimistic aspects
	Emotional inhibition	The excessive inhibition of spontaneous action, feeling, or communication, usually to avoid disapproval by others, feelings of shame, or losing control of one's impulses
	Unrelenting standards	The underlying belief that one must strive to meet very high internalized standards of behavior and performance, usually to avoid criticism
	Punitiveness	The belief that people should be harshly punished for making mistakes; involves the tendency to be angry, intolerant, punitive, and impatient with those people (including oneself) who do not meet one's expectations or standards

Note. Domains and definitions reproduced from Young et al. (2003).

Mairet et al., 2014; van Genderen et al., 2012). Thus, therapeutic strategies within the schema therapy model, such as behavioral pattern breaking, focus on addressing these coping styles (Arntz & Jacob, 2017; Rafaeli et al., 2010; Young et al., 2003).

Adult Attachment Styles

Attachment theory posits that relationship experiences, particularly those with primary caregivers (i.e., parents) early in life, result in the development of attachment styles: individual differences in behaviors, cognitions, and affect within familial and other close relationships (Gillath et al., 2016; Mikulincer & Shaver, 2016). Typically, research into adult attachment styles has been

undertaken in two subdisciplines—the clinical/developmental perspective and the personality/social psychology perspective. The clinical/developmental perspective has largely focused on understanding attachment patterns in adulthood through interview-based assessments, such as the Adult Attachment Interview (AAI; George et al., 1985), that tie early parent-child experiences to attachment states of mind later in life. In the AAI, an individual's interview transcript is coded, and the individual is classified into one of four attachment patterns—secure, dismissing, preoccupied, or disorganized/unresolved. The attachment patterns of secure, dismissing, and preoccupied are further parsed into subgroups designed to classify individuals into more fine-grained attachment statuses. There are five secure subclassifications: (F1) some setting

aside of attachment; (F2) somewhat dismissing or restricting of attachment; (F3) prototypically secure/autonomous; (F4) strong expressed valuing of attachment, being sentimental or a little preoccupied; and (F5) somewhat resentful of conflicted, while still accepting. There are four dismissing subclassifications: (Ds1) dismissing of attachment, (Ds2) devaluing of attachment, (Ds3) restricted in feeling, and (Ds4) cut off from the source of fear. Finally, there are three preoccupied classifications: (E1) passive, (E2) angry/conflicted, and (E3) fearfully preoccupied. (For a detailed review of the AAI subclassifications, see Hesse, 2016.)

An individual who is classified as secure (F1-F5) generally has a balanced view of early relationships, attachment relationships are valued, and attachment-related experiences are considered as influential in the person's development. The manner of the interviewee is characterized as cooperative and open, communication is clear and direct, and the interviewee provides coherent and believable accounts of parental behavior. An individual who is classified as dismissing (Ds1-Ds4) generally tends to minimize or refute the developmental influence of early attachment relationships, attempts to convey negative experiences in a positive manner, and can present an idealized view of attachment figures despite evidence of parental rejection. An individual who is classified as preoccupied (E1-E3) generally tends to express anxiety and/or anger when discussing relationships with parents early in life and seems enmeshed in and ruminates over past parent-child experiences. For some individuals, parents were intrusive or demanded that the child take care of them, with little sensitive and responsive care rendered to the child in return. The manner of the interviewee is characterized by lengthy responses that are confusing and entail inconsistencies. An individual who is classified as disorganized/unresolved tends to have early life experiences with parents marked by losses, traumas, or abuse. The interviewee's manner is characterized by confusing statements and disorientation in speech when recounting events, which extends to a disoriented temporal awareness of when events were experienced.

The personality/social psychology perspective has focused on understanding attachment styles largely within the context of romantic and peer relationships, utilizing a variety of categorical and dimensional self-report measures that assess affect, behavior, and cognitions within these relational contexts (e.g., Brennan et al., 1998; Fraley et al., 2000; Hazan & Shaver, 1987; Karantzas et al., 2010; Simpson, 1990). Early work involved the almost exclusive use of categorical assessments in which individuals were classified using either tripartite (anxious, avoidant, and secure) or quadripartite (preoccupied, dismissing, fearful, and secure) typologies.

Debate has surrounded the conceptualization and measurement of attachment styles as either discrete categories or continuous dimensions (Fraley & Waller, 1998). Most of the findings from research conducted within the personality/social psychology perspective suggests that attachment styles are best conceptualized and measured along two broad dimensions—attachment avoidance and attachment anxiety (Brennan et al., 1998; Fraley & Spieker, 2003; Fraley & Waller, 1998; Gillath et al., 2016). Importantly, variability in scores along the anxiety and avoidance dimensions underpins three- and four-category self-report measures (Fraley & Roisman, 2019; Gillath et al., 2016).

Experiences of inconsistent or inept care tend to result in an anxious attachment style, indicated by high levels of attachment anxiety. Anxiously attached individuals (referred to as preoccupied in four-category attachment assessments) have an excessive need for

closeness and approval, are preoccupied with the availability of close others, and have chronic fears of abandonment (Brennan et al., 1998; Feeney et al., 1994; Karantzas et al., 2010). In addition, anxiously attached individuals tend to experience heightened negative affect that can entail the expression of anger and frustration in times of distress and during interpersonal conflict (Feeney & Karantzas, 2017; Mikulincer & Shaver, 2019), respond to the needs of others with compulsive and intrusive behaviors that can interfere with a care recipient's autonomy (Braun et al., 2012; Canterberry & Gillath, 2012), and solicit support in a manner that is demanding and overreliant (Mikulincer & Shaver, 2016). These characteristics are underpinned by *hyperactivating* behavioral strategies, which entail the intensification of distress, rumination, and increased efforts to seek proximity to close others (Gillath et al., 2016; Mikulincer & Shaver, 2016).

The internal working models of those with an anxious attachment entail negative views of the self and ambivalent views of others (Gillath et al., 2016; Mikulincer & Shaver, 2016; Simpson & Karantzas, 2019). Specifically, cross-sectional and experimental studies demonstrate that anxiously attached individuals view the self as helpless and somewhat childlike in manner as well as low on self-competence/agency and low in self-esteem (e.g., Gentzler & Kerns, 2004; Strodl & Noller, 2003). In terms of their ambivalent models of others, research suggests that anxiously attached individuals hold mental representations of others as unreliable, and thus, despite desiring care and attention from others, anxious individuals harbor pessimism (e.g., Heinonen et al., 2004) and evaluate close others negatively in terms of supportiveness, dependability, and faithfulness (especially when compared to securely attached individuals; e.g., Collins & Read, 1990; Feeney & Noller, 1992; Holtzworth-Munroe et al., 1997).

Conversely, caregiving experiences marked by consistent neglect and/or rejection often result in an avoidant attachment style, indicated by high levels of attachment avoidance. Avoidantly attached individuals (referred to as dismissing in four-category attachment assessments) develop a need for excessive self-reliance, have a discomfort with emotional closeness, are chronically distrusting of others, and tend to view relationships as secondary compared to achievements in other life domains (Brennan et al., 1998; Feeney et al., 1994; Karantzas et al., 2010). Furthermore, avoidantly attached individuals tend to engage in escape-avoidant responses in times of distress and interpersonal conflict, suppress negative affect, and are reluctant to attend to the needs of others (often responding in a manner that is withdrawn and lacks warmth; Braun et al., 2012; Canterberry & Gillath, 2012; Gillath et al., 2016). These characteristics are underpinned by *deactivating* behavioral strategies, which include the downward regulation of distress as well as cognitive and behavioral disengagement from stressors (Gillath et al., 2016; Mikulincer & Shaver, 2016).

The internal working models of those with an avoidant attachment style entail fragile views of the self and negative views of others (Gillath et al., 2016; Mikulincer & Shaver, 2016; Simpson & Karantzas, 2019). Specifically, correlational and experimental studies demonstrate that avoidantly attached individuals evidence both positive and negative views of the self and thus harbor a somewhat unstable and fragile self-concept. Research finds that avoidant individuals hold quite positive views of the self in domains outside close relationships, often reporting similar levels of self-esteem and efficacy to securely attached individuals (e.g.,

Cozzarelli et al., 1998; Taubman-Ben-Ari et al., 2002). However, studies into interpersonal stressors (such as the transition to parenthood) find that attachment avoidance is negatively associated with self-esteem (e.g., Alexander et al., 2001; Cash et al., 2004; Davila et al., 1996).

Although these findings point to avoidant individuals having different self-appraisals in different contexts, Mikulincer and Shaver (2016) suggested that avoidant individuals likely hold a fragile view of self due to a tendency to engage in defensive self-enhancement. According to Mikulincer and Shaver (2016), defensive self-enhancement refers to holding an overtly positive view of the self as competent and capable to cope on one's own and to defend against a compromised self-worth due to a history of rejection and neglect. Indeed, experimental studies have found that avoidant individuals experience significantly larger reductions in positive self-appraisals when exposed to negative feedback and find it difficult to acknowledge negative personal qualities compared to secure individuals (e.g., Mikulincer, 1995). Thus, it may be that avoidant individuals outwardly portray a very positive view of the self but privately harbor a far less stable and positive self-image (Arriaga & Kumashiro, 2019; Simpson & Karantzas, 2019). In terms of model of others, avoidant individuals' experiences of constant rejection and neglect underpin highly negative views of others. These negative views of others involve making internal negative attributions regarding the interpersonal behaviors of attachment figures (e.g., Collins et al., 2006; Pereg & Mikulincer, 2004).

Individuals who index low on both dimensions have a secure attachment style, which is rooted in early caregiving experiences in which needs were mostly tended to in a sensitive and responsive manner (Gillath et al., 2016). Securely attached individuals regard themselves and others as worthy of love and support and are comfortable with intimacy and closeness but balance closeness with autonomy (Brennan et al., 1998). Moreover, securely attached individuals can effectively regulate their emotions and respond constructively in times of distress and interpersonal conflicts (see Cassidy & Shaver, 2016, for review). Securely attached individuals also have the ability to attend to the needs of others in a sensitive and responsive manner as well as to openly support and care for others when required (Canterberry & Gillath, 2012; Gillath et al., 2016).

