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Mary Main's concept of conditional strategies: influences on studies of child–parent and adult romantic attachments

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ABSTRACT

Among Mary Main's many vital contributions to the field of attachment is the idea that human infants develop adaptive *conditional strategies* in the service of maintaining proximity to a secure base in light of a particular caregiving history. In this tribute paper, we describe Main's original theorizing, which delineated three types of conditional strategies: a primary *secure base* strategy and two secondary strategies of *minimizing* or *maximizing* the naturally occurring output of the attachment behavioral system, using a variety of cognitive, affective, and behavioral means. We review the large body of evidence for minimizing and maximizing strategies in infancy, childhood, adolescence, and adulthood. Across a range of studies – including age groups and methodologies extending well beyond Main's original work with infants – there is remarkable convergence of findings that support Main's ideas. We conclude with several promising directions in implementing Main's groundbreaking ideas to enrich future research and clinical applications.

KEYWORDS

Attachment; close relationships; caregiving; adaptive strategies; review

It is a privilege to pay homage to Mary Main and to consider some of her many important contributions to attachment theory and research. Mary was a uniquely brilliant scientist, one who could see things that other researchers did not notice and describe them in ways that allowed others to see and study them. She had an unusual intellectual and personal background, which gave her access to ideas and experiences that played a role in her work. More than anyone we have known, she challenges the idea that major concepts and discoveries in science would eventually emerge even if their particular discoverers had not existed. Mary's understanding of evolutionary biology, ethology, psychodynamic psychology, and philosophy of language provided a foundation for such concepts as primary and secondary conditional attachment strategies, disorganized attachment, and incoherent discourse related to attachment insecurity. Combined with her detailed and tenacious observations of children in the Strange Situation (the laboratory infant attachment assessment; Ainsworth et al., 1978; Main & Solomon, 1986) and adults in the Adult

Attachment Interview (AAI; Main et al., 2008), this broad and deep intellectual background allowed Mary to create whole fields of investigation that are still active and expanding.

Mary attended St. John's College in Annapolis, Maryland. The college is known for its open and intense approach to liberal arts education. As stated on the College's website, "Great books – and great discussions – are the heart of the college's distinctive liberal arts program Inspired by some of history's most brilliant philosophers, scientists, musicians and more, students push themselves to think deeply, discuss intensely, and live boldly. They leave St. John's with a passion that ignites distinctive career paths – and their world." Mary Main is a stellar example of this process. She read deeply in the areas of psychoanalysis, psycholinguistics, and philosophy. (Her first husband was Alvin Main, a professor of philosophy at St. John's.)

For graduate training, Mary entered the psychology department at Johns Hopkins University with the intention of working in the field of psycholinguistics with Professor James Deese. When he proved to be unavailable, Main chose Professor Mary Ainsworth as her advisor. Ainsworth had devised the subsequently famous Strange Situation assessment procedure, which allowed Main to observe filmed infant attachment and exploratory behavior in detail. Mary Main took special interest in avoidant infant behavior (Immelmann et al., 1981). The rest, as they say, is history.

Of Mary's many brilliant and useful ideas, the notion of *attachment strategies* has most directly influenced our own theoretical and empirical work and is the focus of this paper. We begin with an overview of Main's thinking about primary and secondary conditional strategies, review some of the key empirical studies on this topic, and end with a brief conclusion and suggestions for future research. Because Main's original thinking about strategies focused on infants and children (e.g. Main, 1981), we devote most of our attention to this developmental period. Beyond childhood, although Main herself later came to consider conditional strategies in adults (identifying them within the AAI; George et al., 1984/1985/1996; Guerrero, 1996; Main et al., 2003), here we focus on how Main's ideas inspired a novel and generative line of research on adult attachment styles, including our own work. In doing so, we aim to show how broadly Main's ideas about infant strategies spread – informing research in social and experimental psychology, extending into adulthood, a developmental period beyond the one she addressed when developing her thinking about strategies, and using different methods of measuring both attachment and outcomes.

Defining conditional attachment strategies

John Bowlby (1958, 1969/1982) introduced the idea that human infants evolved to possess an attachment behavioral system that flexibly responds to cues of environmental threat and safety. When faced with threat, behavioral activation of the attachment system becomes increasingly evident, with infants typically approaching a caregiver to seek proximity and protection, as is needed during this vulnerable period of development. When the threat recedes, activation of the attachment system is reduced to ongoing monitoring of the environment, and the infant benefits from exploring and learning about the world. The idea that infants use the caregiver as a *secure base from which to derive the multiple benefits of exploring the environment while also staying safe* is what Bowlby came to consider perhaps the central concept of the theory (Bowlby, 1988).