Individuals can also index high on both attachment anxiety and avoidance (referred to as fearful attachment in four-category attachment assessments). These individuals are characterized by a desire for close relationships but avoid relationships due to chronic fears of experiencing emotional hurt at the hands of a significant other (Bartholomew & Horowitz, 1991; Gillath et al., 2016). It is assumed that because fearful individuals are high on both attachment dimensions that they may fluctuate in their use of hyperactivating and deactivating behavioral strategies such that their display of affect and behavior in relationships may reflect a somewhat confused or hybrid mix of the two strategies (Mikulincer & Shaver, 2016).

Attachment Styles and EMS

Young and colleagues (2003) acknowledged that attachment insecurity (as compared to attachment security) should be associated with the endorsement of a raft of EMS. In particular, Young et al. noted that individuals characterized by EMS in the disconnection/rejection domain would be

unable to form secure, satisfying attachments to others ... [Because these individuals] believe that their needs for stability, safety, nurturance, love, and belonging will not be met. Typical families of origin are unstable (abandonment/instability), abusive (mistrust/abuse), cold (emotional deprivation), rejecting (defectiveness/shame), or isolated from the outside world (social isolation/alienation). (p. 13)

Although these theoretical insights are important in establishing the likelihood (and direction) of the associations between attachment styles and EMS, there are two inherent limitations with these assumptions.

First, there is no elaboration on how *different* styles of attachment insecurity (e.g., differing levels of attachment anxiety and attachment avoidance) may be associated with EMS. Given that theory and research into attachment suggest that different styles of attachment insecurity emerge (at least in part) from differences in the quality of care rendered by primary attachment figures early in life, it follows that different attachment styles may evidence similar associations with some EMS but distinct associations with other EMS. Second, the characteristics reflective of different insecure attachment styles suggest that associations with EMS should extend to schema domains beyond that of disconnection/rejection. Nevertheless, both theory and research have largely focused on the associations between adult attachment styles and the disconnection/rejection domain (e.g., Brummet, 2007; De Paoli et al., 2017; Young et al., 2003). In specific studies that have investigated associations with attachment styles and EMS across multiple schema domains, there is typically little by way of clearly articulated theoretical predictions regarding how different attachment styles may converge and diverge in terms of associations across the many and varied EMS (e.g., Gay et al., 2013; Güngör, 2015; Platts et al., 2005). Rather, predictions are often framed in general terms, such as all forms of attachment insecurity are assumed to positively associated with the EMS (or domains) investigated within a given study (e.g., Gay et al., 2013; Güngör 2015; see Bosmans et al., 2010, as an exception).

Given these limitations, the purpose of this meta-analysis was to provide a quantitative review of existing research on attachment styles and EMS. However, an understanding of the characteristic features of each attachment style and each schema allows for the development of specific predictions regarding the associations between different attachment styles and EMS that can be expected on a meta-analytic level. We expand on our predictions below.

Anxious attachment (characterized by a chronic need for approval, preoccupation with relationships, and fears of abandonment) should be positively associated with all schemas within the domain of disconnection/rejection. This is because the EMS in the disconnection/rejection domain center around cognitions of abandonment and the absence of care that meets attachment needs of love, comfort, and security. Furthermore, given that anxiously attached individuals harbor negative views of the self, which entail low self-esteem and a lack of self-efficacy/competence, we expect this attachment style to be positively associated with all schemas in the domain of impaired autonomy/performance. The characteristics and the negative self-views of those with an anxious attachment, together with their tendencies to engage in intrusive or compulsive caregiving behaviors, means that anxious attachment should also be positively associated with schemas in the other-directedness domain. In relation to the domain of impaired limits,

we would expect a positive association between attachment anxiety and insufficient control/self-discipline. This is because the difficulties experienced by anxious individuals in regulating their impulses and behaviors (underpinned by hyperactivating behavioral strategies) should make it difficult to regulate interpersonal needs and emotions. Finally, within the overvigilance domain, we expected anxious attachment to be positively associated with negativity/pessimism given that anxious attachment is associated with negative self-views and the holding of somewhat pessimistic expectations regarding the ability of others to meet attachment needs.

In relation to avoidant attachment, individuals high in attachment avoidance are characterized by a discomfort with emotional closeness, a chronic distrust of others, excessive self-reliance and dismiss the need/importance of relationships (especially in comparison to other life domains). Because of these characteristics, we expect positive associations between avoidant attachment and all schemas within the domain of disconnection/rejection, except abandonment, as individuals high in avoidant attachment would not endorse abandonment due to their excessive self-reliance and tendency to dismiss the need for relationships. In terms of their internal working models, avoidant individuals hold fragile views of the self, entailing positive outward self-evaluations (especially in life domains other than relationships) and yet harbor negative private (i.e., internal) self-evaluations of the self (especially when it comes to relationships). Thus, we expect avoidant attachment to be positively associated with schemas in the impaired autonomy/performance domain. Finally, we expect avoidant attachment to be positively associated with the negativity/pessimism and the emotional inhibition EMS within the overvigilance/inhibition domain. This is because avoidant attachment is associated with fragile views of the self and negative views of others and because the use of deactivating behavioral strategies limits experiencing distress and negative affect. Thus, the mental representations and behavioral strategies of avoidant individuals should perpetuate negative and/or pessimistic world views and inhibition of emotions, especially negative affect.

In relation to secure attachment (i.e., low attachment anxiety and low attachment avoidance), we expected this attachment style to be negatively associated with all EMS. In relation to fearful attachment (i.e., high attachment anxiety and attachment avoidance), it is possible that this attachment style will evidence the most problematic endorsement of EMS. As such, positive associations should be expected across EMS that are predicted to relate to attachment anxiety and attachment avoidance, and these associations may be larger in magnitude than for individuals with an anxious or avoidant attachment style.

The Current Study

The aim of this meta-analysis was to evaluate the empirical literature on the associations between early maladaptive schemas and adult attachment styles. Although schema therapy is informed by an attachment theory perspective, the status of the empirical evidence on the relationships between attachment styles and early maladaptive schemas is unclear. However, several predictions, as summarized above, can be derived through the thoughtful integration of theory and research on adult attachment with schema therapy. Therefore, the findings from this meta-analysis can contribute

to advancing theory, research, and clinical practice in the fields of both adult attachment and schema therapy.

Method

A systematic literature search was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009) guidelines. Below the eligibility criteria, search strategy and process for study selection, quality assessment, and data extraction are described.

Eligibility Criteria

Inclusion Criteria

A systematic search of electronic databases was conducted. The resulting records were assessed against the inclusion criteria, which required that studies (a) reported on original research, (b) were written in English, (c) investigated the unadjusted association between adult attachment styles and EMS and/or schema domains, and (d) reported sufficient data to facilitate the calculation of effect sizes. Book chapters, conference papers, and doctoral dissertations were included if the data were not reported as part of a published journal article.

Exclusion Criteria

Studies were excluded based on three criteria. Specifically, studies were not retained if the sample(s) (a) included participants under the age of 18 years, (b) used a qualitative or single case design, or (c) did not provide measures of EMS or adult attachment styles (e.g., studies that measured schemas not in reference to EMS but in terms of generalized social scripts or measured attachment insecurity in general without distinguishing between different styles of insecurity).

Search Strategy

Parallel systematic searches were conducted across the PsycINFO, Medline Complete, and PsycExtra databases. PsycINFO and Medline Complete were included due to their comprehensive coverage of social science works, and PsycExtra was included given it includes a comprehensive index of gray literature related to the social sciences. There were no limitations added regarding the year or type of publication. A variety of keywords were used separately and in combination to search titles, abstracts, and the full content fields of each database. These keywords included schema therapy AND (“early maladaptive schemas” OR “unconditional schemas” OR “conditional schemas” OR “schema domains” OR “schema modes”) AND (attachment style* OR “attachment orientation*” OR “attachment category*” OR “attachment pattern*” OR “attachment states of mind” OR “adult attachment” OR “attachment” OR “attachment disorgani(?)tion” OR “disorgani(?)ed attachment” OR “Adult Attachment Interview” OR “AAI”). The original search was conducted in May 2019 and a forward search was carried out in June 2021. An updated search was conducted in August 2021. Additional records were identified through a hand search of the reference lists of articles recovered through the database searches to capture any relevant studies that may have been missed using the search strategy listed above.

Study Selection, Quality Assessment, and Data Extraction

Study Selection

The number of excluded articles was noted against the reasons for exclusion (see Figure 1). Articles deemed eligible were retrieved for full-text review and screened independently by two of the coauthors (Gery C. Karantzas and Pamela D. Pilkington). Those evaluated as not meeting the inclusion criteria after full-text review were excluded (see Figure 1). The intraclass correlation of the raters was .98.