In 1977, Main became immersed in thinking that led to a significant enrichment of Bowlby's ideas. During her visit to the Center for Interdisciplinary Research in Bielefeld, Germany, Main learned about the ideas and work of John Crook, Richard Dawkins, and Robert Hinde. These scholars introduced her to the notion of *conditional behavioral strategies* — an organism's evolved capacity to flexibly adapt to its environment by deploying different behaviors to achieve the same goal, depending on its circumstances. In her own estimation (Main et al., 2005, p. 252), "these new friends had a strong impact upon my thinking by making me aware of . . . the import of the ecology of the immediate environment in producing differing 'conditional strategies' for reproductive success (e.g. Crook & Gartlan, 1966; Trivers, 1974)."

Having learned of this concept of conditional strategies from the ethologists and biologists in Bielefeld, Main applied it for the first time to humans. Starting with Bowlby's notion that human infants, at the species level, are biologically predisposed to maintain proximity to a caregiver to increase the likelihood of protection, Main extended this thinking by exploring infants' adaptive capacities to help ensure such protection *in light of a particular caregiving history*. Thus, she reasoned, when infants are faced with a particular type of caregiving and learn from this experience, they are able to tailor their own attachment behavior accordingly, thereby employing a behavioral strategy that is *conditional* upon the predicted response from their caregiver. Infants are thought to have the capacity to use one of several strategies. (Central to Main's thinking is the notion that strategies are used automatically and need not be conscious.) According to Main (1990, p. 49), "Primary strategies are identified as those (such as seeking proximity to an attachment figure under stressful conditions) that directly involve the operation of a major behavioral system." Such a strategy is adaptive and efficient in the context of what Main referred to as "signal-alert mothering" (Main, 1990, p. 54). But in contexts lacking such caregiving (i.e. "in response to a caregiver stressing either exaggerated offspring independence or dependence;" Main, 1990, p. 48), it becomes adaptive for the infant to adopt "secondary" strategies that manipulate the output of the attachment system in the face of variations in caregiving (Main, 1990). Main was careful to note that no infant strategy is "better" than another without consideration of the caregiving context: "Conditional strategies are, *by definition, equal in terms of adaptive value in those conditions in which they are required*" (original italics; p. 56). However, Main made an important distinction about strategies: Although a behavior may be most *adaptive* in a particular environment, it need not be *optimal*. Main considered secondary conditional strategies to come at a psychological cost because they (less efficiently) require manipulation of attentional and behavioral resources, as we later describe. Research, particularly in neuroscience, health, and psychoneuroimmunology, will continue to shed light on these costs. (See Ellis & Del Guidice, 2019, for examples of such research and a similar perspective: "Although this environmentally sensitive regulation of . . . strategies is presumed to be adaptive, adaptive does not mean cost-free." [p. 129]).¹ Hesse (personal communication, 2024) noted that although Robert Hinde, one of the Bielefeld colleagues who introduced Main to ideas of conditional behavioral strategies, initially disagreed with her about this distinction, he later came to agree with her thinking.

Main's initial interest in the concept of behavioral strategies grew from her desire to understand infant avoidant response patterns within the Strange Situation, because such avoidance violated expectations of the evolved species-wide tendencies to respond

differentially to the presence or absence of the attachment figure in an unfamiliar (and thus potentially more dangerous) environment. Main recognized that considering infant avoidance as a strategic adaptation would reveal greater organismic complexity, enrich attachment theory, and provide insights with considerable clinical significance. This is one example of how Main's creativity grew from her desire to understand attachment phenomena at more complex levels than others were considering. Moreover, the ways in which Main drew on evolutionary and ethological foundations – not to understand the species-wide attachment processes as Bowlby and Ainsworth had done, but to bring these considerations to the forefront of understanding individual differences – was novel, important, and generative.

"In the service of proximity:" strategies as goal-oriented

To understand the concept of strategies, it is necessary to consider the strategy's *goal*. Main found the descriptions of goal-oriented strategies in non-human species, which the early ethologists provided, to be useful to her thinking. Opossums, for instance, use the strategy of "playing dead" with the goal of (in the service of) averting attack (Weir, 1899); and Eastern cottonmouth pit vipers use an ambush "sit and wait" strategy with the goal of obtaining food (Eskew et al., 2009). Strategies within the infant-mother relationship are evident when infant baboons respond to maternal attempts to initiate weaning by increasing clinging and suckling behaviors with the goal of delaying weaning (DeVore, 1963). These proximal goals serve the ultimate goal of reproductive fitness (Main, 1979).