Quality Assessment

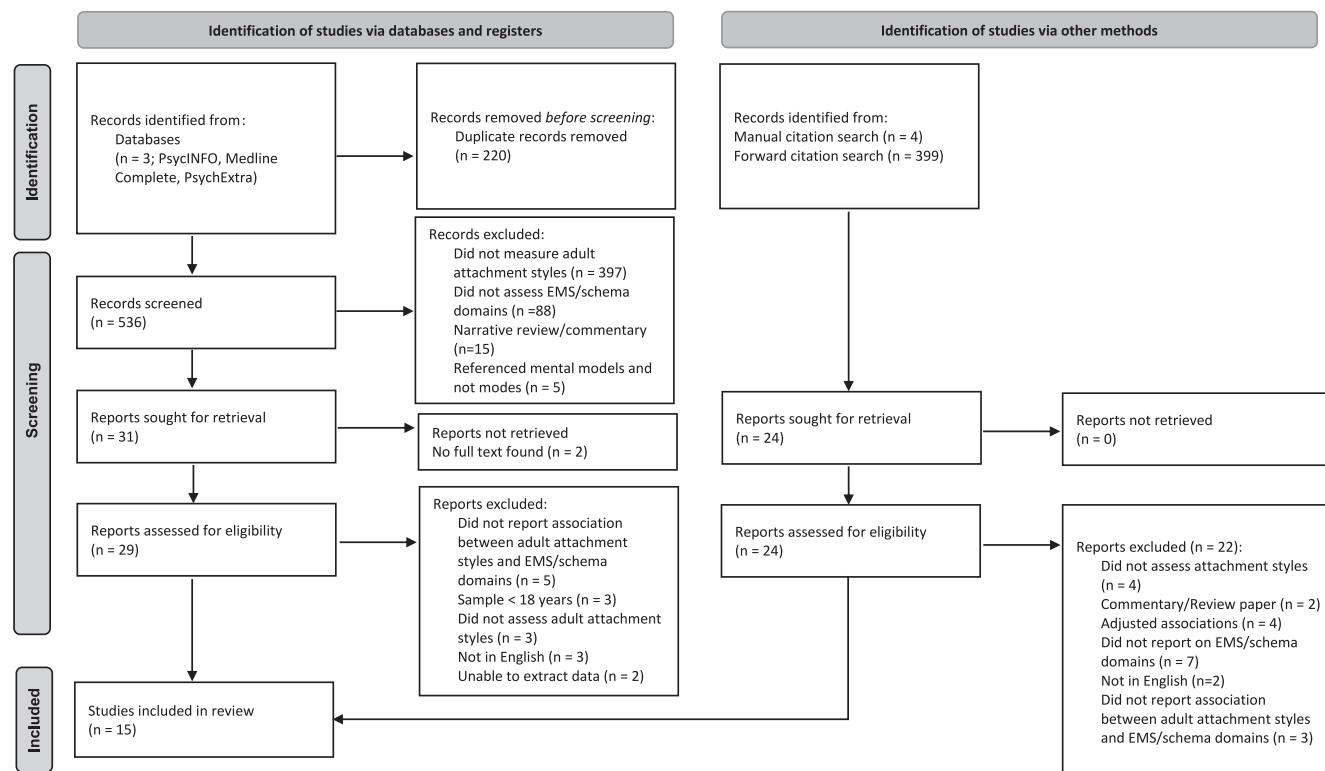
Methodological quality of the included studies was assessed using 15 items from the Appraisal Tool for Cross-Sectional Studies (AXIS; Downes et al., 2016). The AXIS is a dichotomous (yes/no) checklist assessment across six domains of study quality, namely (a) clarity of the study aims and sampling adequacy for addressing research aims (i.e., sample size justification, sampling frame, and sample selection), (b) the use of valid and reliable measures for the outcomes, (c) description of the data analysis plan and complete reporting of the methodological procedure, (d) comprehensive and clear description of the results, (e) justifiable interpretations and conclusions, and (f) the study complies with research ethics standards. In the current meta-analyses, we evaluated study quality by the percentage of AXIS tool criteria items satisfied. We determined a study to be of moderate quality if the characteristics of the study

fulfilled at least 60% of the AXIS tool criteria, of moderately high quality if studies fulfilled 70% of the AXIS criteria, and of high quality if studies fulfilled 80% of the AXIS criteria. The quality assessment was independently undertaken by two of the coauthors (Gery C. Karantzas and Pamela D. Pilkington). The rater intraclass correlation was .97.

Data Extraction

Data extraction included study author and publication year, study characteristics (e.g., sample size, sample type, study design [e.g., cross-sectional, longitudinal]), measures used to assess attachment styles and EMS, and quantitative data that could be used for the estimation of effect sizes in the meta-analysis (e.g., bivariate correlations, mean differences). To facilitate the estimation of effect sizes for attachment styles while maximizing the number of studies that could be included as part of effect size estimations, studies reporting on typological assessments of attachment styles (e.g., Relationship Questionnaire; Bartholomew & Horowitz, 1991, four-category assessment) were grouped within the primary attachment dimensions of anxious and avoidant attachment. The preference to group studies based on these dimensions aligns with contemporary conceptualizations that categorical assessments are also underpinned by these two primary dimensions (e.g., Fraley & Waller, 1998). Thus, attachment style categories such as preoccupied attachment was coded to index attachment anxiety, and dismissing attachment was coded to index attachment avoidance. Given that categorical measures also derive assessments for those deemed high on attachment anxiety and avoidance (e.g., fearful attachment) or

Figure 1
PRISMA Flow Diagram for Quantitative Synthesis



low on both dimensions (e.g., secure attachment), these attachment styles were not grouped under the broad dimensions but coded as separate attachment styles for inclusion in analyses.

Data Analysis

The meta-analysis was conducted in Comprehensive Meta-Analysis Version 3.3.070 (CMA; Biostat Inc., Englewood, NJ; Borenstein, 2009). Extracted effect sizes from each included study were entered into CMA. The effect size metric varied across the studies; hence, to allow for cross-study comparison, all reported effect sizes were converted to a common metric—Pearson's r correlation—as it was the most reported metric across studies. Correlations were transformed from r to Fisher's z for the meta-analysis and back transferred to Pearson's r for interpretability after meta-analyses. We conducted separate meta-analyses for each attachment style in determining the association between attachment styles and EMS. All meta-analyses were based on a random-effects model.

To account for potential statistical dependence (i.e., clustering) that can arise from extracting multiple effect size estimates from the same study (i.e., multiple outcomes assessed within the same sample), the unit of analysis was set at the level of the study in CMA. This feature in CMA allows the program to pool multiple effect size estimates from a single study into one effect (Borenstein, 2009). Furthermore, CMA assumes a within-cluster correlation of $\rho = 1.0$ for analysis, thus providing the most conservative estimate of variance for each study.

Heterogeneity in effect sizes for included studies was estimated using I^2 and T^2 . I^2 estimates the percentage of total variance attributable to variance in the true effect size (Higgins et al., 2003). T^2 is an estimate of between-study variance in the average effect sizes within each study (Fisher & Tipton, 2015). Cohen's (1992) rules of thumb were used to interpret the size of meta-analytic effects; $r \sim .1$ (small), $\sim .3$ (medium), and $\sim .5$ (large).

The analyses were conducted in four stages. First, we estimated effect sizes for the association between each attachment style and overall EMS. Second, we estimated the associations between attachment styles and each schema domain. In terms of schema domains, for studies that provided associations at the domain level, then effect size estimations involved these domain-level associations. However, for studies that provided associations for all EMS constituting a domain, but not domain-level associations, then the relationships across all EMS relevant to a particular domain were pooled for inclusion in the domain-level analyses. Third, the associations between attachment styles and each EMS were estimated. Subgroup analyses were conducted to determine whether the associations between attachment styles differed at the overall EMS level, the domain level, and at the level of each schema.

Finally, a series of subgroup analyses were conducted to investigate whether the estimated associations between attachment styles and EMS (overall) differed on methodological aspects, namely the type of sample used (e.g., community vs. university students vs. clinical vs. forensic) and the type of attachment measure used (categorical vs. dimensional). Q tests and z tests were conducted to enable statistical comparisons across subgroups. A Q test was initially conducted to determine whether the omnibus test demonstrated evidence of differences between subgroups. In instances when these subgroups involved more than two groups, z tests were conducted to determine which groups significantly differed in effect sizes.

Publication Bias

We assessed the presence of possible publication bias using several methods. First, we calculated the overall effect size for published and unpublished studies and conducted a subgroup analysis to determine if publication status moderated the effect size. Second, we conducted visual assessments of publication bias by inspecting the symmetry of the funnel plot. This visual representation is a plot depicting study size on the vertical axis as a function of effect size on the horizontal axis. Large studies appear toward the top of the graph and tend to cluster near the mean effect size. Smaller studies appear toward the bottom of the graph and (since there is more sampling variation in effect size estimates in the smaller studies) will be dispersed across a range of values. In the absence of publication bias, studies are expected to be evenly distributed around the averaged effect size. By contrast, in the presence of bias, the bottom of the plot would show a higher concentration of studies on one side of the mean than the other. This would reflect the fact that smaller studies (which appear toward the bottom) are more likely to be published if they have larger than average effects, which is necessary for them to meet the criterion for statistical significance. Third, we used Egger's test of the intercept (Egger et al., 1997) to determine whether any asymmetry in the funnel plot was statistically significant, where significant asymmetry ($p < .05$) suggests evidence of publication bias.

Sensitivity Analysis

A "one-study-removed" analysis was conducted in CMA to determine the stability of the findings (Borenstein, 2009). A one-study-removed analysis assesses whether the overall averaged effect size estimates are unduly influenced by any potential outlier studies. The one-study-removed analysis sequentially removes one study at a time and recalculates the overall averaged effect with one study removed. Hence, the one-study-removed analysis recalculates as many effect sizes as there are studies in the overall meta-analysis. If the recalculated effect size falls outside the 95% confidence interval (CI) of the overall average effect size, then the removed study is considered an outlier. In event that outlier studies are detected, the results with and without the outliers are compared to determine the degree of influence attributable to the outlier studies.

Results

The identification of articles through the searching of electronic databases using the search terms outlined (see Method) revealed a total of 536 studies (with the removal of duplicates; see Figure 1, PRISMA Flow Chart). The screening of these records at the level of title and abstract against the inclusion criteria resulted in the exclusions 505 studies (see Figure 1). The forward search revealed a total of 399 records. The screening of these records at the title and abstract level against the inclusion criteria resulted in the exclusion of 379 studies (see Figure 1). The updated search did not result in the identification of additional studies for screening. A total of 49 studies were subjected to full-text review, and a manual hand search of the reference lists of these 49 studies revealed an additional four studies for full-text review (see Figure 1). Full-text review resulted in the exclusion of 38 studies, reducing the final number of studies eligible for quantitative synthesis to 15 studies. The reasons for exclusion are presented in Figure 1.