The proximal goal of a strategy varies with development, as a function of an individual's developmentally linked physical, cognitive, biological, social, and regulatory capacities. As such, here we take a developmental approach to considering the goal of attachment-related strategies in humans. Given that infants were the sole focus of the field of attachment theory and research at the time when Main began her work, her initial framework for the goal of attachment strategies necessarily hinged on recognition of the extreme vulnerability of the human infant. According to Main et al. (2005), this vulnerability means that physical and psychological *proximity* to protective attachment figures is "the sine qua non of primate infant survival (p. 253)." For Main, proximity (maintaining access) to the attachment figure is central because it increases not only the likelihood of protection from predators (Bowlby, 1969/1982), but also protection from "starvation, unfavorable temperature changes, natural disasters, attacks by conspecifics, and the risk of separation from the troop" (Main et al., 2005, p. 253; Main, 1979). Such vulnerability, and the necessity of staying close to a protective adult, underscores not only the biological function of the attachment system across species, but also the biological benefit of developing individual strategies to increase the likelihood of proximity to such a figure, *given variations in the caregiving environment*. It seems likely that it was these considerations that led Main to focus on proximity as the goal during her initial consideration of strategies (see Main's early paper, "Avoidance in the Service of Proximity," 1981).

For adults, attempts to understand the goal of attachment strategies entail consideration of protection from a wider variety of threats – physical, emotional, psychological, relational, social, and socio-structural threats – and vary as a function of research methods and traditions. Within Main's framework of the Adult Attachment Interview (see reviews

by Hesse, 1999, 2016), strategies are employed to maintain a particular “state of mind with respect to attachment,” a complex construct we will not attempt to cover here.

Within the adult attachment framework created by social/personality psychologists (Mikulincer & Shaver, 2023a), strategies are employed toward the goal of some degree of felt security (Sroufe & Waters, 1977) while avoiding possible negative relational experiences, such as emotional vulnerability, rejection, or abandonment. These strategies are viewed as direct parallels to the strategies observed in infants (Ainsworth et al., 1978; Main & Hesse, 1990). In adults, the strategies are associated with well-established working models, psychological defenses, and behavioral tendencies. Strategies can therefore be measured in various ways even in individuals who are not currently involved in a particular relationship.

Three strategies

Main argued that the number of potential strategies for obtaining an attachment-related goal is not infinite, but instead is comprised of only three organized options for responding to activation of the attachment system.² Here, we discuss these three strategies, first in infants, children, and adolescents, and next in adults.

Infants, children, and adolescents

In environmental contexts that include an attachment figure who routinely responds to signals for desired care, infants develop experience-based confidence in the figure’s availability (i.e. they view their caregiver as a *secure base*, providing both support for exploration and a haven of safety in times of threat). With this confidence, an infant’s strategy is simple: seek care from the responsive caregiver when needed. Main (1990) considered such behavior as “the naturally occurring output of the attachment behavioral system” (p. 57). In Main’s view, this is, therefore, the most efficient strategy for achieving the goal of proximity in a responsive caregiving context as it requires no protective distortions of perception and/or behavior. Central to understanding these infants’ strategy is the idea that directly signaling need or seeking proximity when distressed supports infants’ exploration of their environment from a secure base. According to Ainsworth (1972), “the dynamic equilibrium between these two behavioral systems [attachment and exploration] is even more significant for development (and for survival) than either one in isolation” (p. 118). Although the exploratory system gives survival advantages to the child by providing important information about the workings of the environment – how to use tools, build structures, obtain food – unbridled exploration with no attention to potential hazards can be dangerous. The complementary nature of the exploratory and attachment systems is thought to have evolved to ensure that while children are protected by maintaining proximity to attachment figures, they nonetheless gradually learn about the environment through exploration. This strategy, which Main considered the primary strategy, can be descriptively labeled as a secure base strategy.