Study Characteristics and Design

Fifteen studies were included in the meta-analysis; most studies ($k = 11$) were peer-reviewed journal articles, while four studies were theses (see Table 2). The studies were published between 1995 and 2017. The majority of studies were conducted in the United States ($k = 8$), followed by Canada and Turkey ($k = 2$, respectively), and one study was conducted in Belgium, the United Kingdom, and Australia, respectively (see Table 2). All studies, except for Simard et al. (2011), were cross-sectional in design. All studies administered self-report questionnaires to assess adult attachment styles and EMS and/or schema domains.

Sample Characteristics

The sample across 15 studies totaled 3,339 participants. As shown in Table 2, studies varied in sample size from 40 to 616 participants. Most studies ($k = 7$) used samples of university students, two studies used community samples (Körük, 2017; Simard et al., 2011), two used clinical samples (Brummet, 2007; Platts et al., 2005), and two studies used forensic samples (Fish, 2014; McKee et al., 2012). One study included clinical and university student subsamples (De Paoli et al., 2017), and one study included community and university student subsamples (Farr, 2010). The mean age of participants across studies ranged from young adulthood (18.5 years) to middle adulthood (47 years). Most studies ($k = 13$) recruited men and women as part of the sample (but did not report analyses separately for each gender), and two studies exclusively recruited male participants.

Attachment Style Measures

A total of five self-report measures of adult attachment styles were used across the studies. Of these, four were widely utilized self-report measures in the adult attachment literature and were used in approximately equal numbers across studies. These measures were the Experience in Close Relationships scale (Brennan et al., 1998; $k = 4$), the Experiences in Close Relationships—Revised (Fraley et al., 2000; $k = 3$), the Relationship Questionnaire (Bartholomew & Horowitz, 1991; $k = 3$), and the Relationship

Style Questionnaire (Griffin & Bartholomew, 1994; $k = 3$). One study (Rayner, 2008) used a previously developed unpublished attachment style measure known as the Adult Scale of Parental Attachment (Snow et al., 2004). The Experience in Close Relationships scale, Experiences in Close Relationships—Revised, Relationship Style Questionnaire, and Adult Scale of Parental Attachment represent dimensional assessments of attachment, while the Relationship Questionnaire uses a categorical assessment of attachment. None of the included studies employed interview assessment measures such as the AAI (George et al., 1985).

EMS Measures

Fourteen out of 15 studies used a version of the Young Schema Questionnaire (YSQ; Young & Brown, 1990; see Table 2). Most studies used shortened versions of the YSQ (YSQ-SF, Young & Brown, 1990, $k = 8$; YSQ-S3, Young, 2004, $k = 4$), followed by studies that used versions of the YSQ long form (i.e., YSQ-L2, YSQ-L3; Young, 1990; Young & Brown, 2003, $k = 2$). One study used a derivative of the YSQ, the Early Maladaptive Schema Questionnaire—Revised (Ball & Young, n.d., Cecero et al., 2004). All measures assessed EMS in adulthood and thus current mental states of maladaptive schemas.

Study Quality

Most studies included in the meta-analysis demonstrated moderately high to high research quality across the domains of the AXIS critical appraisal tool (see Supplemental Table S1). Of the 15 studies in the meta-analysis, 10 studies fulfilled 80% or more of the AXIS criteria, while three studies fulfilled greater than 70% of the AXIS criteria. Of these studies, all were considered to have a clear statement of the aims and an appropriate research design to address the aims and used previously validated measure to assess attachment styles and EMS. However, commonly missed AXIS criteria included relying on convenience sampling, failure to justify sample size, failure to include any measures to address, and failure to categorize or describe nonresponders, and there was an absence of explicit information regarding ethics approval or that

Table 2
Study Characteristics

Author and year	Attachment measure	EMS measure	Country	Sample type	Age (in years)	<i>N</i>	Publication status
Bosmans et al. (2010)	ECR	YSQ-SF	Belgium	University students	21.0	289	Published
Brummet (2007)	ECR-R	YSQ-S3	U.S.	Clinical (opioid dependent)	47.0	101	Thesis
Cecero et al. (2004)	RQ	EMSQ-R	U.S.	University students	20.0	292	Published
Clifton (1995)	RQ	YSQ-L2	U.S.	University students	20.0	218	Thesis
De Paoli et al. (2017)	ECR-R	YSQ-SF	Australia	University students and clinical	21.5	616	Published
Farr (2010)	ECR-R	YSQ-SF	U.S.	Community and university students	24.7	340	Thesis
Fish (2014)	RSQ	YSQ-S3	U.S.	Forensic (incarcerated men)	37.3	71	Thesis
Gay et al. (2013)	RSQ	YSQ-SF	U.S.	University students	19.1	396	Published
Güngör (2015)	RQ	YSQ-S3	Turkey	University students	21.0	408	Published
Körük (2017)	ECR-R	YSQ-S3	Turkey	Community	27.0	100	Published
Platts et al. (2005)	ECR	YSQ-SF	U.K.	Clinical	39.0	72	Published
McKee et al. (2012)	ECR	YSQ-SF	U.S.	Forensic (male batterers)	34.1	40	Published
McLean et al. (2014)	ECR	YSQ-SF	Canada	University students	18.5	146	Published
Rayner (2008)	ASPA	YSQ-SF	U.S.	University students	20.4	250	Thesis
Simard et al. (2011)	ECR	YSQ-L3	Canada	Community	21.0	60	Published

Note. ASPA = Adult Scale of Parental Attachment; ECR = Experiences in Close Relationships; R = Revised; RSQ = Relationship Scales Questionnaire; RQ = Relationship Questionnaire; SF = Short Form; S3 = Short Form Version 3; YSQ = Young Schema Questionnaire; EMS = early maladaptive schemas.

the study had not been reviewed by the appropriate ethics committee. There were two studies that fulfilled 67% of the AXIS criteria.

The Associations Between Adult Attachment Styles, Schema Domains, and Early Maladaptive Schemas

Anxious Attachment

Anxious attachment was positively associated with overall EMS ($r = .36$, 95% CI [.27, .42], $p < .001$). As shown in Table 3, anxious attachment was significantly positively associated with all schema domains, with the magnitude of the associations ranging from $r = .17$ (impaired limits) to $r = .49$ (disconnection/rejection). Subgroup analysis revealed significant differences in these associations, $Q(4) = 11.63$, $p < .001$. The strength of the association was significantly larger in the disconnection/rejection domain compared to all other schema domains ($z_s = 2.12-4.38$, $ps < .05$ to $.001$; see Supplemental Table S2 for all z tests), except for impaired autonomy. Significant differences in the magnitude of the association were also found between impaired autonomy ($r = .35$) and impaired limits ($r = .17$; $z = 2.66$, $p < .01$) and between impaired limits and other-directedness ($r = .23$; $z = -3.22$, $p < .01$).

In relation to the associations found between attachment anxiety and each schema, significant associations were found across all EMS, except for emotional inhibition (see Table 3). These significant associations ranged in magnitude between $r = .16$ (entitlement/grandiosity) and $r = .51$ (abandonment). The largest associations were found in EMS that related to three schema domains: disconnection/rejection (abandonment $r = .51$, defectiveness $r = .41$, social isolation/alienation $r = .40$), other-directedness (subjugation $r = .44$, approval seeking $r = .40$), and overvigilance/inhibition (negativity/pessimism $r = .46$).

Avoidant Attachment

Avoidant attachment was positively associated with overall EMS ($r = .22$, 95% CI [.15, .29], $p < .01$). As shown in Table 3, avoidant attachment was significantly positively associated with all schema domains; the magnitude of the associations ranged from $r = .12$ (other-directedness) to $r = .32$ (disconnection/rejection). Subgroup analysis revealed significant differences in these associations, $Q(4) = 10.36$, $p < .05$. The strength of the association was significantly larger in the disconnection/rejection domain ($r = .32$) compared to the domains of impaired limits ($r = .19$; $z = 1.97$, $p < .05$) and other-directedness ($r = .12$; $z = 2.88$, $p < .01$). Significant differences in associations were also found between impaired autonomy ($r = .35$) and impaired limits ($r = .17$; $z = 2.66$, $p < .01$) and between impaired limits and other-directedness ($r = .23$; $z = -3.22$, $p < .01$).

For the associations found between attachment avoidance and each EMS, significant associations were found across all EMS, except for subjugation (see Table 3). These significant associations ranged in magnitude between $r = .09$ (self-sacrifice) and $r = .33$ (emotional deprivation). The largest associations were found in EMS that relate to the disconnection/rejection domain (emotional deprivation $r = .33$, mistrust/abuse $r = .31$, defectiveness $r = .31$, social isolation/alienation $r = .30$, social isolation/alienation $r = .40$) and impaired autonomy/performance (vulnerability to harm/illness $r = .29$).

Fearful Attachment

Fearful attachment was positively associated with overall EMS ($r = .28$, 95% CI [.20, .34], $p < .001$). As shown in Table 3, fearful attachment was significantly positively associated with all schema domains; the magnitude of the associations ranged from $r = .25$ (impaired autonomy) to $r = .42$ (disconnection/rejection). Subgroup analysis revealed significant differences between schema domains $Q(4) = 10.11$, $p < .05$. Specifically, differences were found between the schema domains of disconnection/rejection ($r = .42$) and other-directedness ($r = .27$; $z = 1.97$, $p < .01$). Significant differences in associations were also found between impaired autonomy ($r = .35$) and impaired limits ($r = .17$; $z = 2.66$, $p < .01$) and between impaired limits and other-directedness ($r = .23$; $z = -3.22$, $p < .01$).

In relation to the associations found between fearful attachment and each schema, significant associations were found across all EMS, except for unrelenting standards (see Table 3). These significant associations ranged in magnitude between $r = .13$ (self-sacrifice) and $r = .44$ (mistrust/abuse). The largest associations were found in EMS that relate to the disconnection/rejection domain (mistrust/abuse $r = .44$, defectiveness $r = .33$, emotional deprivation $r = .31$, social isolation/alienation $r = .29$), other directedness (subjugation $r = .34$), and overvigilance/inhibition (emotional inhibition $r = .33$).

Secure Attachment

Secure attachment was negatively associated with overall EMS ($r = -.13$, 95% CI [-.29, .04], $p < .01$). As shown in Table 3, secure attachment was only found to be significantly negatively associated with the overvigilance/inhibition schema domain ($r = -.17$). The associations between secure attachment and schema domains were generally small (see Table 3). Subgroup analysis revealed no significant differences in these associations between secure attachment and schema domains, $Q(4) = 2.66$, $p > .05$.

Comparing the Strength of Associations Between Attachment Styles and Given Schema Domains and EMS

Attachment Styles and Schema Domains

Subgroup analysis revealed that the strength of the associations between attachment styles and schema domains differed significantly, $Q(3) = 26.33$, $p < .001$. In relation to the disconnection/rejection schema domain (see Table 3), the association with anxious attachment ($r = .49$) was significantly larger compared to avoidant attachment ($r = .32$; $z = 2.19$, $p < .05$) and secure attachment ($r = -.16$; $z = 3.94$, $p < .001$). The association with avoidant attachment was also larger compared to secure attachment ($z = 2.97$, $p < .01$), as was the association with fearful attachment ($r = .42$) compared to secure attachment ($z = 3.53$, $p < .001$). In terms of the associations between attachment styles and the schema domain of impaired limits, the association was significantly larger for all three insecure attachment styles compared to secure attachment (see Table 3; $z_s = 2.75-2.90$, $ps < .001$; see Supplemental Table S2 for exact z tests). In terms of the associations between attachment styles and the other-directedness domain, the association was significantly larger for attachment anxiety ($r = .34$) compared to avoidant attachment ($r = .12$; $z = 3.67$, $p < .001$) and secure

Table 3
Effect Sizes for the Associations Between Attachment Styles, Schema Domains, and Early Maladaptive Schemas

Attachment style and schemas	<i>k</i>	<i>r</i>	95% CI		<i>p</i>	<i>f</i> ²	<i>T</i> ²
			LL	UL			
Anxious attachment							
Disconnection/rejection	12	.49	.35	.54	<.0001	86.41	.04
Abandonment	7	.51	.36	.63	<.0001	87.61	.05
Mistrust/abuse	5	.35	.22	.47	<.0001	66.29	.02
Emotional deprivation	6	.34	.20	.47	<.0001	73.98	.03
Defectiveness	6	.41	.23	.56	<.0001	85.76	.05
Social isolation/alienation	6	.40	.24	.54	<.0001	81.76	.04
Impaired autonomy/performance							
Dependence/incompetence	10	.34	.24	.43	<.0001	81.49	.02
Vulnerability/harm illness	6	.31	.15	.45	<.0001	81.78	.04
Enmeshment	5	.33	.16	.48	<.0001	76.08	.03
Failure	4	.20	.11	.29	<.0001	0.00	.00
Impaired limits	5	.31	.22	.39	<.0001	20.20	.00
Entitlement/grandiosity	8	.17	.09	.24	<.0001	38.65	.00
Insufficient control/self-discipline	4	.16	.07	.25	<.0001	0.00	.00
Other-directedness	5	.21	.12	.30	<.0001	12.41	.00
Other-directedness							
Subjugation	9	.32	.26	.38	<.0001	40.18	.00
Self-sacrifice	4	.44	.27	.58	<.0001	72.03	.03
Approval seeking	5	.22	.14	.30	<.0001	0.00	<.00
Overvigilance/inhibition	2	.40	.21	.56	<.0001	35.57	.01
Negativity/pessimism	7	.23	.11	.34	<.0001	63.35	.02
Emotional inhibition	2	.46	.26	.62	<.0001	46.75	.01
Unrelenting standards	4	.22	-.05	.46	.12	83.52	.06
Punitiveness	5	.20	.07	.32	<.0001	52.64	.01
	2	.32	.17	.46	<.0001	0.00	<.00
Avoidant attachment							
Disconnection/rejection	14	.31	.22	.39	<.0001	82.81	.02
Abandonment	8	.15	-.03	.32	.10	91.45	.06
Mistrust/abuse	6	.31	.23	.40	<.0001	57.11	.01
Emotional deprivation	8	.33	.21	.44	<.0001	84.47	.03
Defectiveness	7	.31	.19	.42	<.0001	78.25	.02
Social isolation/alienation	8	.30	.20	.41	<.0001	79.58	.02
Impaired autonomy/performance							
Dependence/incompetence	10	.23	.12	.34	<.0001	82.29	.03
Vulnerability/harm illness	5	.17	.10	.25	<.0001	6.47	.00
Enmeshment	5	.29	.13	.44	<.0001	79.24	.03
Failure	4	.15	.05	.25	<.0001	37.22	.00
Impaired limits	5	.19	.08	.29	<.0001	48.89	.01
Entitlement/grandiosity	11	.18	.10	.27	<.0001	70.88	.01
Insufficient control/self-discipline	6	.17	.06	.28	<.0001	71.65	.01
Other-directedness	6	.15	.05	.25	<.0001	59.14	.01
Other-directedness							
Subjugation	11	.12	.02	.21	.02	77.33	.02
Self-sacrifice	5	.13	-.10	.35	.28	91.47	.06
Approval seeking	5	.09	.00	.17	.04	18.31	.00
Overvigilance/inhibition	1	.30	.11	.47	<.0001	0.00	.00
Negativity/pessimism	8	.25	.14	.36	<.0001	67.30	.02
Emotional inhibition	1	.65	.52	.75	<.0001	0.00	.00
Unrelenting standards	4	.39	.22	.54	<.0001	78.22	.03
Punitiveness	5	.11	-.01	.22	.09	58.22	.01
	1	.27	.08	.44	.01	0.00	.00
Fearful attachment							
Disconnection/rejection	7	.40	.29	.49	<.0001	80.72	.02
Abandonment	4	.34	.28	.40	<.0001	.00	.00
Mistrust/abuse	5	.44	.30	.57	<.0001	87.97	.03
Emotional deprivation	4	.31	.20	.41	<.0001	64.85	.01
Defectiveness	4	.33	.22	.43	<.0001	63.97	.01
Social isolation/alienation	4	.29	.18	.39	<.0001	62.92	.01
Impaired autonomy/performance							
Dependence/incompetence	6	.24	.11	.37	<.0001	80.54	.02
Vulnerability/harm illness	3	.20	.10	.29	<.0001	23.63	.00
Enmeshment	4	.19	.07	.29	<.0001	59.19	.01
Failure	3	.25	.07	.40	.01	71.59	.02
Impaired limits	3	.23	.12	.34	<.0001	35.17	.00
Entitlement/grandiosity	6	.29	.09	.47	<.0001	92.48	.06
Insufficient control/self-discipline	4	.22	.13	.31	<.0001	47.00	.00
	4	.19	.09	.29	<.0001	51.19	.01

(table continues)

Table 3 (continued)

Attachment style and schemas	<i>k</i>	<i>r</i>	95% CI		<i>p</i>	<i>f</i> ²	<i>T</i> ²
			LL	UL			
Other-directedness	5	.26	.17	.35	<.0001	46.81	.01
Subjugation	3	.34	.26	.41	<.0001	0.00	.00
Self-sacrifice	3	.13	.04	.21	<.0001	0.00	.00
Approval seeking	0	—	—	—	—	—	—
Overvigilance/inhibition	5	.29	.15	.42	<.0001	76.21	.02
Negativity/pessimism	0	—	—	—	—	—	—
Emotional inhibition	4	.33	.21	.43	<.0001	64.37	.01
Unrelenting standards	3	.06	-.05	.15	.28	19.85	.00
Punitiveness	0	—	—	—	—	—	—
Secure attachment							
Disconnection/rejection	5	-.16	-.43	.14	.30	97.06	.11
Abandonment	3	-.28	-.53	-.01	.04	95.89	.09
Mistrust/abuse	3	-.32	-.52	-.09	.01	91.62	.04
Emotional deprivation	4	-.30	-.40	-.20	<.0001	68.88	.01
Defectiveness	3	-.29	-.53	-.01	.04	94.19	.06
Social isolation/alienation	3	-.32	-.45	-.18	<.0001	78.81	.01
Impaired autonomy/performance	3	.05	-.24	.34	.74	94.80	.07
Dependence/incompetence	2	-.17	-.58	.31	.50	96.58	.12
Vulnerability/harm illness	2	.14	-.36	.57	.61	96.86	.13
Enmeshment	2	-.10	-.55	.39	.70	96.84	.13
Failure	2	-.17	-.67	.43	.60	97.94	.21
Impaired limits	4	-.10	-.27	.07	.26	89.29	.03
Entitlement/grandiosity	3	-.10	-.19	-.02	.02	37.37	.00
Insufficient control/self-discipline	3	-.24	-.37	-.11	<.0001	75.20	.01
Other-directedness	3	-.12	-.32	.10	0.29	89.97	.03
Subjugation	2	-.25	-.67	.30	.37	97.30	.16
Self-sacrifice	2	-.09	-.24	.06	.24	64.55	.01
Approval seeking	0	—	—	—	—	—	—
Overvigilance/inhibition	3	-.17	-.28	-.06	<.0001	58.36	.01
Negativity/pessimism	0	—	—	—	—	—	—
Emotional inhibition	3	-.30	-.46	-.11	<.0001	86.34	.03
Unrelenting standards	2	.08	-.02	.17	.12	14.08	.00
Punitiveness	0	—	—	—	—	—	—

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

attachment ($r = -.12$; $z = 3.94$, $p < .001$). The association for avoidant attachment was smaller compared to fearful attachment ($r = .27$; $z = -2.14$, $p < .05$); however, the association for fearful attachment was significantly larger compared to secure attachment ($z = 3.17$, $p < .01$). In relation to the associations between attachment styles and overvigilance/inhibition, all insecure attachment styles had significantly larger associations compared to secure attachment (see Table 2; z s = 4.81–5.31, $ps < .001$; see Supplemental Table S2 for exact z tests). No significant differences were found in the associations between attachment styles and the schema domain of impaired autonomy (see Table 3; see Supplemental Table S2 for exact z tests).