In contrast, environmental contexts with an attachment figure who does not reliably respond to the infant’s signals (i.e. an inconsistently responsive or rejecting caregiver), the secure base strategy is neither adaptive nor efficient, and a secondary strategy may allow at least partial attainment of the goal of proximity. As noted, Main (1990) referred to such

strategies as being used to alter the naturally occurring output of the attachment behavioral system. Such alteration can take one of two possible forms, either minimizing or maximizing this output, and it occurs when experience has suggested that such manipulation would facilitate a goal that ultimately serves a protective function. Main (1990) summarized her thinking: "Circumstances may require manipulating the level of output usually called for by the system through secondary strategies that act to *minimize* or *maximize* that output in response to a caregiver" (p. 48, emphasis added).³

As noted above, the secondary strategy to which Main first attended was the *minimizing* strategy of infants classified as insecure/avoidant in Ainsworth's Strange Situation procedure. According to Bowlby (1973), the activation of attachment behavior that is not met with comfort or support arouses anger and/or anxiety, arousal that can be prevented if input that would normally activate attachment behavior is *defensively* excluded from conscious processing. Main (1981) elaborated on the function of avoidance, suggesting that avoidant behavior may serve to maintain the attachment relationship. In the context of a history of extensive rejection (which avoidant infants have experienced; Ainsworth et al., 1978), attachment behavior may have dangerous consequences for the child. If the infant overtly expresses the anger associated with rejected attachment behaviors, the infant may risk alienating the attachment figure. If the infant makes further demands and becomes clingier, the infant may risk being rebuffed further. Avoidance reduces the infant's arousal level and thereby prevents the direct, and possibly dangerous, expression of anger to the attachment figure. Avoidance simultaneously protects the infant from the rebuff that often results from attempts to seek contact as well as from the painful fear of alienating the attachment figure upon whom the infant depends for survival. Cognitive disconnection of input that might activate behavior potentially displeasing to the attachment figure serves to maintain organization during times of stress and to maintain proximity to the attachment figure.

In contrast to infants whose caregivers are either consistently responsive to their attachment bids (infants who use a secure base strategy) or consistently unresponsive (avoidant infants who use a minimizing strategy), some infants have caregivers who are *inconsistently* responsive to them (classified as insecure/anxious; Ainsworth et al., 1978; see also Cassidy, 1994). In response to an inconsistently responsive caregiver, infants are thought to develop a *maximizing* strategy of increasing bids for attention through use of a coherent strategy of exhibiting extreme dependence on the attachment figure. Main and Solomon (1986) stated that "in its heightened display of emotionality and dependence upon the attachment figure, this infant successfully draws the attention of the parent" (p. 112). As such, this strategy serves the goal of maintaining proximity to an inconsistently responsive caregiver.

It is interesting to note that when considering infant secondary attachment strategies (minimizing or maximizing), Main speculated about these as attempts to cooperate with parental preferences:

If these are, however, adaptive strategies, then one means to obtaining as much parental investment as possible would certainly lie in taking on those behavior patterns most pleasing (or least stress-producing) to the parent. Should the parent then wish to promote independence, the infant should appear as independent as possible, even if this means minimizing responsiveness to natural clues to danger and to the parent's leave-takings (conceivably, a strategy [of insecure/avoidant infants]). Should the parent wish instead to promote

prolonged dependence, the infant should maximize responsiveness to any faint clues to danger and maximize its focus on the parent (conceivably, a strategy [of insecure/anxious infants]). (1990, p. 56)

Adults

In the social/personality literature on adult attachment, Main's concept of secondary strategies – maximizing strategies (or hyperactivation of the attachment system) and minimizing strategies (deactivation of the system) – is also employed to characterize forms of attachment insecurity in adults' close relationships. Deactivation of the attachment system (minimizing) is characteristic of people who score high on measures of attachment-related avoidance. It includes inhibition of proximity-seeking inclinations and actions, suppression or discounting of threats that might activate the attachment system, and determination to handle stresses alone (a stance that Bowlby, 1982, called "compulsive self-reliance"). These strategies involve maintaining physical and emotional distance from others, being uncomfortable with intimacy and interdependence, ignoring or down-playing threat- and attachment-related cues, and suppressing threat- and attachment-related thoughts (Shaver & Mikulincer, 2002). These tendencies are bolstered by a self-reliant attitude that decreases dependence on others and discourages acknowledgment of personal faults and vulnerabilities (Mikulincer & Shaver, 2016, 2023a).