Attachment Styles and EMS

Subgroup analyses revealed that attachment styles significantly differed in their associations with EMS, $Q(3) = 36.81$, $p < .001$. However, subgroup analyses excluded comparisons related to the approval-seeking, punitiveness, and self-sacrifice schemas as these EMS were either not investigated across the included studies or investigated in only one study. All insecure attachment styles were found to have larger associations compared to secure attachment across the same nine EMS, namely abandonment, defectiveness, emotional deprivation, emotional inhibition, entitlement/grandiosity, insufficient control/self-discipline, mistrust/abuse, self-sacrifice, and social isolation/alienation (see Table 3; z s = 2.00–7.48, $ps < .05$ to

< .001; see Supplemental Table S2 for exact z tests). Furthermore, anxious attachment ($r = .47$; $z = 2.40$, $p < .05$) and fearful attachment ($r = .35$; $z = 2.09$, $p < .05$) styles had significantly larger associations with the subjugation schema compared to secure attachment ($r = -.25$). In terms of differences in associations between insecure attachment styles and EMS, anxious and avoidant attachment only differed from fearful attachment on the abandonment schema. Specifically, the association between abandonment and anxious attachment ($r = .56$) was larger compared to fearful attachment ($r = .36$; $z = 2.00$, $p < .05$), whereas the association between this schema and avoidant attachment was smaller ($r = .15$) compared to fearful attachment ($z = -2.13$, $p < .05$). Finally, anxious attachment was found to have significantly higher associations with three EMS compared to avoidant attachment; these were abandonment ($r = .56$ [anxious] vs. $r = .15$ [avoidant]; $z = 3.12$, $p < .01$), self-sacrifice ($r = .22$ [anxious] vs. $r = .09$ [avoidant]; $z = 2.23$, $p < .05$), and subjugation ($r = .47$ [anxious] vs. $r = .13$ [avoidant]; $z = 2.19$, $p < .05$).

Study Characteristic Subgroup Analyses

We undertook a series of subgroup analyses to investigate the potential moderating effect of sample type (university students vs. community samples vs. forensic samples vs. clinical samples) and the type of attachment measure used (categorical vs. dimensional). We did not conduct subgroup analyses on measures of EMS as all

studies (except one) used a variant of the Young Schema Questionnaire. We analyzed each moderator separately for each attachment style. For the moderating role of sample type, there were only enough studies to conduct subgroup analyses on the association between anxious attachment and EMS and avoidant attachment and EMS. Neither subgroup analysis revealed a significant difference in the associations by sample type (anxious attachment, $Q[4] = 3.17, p = .53$; avoidant attachment, $Q[4] = 4.61, p = .47$). For the moderating role of the type of attachment measure, the associations between anxious attachment and EMS and avoidant attachment and EMS (but not for fearful or secure attachment) were significantly larger for studies that used dimensional measures compared to categorical measures (anxious attachment: dimensional measures, $r = .42, p < .0001$, vs. categorical measures, $r = .21, p < .0001$; $Q[1] = 20.94, p < .0001$; avoidant attachment: dimensional measures, $r = .27, p < .0001$, vs. categorical measures, $r = .06, p = .03$; $Q[1] = 22.38, p < .0001$).

Publication Bias

Subgroup analyses were performed to compare whether the associations between attachment styles and overall EMS differed for published and unpublished (namely theses) studies. Publication status was not found to moderate the association between attachment styles and EMS overall, anxious: $Q(1) = .001, p = .97$; avoidant: $Q(1) = .24, p = .62$; fearful: $Q(1) = 1.16, p = .29$; secure: $Q(1) = .69, p = .41$. Evidence of publication bias was also assessed by inspecting the funnel plots for the analyses of each attachment style on overall EMS. All funnel plots (see Supplemental Figure S1a–d) demonstrated little evidence of asymmetry with studies evenly distributed in the funnel. Furthermore, Egger's test of the intercept (Egger et al., 1997) suggested there was no statistically significant asymmetry detected in the funnel plots related to each attachment style and its association with EMS overall (anxious: intercept = .56, 95% CI [-3.13, 4.24], $p = .74$; avoidant: intercept = 1.40, [-1.67, 4.47], $p = .34$; fearful: intercept = 2.97, [-.40, 6.35], $p = .07$; secure: intercept = -17.74, [-54.12, 18.64], $p = .22$).

Sensitivity Analysis

One-study-removed analyses were conducted and demonstrated that the associations between each attachment style and EMS overall were stable and not influenced by any study (see Supplemental Figure S2a–d). All reestimated effect sizes for each study fell within the 95% CI of the mean effect size for each attachment style (anxious: 95% CI [.27, .42]; avoidant: [.15, .29]; fearful: [.20, .34]; secure: [-.29, .04]). Thus, no statistical evidence was found to suggest that any included study was an outlier.

Discussion

The meta-analysis reported in this article is the first quantitative review into the state of the field regarding the associations between adult attachment styles and EMS. The review provides important insights, highlighting points of similarity and difference regarding the schemas that are endorsed by people with different attachment styles. These insights have important implications for theory, research, and practice across the fields of both adult attachment and schema therapy.

Our findings largely supported our predictions regarding the associations between attachment styles and EMS. In doing so, the findings provide evidence regarding how attachment styles are associated with EMS beyond the domain of disconnection/rejection—the schema domain commonly assumed to be central to the experience of attachment insecurity (Young et al., 2003). Our findings indeed demonstrate that attachment styles are associated with EMS across a wide array of schema domains, and some of these associations are comparable in magnitude to those found in the disconnection/rejection domain. Specifically, all insecure attachment styles (i.e., anxious, avoidant, and fearful attachment) were significantly positively associated with all schema domains, and attachment security generally demonstrated negative associations with schema domains.

Subgroup analyses identified few differences in the strength of these associations between the insecure attachment styles. It is important to note that the lack of significant differences may well be due to the fact that some inferential analyses involved subgroups with a small number of studies. However, the differences that were found provide important points of divergence that discriminate between the schemas endorsed by those with an anxious and avoidant attachment style. Below, we discuss the associations between insecure attachment styles, each schema domain, and related EMS with reference to theory and research in adult attachment.

At the domain level, the associations between anxious attachment and disconnection/rejection and other-directedness were significantly larger than for avoidant attachment. Unlike those with an avoidant attachment, individuals with an anxious attachment are characterized by chronic fears of rejection and abandonment and thus are sensitive to the unreliability of attachment figures (Brennan et al., 1998; Mikulincer & Shaver, 2016). Also, due to their tendencies to maintain excessive closeness to attachment figures, those with an anxious attachment are particularly prone to experience feelings of loneliness and social isolation, more so than those with an avoidant attachment (e.g., Mikulincer et al., 2013) who dismiss the importance of relationships and value self-reliance (Gillath et al., 2016; Karantzas et al., 2010). Furthermore, the chronic negative self-views harbored by individuals with an anxious attachment mean that they are likely to perceive themselves as inadequate, flawed, or lacking agency and competence. In terms of the EMS related to the disconnection/rejection domain, a large association was found between anxious attachment and abandonment. In contrast, no significant association was found between this schema and avoidant attachment. Although no other significant differences were found in the associations between anxious and avoidant attachment and the EMS in the disconnection/rejection domain, the associations were typically larger for attachment anxiety, especially in the schemas of social isolation/alienation and defectiveness. Thus, the precision to detect significant differences may be due to the modest number of studies that could be included as part of the subgroup analyses.

However, the fact that several significant associations were found between schemas in the disconnection/rejection domain and avoidant attachment (except abandonment) highlights the centrality of this schema domain in unpacking the mental representations of avoidant individuals. Indeed, it appears that the characteristics and attachment working models for those with an avoidant attachment (i.e., dismissal of the importance of relationships, chronic distrust of others, excessive self-reliance, and fragile views of the

self; Gillath et al., 2016; Simpson & Karantzas, 2019) align with schemas that index emotional deprivation, mistrust, social isolation, as well as internal evaluations of the self as somewhat defective.

As noted, the other domain in which the strength of associations significantly differed between anxious and avoidant attachment was other-directedness. The strength of the association was nearly three times larger for anxious attachment compared to avoidant attachment. Moreover, the EMS related to this domain—subjugation, self-sacrifice, and approval seeking—were all larger in magnitude compared to avoidant attachment, with significant differences found in subjugation and self-sacrifice. Anxious individuals' endorsement of schemas in the other-directedness domain closely aligns with many of the characteristics and cognitions of this attachment style. Not only do anxious individuals hold negative self-views that entail a lack of efficacy and competence that can feed into thoughts and feelings regarding failure, but evidence also suggests that they engage in self-sacrifice within close relationships, whereas avoidant individuals do not (e.g., Impett & Gordon, 2010). Moreover, because of their chronic fears of rejection and need for approval, anxious individuals can privilege the needs of others over the needs of the self to convey a sense of support and sacrifice in the hopes of being validated by close others (Mikulincer & Shaver, 2009). In this respect, privileging the needs of others is ego focused (i.e., a drive to satisfy one's own needs for proximity as well as emotional closeness and connection), rather than focused on attending to the needs of others in a sensitive and responsive manner that does not entail uncalled for acts of sacrifice. In addition, anxious individuals enact less assertiveness in their close relationships (e.g., Anders & Tucker, 2000) and often communicate relationship goals and needs in an unclear and indirect manner (Feeney & Karantzas, 2017). These cognitions and behaviors that characterize anxious attachment overlap with the features that characterize the subjugation schema.

In contrast, avoidant individuals focus on the self and show chronic distrust of others, and their minimization of the importance of relationships means that they are unlikely to endorse schemas regarding self-sacrifice and subjugation. In line with the findings of this meta-analysis, recent research has found that avoidant individuals engage in little self-sacrifice and do not privilege the needs of others over those of the self (Caspi-Berkowitz et al., 2019). Interestingly, attachment avoidance was found to be associated with approval seeking; however, we contend that the manner in which approval seeking is manifested in avoidant individuals differs from those with an anxious attachment style. For avoidant individuals, their emphasis on achievements outside the relationship domain and tendencies to outwardly exhibit a sense of competence and high self-esteem means that they may value acknowledgement of their skills and abilities by others. Indeed, experimental studies have found that avoidant individuals experience significant reductions in self-esteem when receiving negative false feedback on achievement-related tasks (e.g., Mikulincer, 1995).

No significant differences were found between anxious and avoidant attachment in the impaired autonomy/performance schema domain, though the associations were generally larger for attachment anxiety. On the one hand, the lack of differences may be due to the modest number of studies that could be included in the subgroup analysis. On the other hand, it may be that concerns regarding autonomy, competence, and the expression of needs are

salient in the minds of both anxious and avoidant individuals. However, we suggest that the way these schemas are expressed can vary between these two attachment styles. On the one hand, anxious individuals are likely to view themselves as lacking competence and failing in important life domains, as well as being highly dependent and preoccupied (enmeshed) with close others. On the other hand, avoidant individuals may privately have concerns regarding their sense of competence and failures given their need to outwardly portray their self as highly competent and capable—largely driven by defensive self-enhancement (Mikulincer & Shaver, 2016). Although avoidant individuals do not tend to become overly enmeshed with relationship partners and close others, their discomfort with closeness means that they can feel somewhat smothered or trapped in their close relationships (Feeney, 1999; Feeney & Fitzgerald, 2022). Because both anxious and avoidant individuals are hypervigilant to threat, and thus are sensitive to detecting and responding to danger (Caspi-Berkowitz et al., 2019; Ein-Dor et al., 2010), individuals with either attachment style are likely to harbor cognitions that one is vulnerable to negative events and experiences, though anxious individuals are more likely to exaggerate the seriousness of a given threat and feel less likely to effectively manage or prevent it (Ein-Dor et al., 2010; Gillath et al., 2016).

No differences were found between anxious and avoidant attachment in the schema domain of overvigilance/inhibition, though in relation to the EMS associated with this domain, anxious attachment was significantly positively associated with unrelenting standards, whereas avoidant attachment was not. The lack of association between avoidant attachment and unrelenting standards is somewhat surprising. Given that avoidant individuals are focused on upholding a positive view of the self and place emphasis on achievements in noninterpersonal domains, it would be expected that avoidant individuals would endorse the setting and striving to achieve high standards. However, the nonendorsement of unrelenting standards may fit with avoidant individuals' defensive self-enhancement. That is, the relentless pursuit of meeting high standards is likely to thwart avoidant individuals' appraisals of the self as highly independent, competent, and efficacious. Thus, to combat the risk of experiencing chronic failure through the endorsement of unrelenting standards, avoidant individuals may deemphasize the need to set and maintain high standards.

In line with expectations, avoidant attachment was positively associated with emotional inhibition (and was nearly double in magnitude compared to the nonsignificant association between anxious attachment and this maladaptive schema). This finding aligns with the deactivating behavioral strategies that underpin the functioning of the attachment system in avoidant individuals (Mikulincer & Shaver, 2003, 2016). Moreover, this finding is consistent with past research into the emotion regulation strategies used by avoidant individuals that largely entail the suppression of negative emotions (e.g., Garrison et al., 2014; Mikulincer & Orbach, 1995).

Finally, both anxious and avoidant attachment styles generally demonstrated the weakest (but nonetheless significant) associations with the impaired limits schema domain (and associated EMS). The two attachment styles did not significantly differ in their associations at the domain level nor the schemas constituting this domain (i.e., entitlement/grandiosity and insufficient self-control/self-discipline). The findings suggest that the impaired limits domain reflects schemas that are not as closely tied to attachment insecurity as the other

schema domains. This may be because domains such as disconnection/rejection, impaired autonomy/performance, and other-directedness entail schemas that tap into the core concerns and cognitions that dominate the minds of insecurely attached individuals in a way that impaired limits does not.

In terms of the associations between fearful attachment (i.e., individuals classified as high on anxious and avoidant attachment), schema domains, and EMS, the associations largely corresponded to the pattern of relationships that reflect a mix of the associations found for anxious and avoidant attachment. Furthermore, the magnitudes of these associations for fearful attachment were of a size that fell in between the associations for anxious and avoidant attachment. Consistent with this pattern of associations, the relationships between fearful attachment, schema domains, and EMS did not significantly differ from those of anxious and avoidant attachment, with one exception. Specifically, the association between fearful attachment and the disconnection/rejection domain was significantly larger in magnitude compared to avoidant attachment. The general pattern of associations for fearful attachment suggests that despite harboring both anxious and avoidant behavioral strategies and characteristics, individuals who are fearfully attached are not likely to experience more chronic endorsement of maladaptive schemas than individuals who have an anxious or avoidant attachment style. However, note that our findings regarding fearful attachment are based on a small number of studies.

In terms of secure attachment, the negative and largely non-significant associations between this attachment style, schema domains, and EMS highlight that harboring positive attachment working models of both self and others buffers the development of chronic maladaptive schemas. Indeed, research typically finds that securely attached individuals possess highly adaptive and constructive cognitive processes with regard to dealing with stressful life events and interpersonal difficulties (e.g., Mikulincer & Florian, 1995). These processes are likely fostered through relationship experience across the lifespan in which attachment figures met one's core emotional needs and, in doing so, attended to a person's vulnerabilities while also fostering their competence and capabilities (Feeney & Thrush, 2010).

Implications

The findings of this meta-analysis have several important implications in terms of theory, research, and clinical practice in the fields of adult attachment and schema therapy. The integration of adult attachment styles with EMS as part of this meta-analysis provides an important organizational framework regarding the maladaptive mental representations that insecure individuals harbor regarding their views of themselves and others. Although some research has found that various EMS demonstrate considerable empirical overlap, and thus a reduced set of schema domains may strike a balance between schema breadth and specificity (e.g., Bach et al., 2018; Yalcin et al., 2020), our findings suggest that the 18 EMS help to unpack the cognitive themes that dominate the minds of insecurely attached individuals in a manner that is not typically undertaken in attachment research.

Traditionally, research into the cognitive structures and processes that underpin attachment insecurity has focused on outcomes such as self-esteem and self-efficacy or positive/negative attributions regarding the self and others (for reviews, see Gillath et al., 2016;

Mikulincer & Shaver, 2016). Although these studies have provided important insights into the mental representations associated with different attachment styles, this research is not organized in a systematic manner that maps out the fine-grained cognitive themes that characterize the working models of people who differ in their attachment styles. The fine-grained approach to understanding the working models of self and others afforded through a schema therapy perspective has the potential to uncover new and important insights into the cognitive content and architecture of people with different attachment styles. For example, the unexpected and novel findings regarding the significant positive associations between avoidant attachment and approval seeking and defectiveness shed new light that can help to explain the cognitive underpinnings of avoidant individuals' tendencies to engage in processes such as defensive self-enhancement. That is, processes such as defensive self-enhancement may be employed by avoidant individuals to defend against feelings of defectiveness and a hidden (but nonetheless present) desire to experience approval from others.

In terms of clinical practice, the findings of the meta-analysis can provide schema therapists with an understanding of the schema domains and EMS that are likely to feature in the presentation of clients who differ in their attachment styles. For instance, although schemas within the domain of disconnection/rejection are likely to be endorsed by all insecurely attached clients, cognitions regarding abandonment are likely to be pervasive in the minds of anxiously and fearfully attached individuals, but not for those with an avoidant attachment style. In contrast, anxiously attached clients are likely to present with schema endorsement in the other-directedness domain, but the presentation of clients with an avoidant attachment are less likely to feature cognitions in this domain, though they may evidence cognitions regarding approval seeking.

Another important clinical implication of this research is that although some schemas may be endorsed across multiple attachment styles, the presentation or manifestation of specific schemas in therapy is likely to be different depending on the person's attachment style. From a schema therapy perspective, we contend that the differences in how certain schemas can manifest for attachment anxiety and avoidance are likely to be rooted in systematic differences in the coping styles used to deal with the schema activation. We theorize that attachment anxiety is likely to be associated with the endorsement of surrender and overcompensation coping styles. This is because the hyperactivating strategies of anxious individuals intensify feelings, cognitions, and behaviors that align with EMS related to abandonment, enmeshment, failure, approval seeking, and alike. Thus, anxious individuals are likely to embody the EMS that are activated. However, at times, anxious individuals may respond with an overcompensation coping style when EMS such as abandonment/instability are activated. Specifically, the overcompensation of anxious individuals is likely to manifest through clinginess and excessive attempts at proximity that smother close others, as well as harsh criticism of partners for even the slightest of inattention.

In contrast, we suggest that attachment avoidance is likely to be associated with avoidant and overcompensation coping styles. This is because the deactivating strategies of avoidant individuals function to attenuate and minimize the experience and processing of affect, cognition, and the enactment of behaviors associated with schemas such as mistrust/abuse, emotional deprivation, social isolation/alienation, and alike. Avoidant coping can be used to

short-circuit schema activation or to reduce the cognitive-affective attention that is devoted to dealing with the schema—a coping approach that aligns with avoidant individuals' defensive processes in dealing with challenging emotions and thoughts (Gillath et al., 2016; Mikulincer & Shaver, 2016). However, the activation of some EMS, such as those that pertain to defectiveness, vulnerability to harm/illness, and approval seeking/recognition, may heighten the use of an overcompensation coping style. Thus, avoidant individuals may engage in aggrandizing behavior in which they exaggerate their skills, competencies, and abilities.