Hyperactivation, or maximizing, is characteristic of people who score high on measures of attachment anxiety. It is manifested in energetic, insistent attempts to get a relationship partner, viewed as insufficiently available or responsive, to pay more attention and provide better care and support. Hyperactivating (maximizing) strategies include clinging, controlling, and coercive responses; cognitive and behavioral efforts to establish physical contact and a sense of "oneness"; and overdependence on relationship partners as a source of protection (Shaver & Mikulincer, 2002). Hyperactivation/maximizing keeps the attachment system chronically activated and constantly on the alert for threats, separations, and betrayals; it therefore unintentionally exacerbates relational conflict, heightens distress associated with attachment-figure unavailability, and reinforces doubts about one's ability ever to attain a sense of security (Mikulincer & Shaver, 2016, 2023a).

Implementing attachment-related strategies: cognitive, affective, and behavioral tools

Just as the *goal* of a strategy varies with development, so too do the *tools available to implement the strategy* vary with development, again as a function of an individual's physical, cognitive, biological, social, and regulatory capacities. For example, during adulthood, manipulations of behavior may expand to include sexual behavior as part of a strategy, and the nature of biological involvement will change accordingly (as in reproductive strategies).

The capacity to use strategies to increase access to a protective attachment figure is, for infants, a matter of life and death; for adults, it may at times feel similarly existential. As such, it makes evolutionary sense for individuals of all ages to use every possible tool at their disposal to meet their strategic goal. In the service of implementing a strategy, individuals may regulate perceptions, thoughts,

memories, feelings, and verbal and nonverbal behavior. Main and her colleagues mentioned all of these, noting, for instance, when discussing infants: “Where access [proximity to an attachment figure] is consistently restricted or admitted only unpredictably, we may expect active reorganization, restriction, and redirection in attention, behavior, and emotional expression” (Main et al., 1985, p. 77). Relatedly, twenty years later, Main et al. (2005) noted: “Emotion, attention, and procedural memories are, of course, not mutually exclusive (see Amini et al.’s, 1996, emphasis upon affect as well as memory). All three must be mutually influential, all effect narrative, and all three have no doubt contributed to the continuities observed [in the Berkeley Longitudinal Sample]” (p. 292).

In sum, Main viewed multiple processes as useful parts of a complex and interwoven adaptive strategy that developed in response to a particular caregiving history. Throughout Main’s conceptual and empirical writings, she varied her focus on specifics – often centering on behavior (particularly in infants), as well as on attention and memory. At times, she talked of enlisting *behavior* in order to shift *attention* to or from attachment-related stimuli (Main, 1981, 1990). Elsewhere, she talked of shifting *attention* to reduce fearful *emotions*, “thereby avoiding or minimizing the distress that might well follow an experience of fear in which a caregiver was rejecting” (Main & Hesse, 1990). An additional description referred to manipulating *emotions* in order to support organization of *behavior*, which in turn is maintained through a shift in *attention* (Main & Hesse, 1990). Importantly, at no point did she limit options available for strategic purposes. Indeed, considerable lifespan data from Main and others indicate that the strategies of minimizing and maximizing rely on all of these tools.⁴

In the following sections, we present examples of the research examining Mary Main’s ideas of minimizing and maximizing strategies and their cognitive, affective, and behavioral components. Given the origins of Main’s thinking and research, we begin with a comprehensive discussion of studies from the developmental examination of infants, children, and adolescents. We then provide a briefer discussion of studies from the social psychology tradition of attachment relationships in adults.

Empirical research with infants, children, and adolescents

The insecure/avoidant pattern and the minimizing strategy in children

The behavior of one group of infants within the Strange Situation appears to minimize connection with the parent: those classified as insecure/avoidant. On reunion with the parent, these infants show little interest in proximity or contact and, in fact, actively avoid the parent. In the service of maintaining proximity to a potentially rejecting caregiver, avoidant children enlist a range of tools to minimize *attention*, *memory*, and *emotion* toward attachment-related stimuli. Importantly, avoidance is the more common organized insecure pattern (typically 15% of an infant sample in which the majority are classified as secure) (Madigan et al., 2023; and the pattern that Main (1981) initially set out to understand in young children. Thus, the bulk of the literature on secondary strategies in childhood has focused on the minimizing strategies of avoidant children.

Attention

Evidence reveals that avoidant children draw on attentional processes as part of their minimizing strategy. Main et al. (1985), for example, reported that 6-year-old children who had been classified as insecure/avoidant to mother in the Strange Situation during infancy showed greater difficulty attending to family photographs than did secure children. Insecure/avoidant children avoided such photographs (e.g. by refusing to accept one when offered, or by actively turning from it). Although behavioral avoidance of the mother on reunion had been well documented by this point, Main's longitudinal study offered the first demonstration of the strategy of shifting attention away from an attachment stimulus—i.e. away from a photograph of the child with parents – at the level of representation. Main's striking insight about this finding: “[W]e see that it is not necessary to observe ‘real’ interaction between the child and the mother in order to begin to build an understanding of the way in which the child's mind is organized with respect to the relationship.” (p. 90)

In another study, Kirsh and Cassidy (1997) reported that 3-year-old children who had been classified as insecure/avoidant to mother in the infant Strange Situation manifested their minimizing strategy via attentional biases in relation to attachment-relevant information (as assessed with recorded eye movements). In one task, children were presented with three drawings of a child – mother dyad. In one drawing, the dyad was engaging in an emotionally positive interaction, and in the other two drawings, the dyad was engaging in either an emotionally neutral or a negative interaction. Children who had been insecure-avoidant in infancy looked away from all three drawings proportionately longer than either secure or insecure-ambivalent children. In another task, the children viewed eight sets of complementary drawings; in each set, one drawing was attachment-related (mother-child), and the other was not. Insecure/avoidant children looked away from the attachment-related mother-child drawings more than secure children.

Similar findings linking attachment-related avoidance with a strategy of shifting attention away from attachment-related stimuli emerged from an eye-tracking study of participants in middle childhood (Vandevivere et al., 2014). In one task, children were shown an array of neutral faces, some of the mother and some of unfamiliar women. Children's greater avoidance was linked to (a) reduced total viewing time of the mother's neutral face, and (b) fewer attentional visits to the mother's face than to the unfamiliar adult's face. In another task, children again viewed faces of their mothers and of unfamiliar women, this time with either happy or negative expressions. Avoidance again was associated with reduced total viewing time on the mother's face, regardless of emotional valence.

Memory

In addition to attention, the available data indicate that insecure/avoidant children also engage memory processes as part of a minimizing strategy, in part to suppress memories of caregiver rejection that could elicit negative emotion (e.g. anger, which could threaten access to the caregiver) or activate negative views of the self. In a study described above, Kirsh and Cassidy (1997) asked 3-year-old children to listen to and recall information from six stories about a child's bid for care from their mother following a minor injury. In these stories, mothers were (a) responsive and sensitive to the child's bid, (b) rejecting of the child's bid, or (c) self-involved following the child's injury. After controlling for general

cognitive functioning, results showed that compared with their secure counterparts, children with insecure-avoidant attachment histories had poorer memory for the responsive/sensitive stories, consistent with the notion of suppression.

Similar evidence about avoidant attachment and attachment-related memory biases emerged from a study of adolescents (Dykas et al., 2014). This study considered adolescents' scores along the "insecure/dismissing" continuum as assessed with the AAI (George et al., 1984/1985/1996); this dimension reflects "an attempt to limit the influence of attachment relationships in thought, in feeling, or in daily life" (Hesse, 1999, p. 401). Adolescents' dismissing AAI dimension scores were linked to biases in memory processes for childhood emotional events and to reduced memory for attachment-relevant stimuli. In one task, adolescents were asked to recall emotional events that occurred before the age of 14 (Mikulincer & Orbach, 1995). As expected, higher adolescent dismissing scores were linked to taking longer to recall emotional childhood memories and to older reported ages during which the events occurred (but not to the intensity of the target emotion). Relatedly, two additional tasks in this study indicated an association between dismissing adolescent attachment and reduced memory for attachment-relevant stimuli. In an incidental recall task based on the depth-of-processing paradigm (Rudolph et al., 1995), adolescents with higher dismissing scores recalled fewer negative parent-related adjectives describing their own parents; no links were found for positive adjectives. In the second task, participants heard audio-recorded stories about an adolescent's typical day spent with a parent (i.e. not their own parent); interspersed within stories were both positive (e.g. thoughtful, loving) and negative (e.g. mean, unreliable) parental attributes. Adolescents with higher dismissing scores recalled fewer positive generalized parent-related adjectives; no links were found for negative adjectives.