As a case in point, take the approval-seeking/recognition schema. Although anxious and avoidant clients may endorse an approval-seeking/recognition schema, the presentation of this schema in anxious individuals is likely to be characterized by a chronic desire to be liked and validated by others (a focus on the approval-seeking component of the schema). This presentation is reflective of a surrender coping style in which an anxious individual openly endorses the schema, and thus intensify affect, cognitions, and behaviors that align with the activation of this schema. In contrast, for avoidant individuals, activation of the approval-seeking/recognition schema is likely to especially tap into the need for recognition and manifest in highlighting one's abilities, skills, successes, and achievements in the hopes that these self-promoted qualities and outcomes are mutually endorsed or acknowledged by others. The use of this coping style by avoidant individuals aligns with Mikulincer and Shaver's (2016) notion of defensive self-enhancement—maintaining an overly positive view of the self to defend against a compromised or fragile sense of self-worth. Although our brief explication of how coping styles may be associated with attachment styles provides insights into how EMS activation may manifest in anxious and avoidant individuals, we highlight that our insights are theoretical and that the available data to date have only focused on the associations between attachment styles and EMS. To this end, research is needed to provide the empirical evidence necessary to confirm our theoretical predictions regarding the associations between attachment styles and coping styles as formulated within the schema therapy model.

The similarities and differences in the schemas endorsed by individuals with different attachment styles, along with suggested differences in schema presentation in the form of coping styles, highlight the importance of integrating assessments of attachment styles when working with clients from a schema therapy model perspective. The findings of this meta-analysis are exclusively based on self-report assessments of adult attachment styles; such assessments are time- and cost-efficient for therapists to administer and score. Importantly, the information derived from these assessments can provide insights that can then guide case formulation in drawing connections between people's chronic patterns of relating to others in close relationships, their EMS, and coping styles. These connections can help to formulate a narrative that can be fed back to clients regarding the quality of their early life experiences with caregivers and how this ties in with their interactions with close others and views of the self.

In the context of schema therapy, knowledge about a client's attachment style can assist schema therapists to tailor therapy to address EMS and coping styles that are relevant to different styles of attachment insecurity. Within the schema therapy model, the therapist engages in the role of a secure base through limited reparenting (Rafaeli et al., 2010; Young et al., 2003) and uses a suite of therapeutic interventions such as imagery rescripting, chair work,

various cognitive techniques, and behavioral pattern breaking. Knowledge about a client's attachment style can help the therapist tailor efforts at limited reparenting and related interventions such as imagery rescripting and behavioral pattern breaking.

For instance, when it comes to limited reparenting of clients with an anxious attachment style, reassuring their sense of worth and encouraging these clients to deal with relational issues in a more independent, agentic, and constructive way may be particularly important (Berant & Obegi, 2009; Gillath et al., 2016). In contrast, for clients with an avoidant attachment style, their defensive processes can make it harder for them to view the therapist as a stronger and wiser other (Levy et al., 2011; Taylor et al., 2015). Thus, limited reparenting can initially focus on acknowledging their competencies and abilities and that they have developed numerous tools and skills for dealing with difficult issues and challenges autonomously. "However, therapists need to temper the extent to which the approach they undertake feeds into avoidant individuals' perceptions of self-reliance, as this is one of the characteristics that make avoidant individuals devalue relationships and minimize disclosure" (Gillath et al., 2016, p. 312). Moreover, from a schema therapy perspective, avoidant individuals' excessive self-reliance and discomfort with emotional closeness has likely thwarted the fulfillment of core emotional needs, especially in fostering secure emotional bonds and the freedom to express valid needs and emotions. Thus, buying into avoidant individuals' characteristic tendencies and cognitions during therapy is likely to increase the likelihood that such core emotional needs remain unmet. In working with avoidant clients, it may be worthwhile for schema therapists to help them realize that their capabilities can be channeled toward exploring past experiences that made them so self-reliant and to appreciate the acknowledgement and exploration of hidden vulnerabilities as a sign of strength (Behary, 2020; Rafaeli et al., 2010).

The findings of the present meta-analysis are also relevant for other forms of psychotherapy (Levy & Johnson, 2019). A guiding principle of attachment-informed therapy is for the therapist to act as a secure base or stronger and wiser other—much like a sensitive and responsive parent (e.g., Bowlby, 1969/1982; Johnson, 2019). In doing so, interactions between the client and therapist are aimed at rendering insecure individuals' use of hyperactivating and deactivating strategies obsolete (Gillath et al., 2016; Wallin, 2007) as core emotional needs are met through the therapeutic process. Knowledge about the relationships between EMS and attachment styles has wider implications for other attachment-focused interventions that emphasize disruptions in the normative functioning of attachment bonds and the development of pervasive negative mental representations of the self and others. These therapeutic approaches include, but are not limited to, mentalization-based therapy (Allen et al., 2008) and transference-focused psychotherapy (Kernberg et al., 2008). However, our findings can also inform other approaches that similarly seek to improve dysfunctional relational and affective outcomes by modifying the negative cognitions internalized from early adverse experiences. These include traditional cognitive behavioral therapy (Beck & Dozois, 2011) and psychodynamic therapy (Shedler, 2010).

Limitations and Future Directions

Although our quantitative synthesis of the associations between attachment styles and EMS provides important insights that bridge attachment theory and schema therapy, there are some limitations

and future research directions to be considered. First, the number of studies that could be included as part of the meta-analysis were modest. This meant that several subgroup analyses were based on comparisons of only a small number of studies. Thus, some caution needs to be exercised when discussing differences in associations in terms of “statistical significance.” Second, the meta-analysis included only a small proportion of clinical samples. Given that schema therapy is typically applied to those who experience significant clinical presentations, the findings of the current meta-analysis may best generalize to people for whom mental health problems are either absent or present on a subclinical level (however, no significant differences were found in the associations when comparing clinical to nonclinical samples). Future research could entail studies with a greater focus on recruiting participants from clinical populations to further advance an understanding of the relationships in attachment styles and schemas.

Third, the studies included in this meta-analysis all used self-report assessments of EMS and attachment styles. In terms of the assessment of EMS, all measures are based on adult mental states of maladaptive schemas. Thus, although the concept of EMS as described in the schema therapy model assumes that the development of maladaptive schemas begins early in life, the measures do not capture the assessment of maladaptive schemas in the early stages of the lifespan. Future research could focus on the development of self-report measures or interview assessments that attempt to tie early life experiences with caregivers to maladaptive schemas early in life. In terms of the assessment of attachment styles, all self-report measures were situated within the personality/social psychology tradition of research into adult attachment. Thus, none of included studies used interview assessments (such as the AAI) that directly tap into adults’ mental states regarding their relationships with their parents in early life. This is important to highlight for two reasons.

First, the schema therapy model assumes that early life experiences with caregivers are central to the development of EMS. Thus, it may well be that the assessment of adult attachment patterns by way of the AAI may provide important and additional insights into the associations between attachment patterns and schemas that not only advance theory and research but also arm therapists with further knowledge regarding the quality of early caregiving experiences that enhances case formulation and treatment.

Second, the AAI can classify individuals with a disorganized attachment pattern—something that self-report measures typically cannot (but see Briere et al., 2019; Paetzold et al., 2015, for stand-alone self-report measures of disorganized attachment). This is because an individual’s AAI is scored for coherence of narrative, a dimension of the AAI scoring that is critical for the classification of people in terms of their attachment patterns (Hesse, 2008). Individuals classified as disorganized evidence an incoherent or confused narrative regarding their adult representations of early attachment relationships. In contrast, self-report measures of attachment assess people’s conscious and coherent attitudes regarding close relationships, and thus disorganized attachment is difficult to assess through self-report means. However, the clinical and development literatures highlight that disorganized attachment is most commonly associated with psychopathology such as borderline personality disorder (Casidy & Shaver, 2016). Given that the schema therapy model was developed, and is often applied, to treat chronic psychopathology, future research should focus on using the AAI (alongside self-report

measures) to assess attachment patterns and to capture clients with a disorganized attachment.

Finally, given that our findings suggest that adult attachment styles are associated with many EMS, future research could focus on a microanalysis as well as a macroanalysis of the nexus between adult attachment styles in EMS. In terms of research that takes a microanalytic approach, various studies into adult attachment have suggested that the broad dimensions that underpin attachment styles can be parsed into facets (e.g., Del Giudice, 2016; Feeney et al., 1994; Karantzas et al., 2010). For example, important facets associated with attachment anxiety are the need for approval and preoccupation with relationships; for attachment avoidance, key facets are discomfort with closeness and lack of confidence depending on others. Future research could test whether specific EMS are more or less associated with specific attachment facets. For instance, is the attachment anxiety facet “need for approval” more likely to be associated with the approval-seeking schema than the “preoccupation with relationships” facet? Is the attachment avoidance facet “discomfort with emotional closeness” more likely to be associated with the emotional inhibition schema than the “lack of confidence depending on others” facet? Answering such questions could provide insights into the cognitive substrates that are central to the attachment facets and thus the key characteristics that encompass adult attachment styles. In terms of future research that takes a macroanalytic approach, studies could investigate the extent to which models of self and other—which reflect the internal working models described within attachment theory—provide a parsimonious organizational framework to situate schema domains and EMS. One way to test this idea would be through developing and testing the goodness of fit of a hierarchical structure of EMS in which schemas that are self-referent and other-referent are modeled to load onto models of self and other and compared to existing models regarding the structural configuration of EMS and domains.

Conclusion

The meta-analysis reported in this article is the first quantitative review into the associations between adult attachment styles and early maladaptive schemas. In doing so, the article outlines the state of knowledge regarding research efforts aimed at integrating attachment theory with schema therapy. The findings from this meta-analysis provide numerous theoretical insights and have important implications regarding future research and clinical practice that bridges attachment styles with early maladaptive schemas.

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