Emotions

If a strategy of minimizing the importance of the attachment relationship serves the avoidant infant well, how could regulation of emotions best be used to this end? Minimizing negative emotions such as anger, sadness, or distress is thought to be a useful component of a strategy to minimize the importance of the relationship. Central to this argument is Main's proposition, discussed earlier, that this minimizing actually permits the infant to maintain sufficient proximity to a caregiver who is known to reject attachment-bids, in order to ensure protection in several ways (Main, 1981). Avoidance and the masking of negative emotion may reduce the infant's apparent arousal level (Bowlby, 1980) and thereby prevent the direct, possibly dangerous expression of anger toward the attachment figure. In addition, masking of negative affect protects the infant from the rejection that often results from attempts to seek contact as well as from the painful fear of alienating the attachment figure on whom the infant depends for survival (Bowlby, 1980; Main, 1981). Further, minimizing anger can at times signal a lack of investment in the relationship; within a strategy of minimizing the importance of the relationship, such investment is not acceptable.

Several studies have shown that a tendency to mask negative affect (i.e. not share one's distress) while interacting with the parent characterizes insecure/avoidant infants. In the earliest of these studies, observations of the communication patterns of mother-infant dyads during the Strange Situation revealed that avoidant infants communicated directly

with their mothers only when the infants were feeling at ease (Grossmann et al., 1986). Unlike secure infants, when these infants became distressed, they tended not to signal the mother directly and did not seek bodily contact. Similarly, Spangler and Grossmann (1993) found that, unlike secure babies, avoidant babies turned to their mothers, not when they were highly aroused (as assessed by heart rate), but rather only during times of low arousal. In another similar study, avoidant infants were found to differ from secure infants in their emotion regulation behaviors on reunion: rather than being mother-oriented, the regulatory behaviors of avoidant babies were self-oriented (Braungart & Stifter, 1991). Given that the avoidant infants in this sample showed greater distress during separation than some secure infants (the B1 and B2 infants), this study again provides evidence that, when distressed, avoidant babies do not share their distress with their parent.

A similar connection between infant avoidance and suppression of negative affect emerged from a study in which infants and mothers were observed in face-to-face interactions during the first year, and attachment was assessed at age 22 months (Malatesta et al., 1989). The authors interpreted their findings as follows: “During stressful situations – when it is more adaptive to communicate one’s distress – insecurely attached [avoidant] children, paradoxically, displayed more positive affect (mainly interest) and showed the compressed lips expression more frequently; we interpret these findings as revealing a pattern of emotion suppression and vigilance” (p. 72).

Further, a pioneering study used psychophysiological measures to provide data that again suggest a masking of negative affect in relation to the parent by avoidant infants (Spangler & Grossmann, 1993). Although heart-rate measures revealed that avoidant infants were as physiologically distressed on separation as the secure babies, and although the post-Strange Situation cortisol levels indicated that the procedure was *more* stressful for avoidant than secure babies, the avoidant babies masked their negative affect: that is, they showed significantly less negative vocalization during the separations than did secure babies. (See Gander & Buchheim, 2015, for a review summarizing physiological indications of a minimizing strategy: “avoidant infants have increased heart rate from separation long into reunion, an increased cortisol level, and they tend to exhibit more left prefrontal activity which is associated with the inhibition of emotional attachment behavior like crying . . . [findings that] are particularly notable as this group typically shows low levels of subjective distress.” [p. 10]).

A strategy of minimizing negative affect has been shown to characterize avoidant infants *beyond the context of the relationship with the attachment figure*, and to develop across the first year. In one study, the same laboratory observational assessment of infant negative reactivity (an arm-restraint task designed to elicit infant frustration; Braungart-Rieker & Stifter, 1996), was conducted at 5 and 12 months. In keeping with the notion that infant avoidance is associated with minimizing negative emotions, results indicated that at 5 months, attachment groups did not differ in reactivity, but by 12 months, insecure-avoidant infants were the least reactive (Sherman et al., 2013; see also Kochanska, 2001, for data concerning the emotional development of avoidant children across the first three years of life, and implications for possible suppression).

Several additional studies provide examples of the use of restricted affect in situations not involving the attachment figure (i.e. social interactions related to peers and strangers) by children classified as avoidant; this restricted affect can be viewed as part of individuals’ defensive communication that they are unaffected by

(and therefore not vulnerable to) others. In an experimental study, researchers analyzed the affect and behavior of 3-year-olds who had been assessed in the Strange Situation with mother at 12 months (Lütkenhaus et al., 1985). An unfamiliar adult visitor played a competitive tower-building game with the children, and the children's affective reactions to winning and losing were analyzed. The avoidant children manifested sadness about losing *while* they were still engaged in the game, but this affective display ceased when the game was over and the experimenter was available for social communication. In fact, during this latter phase of "social communicative exchange," avoidant children tended to replace sadness with smiling. In contrast, securely attached children showed their sadness *after* the game, when the adult was more available. It is not the case that avoidant children simply did not feel (or display) sadness, because sad expressions were evident before the game was finished and there was no eye contact between child and experimenter, leading the authors to suggest that greater hesitancy to display sad feelings in social situations characterizes avoidant children. It is striking that such masking of true feelings of sadness is evident as early as 3 years of age, and it is also striking that this pattern of masking emotions is used so readily with a new social partner, someone with whom the child has had no history of social interaction.

Three creative studies examining older school-aged children provide evidence of minimizing tendencies associated with avoidant attachment through studies reporting discrepant findings across modalities. These studies – differing in research design, child age, attachment and outcome selection, and concurrent vs. longitudinal assessment points – are similar in indicating a link between avoidance and minimizing. For instance, in one study of school-aged children, greater avoidance was associated with greater discrepancy (under-reporting of distress) in response to simulated peer rejection, compared to children's ERP neural responses (White et al., 2012). Similarly, another study found that children classified avoidant on the Child Attachment Interview (CAI; Shmueli-Goetz et al., 2004) underreported their distress (as indicated by cortisol reactivity) during a laboratory paradigm designed to induce feelings of vulnerability in interpersonal situations (Borelli et al., 2014). Longitudinal evidence has also shown that avoidant attachment assessed with the CAI at age 9 predicted discrepancies between coder-ratings and child-reports of distress during a stressor task three years later, indicating that avoidance was associated with children's tendency to under-report distress relative to behavioral indicators (Borelli et al., 2017) (For related evidence of a link between avoidance and a dampened emotional response within a social stressor laboratory task during middle childhood, see Abtahi & Kerns, 2017).

Although most studies have examined specific social interactions, findings replicated across two studies indicated that adolescent avoidant attachment style is linked with higher self-reported *trait* tendencies of suppression of sadness across contexts (Brenning & Braet, 2013).

Minimization of other emotions in the service of minimizing the relationship with the attachment figure is also expected to characterize insecure/avoidant children. For example, joy may be minimized because it signals an openness and a readiness for interaction. As Malatesta wrote, joy "promotes social bonding through contagion of good feeling" (Malatesta & Wilson, 1988, p. 107). Thus, joy can be viewed as reflecting investment in the

relationship. Again, such investment is not acceptable within a strategy of minimizing the relationship.

No research has examined children's suppression of positive emotions in relation to attachment patterns. Generally, little positive emotion is thought to be associated with avoidant attachment. There is some empirical evidence that, compared to secure infants, avoidant infants are less likely to express positive emotions (Matas et al., 1978; Pastor, 1981; Waters et al., 1979) and are more likely to decrease smiling in interaction with the mother over the first year (Malatesta et al., 1989), but in none of these studies is there evidence that suppression is involved.

The insecure/anxious pattern and the maximizing strategy in children

In the service of maintaining proximity to an inconsistent caregiver, insecure/anxious children enlist a range of tools to maximize *attention*, *memory*, and *emotion* toward attachment-related stimuli. Importantly, the insecure/anxious classification is relatively rare in Western samples (meta-analytic estimate = 10%; Madigan et al., 2023); thus, fewer studies have had sufficient power to examine maximizing strategies in this smaller group. In adolescence, researchers have indexed preoccupied attachment in terms of "hyper-activating" (i.e. maximizing) strategies on the Adult Attachment Interview, which include cognitive characteristics (attention, memory, linguistic patterns) and emotional arousal (e.g. anger, distress) that up-regulate the attachment system (Kobak et al., 1993).

Attention

Evidence suggests that insecure/anxious children engage in maximizing attentional strategies to maintain focus on the caregiver's whereabouts (Cassidy & Berlin, 1994), as well as to attract their caregiver's attention though heightened distress and clinging (Ainsworth et al., 1978). In her observations of infants in the Strange Situation, Main (2000, p. 1077) described the strategy of insecure/anxious infants as a form of rigid heightened attention on the caregiver at the expense of exploration: "The insecure-resistant/ambivalent infant . . . may maintain behavioral organization through a singular focus upon the parent, which of course prevents attention from 'wandering' to exploration of the room and the toys." In a study of social referencing during the Strange Situation, insecure/anxious infants looked to their mothers directly after looking at the stranger (presumably seeking assurance amid uncertainty) significantly more than secure and avoidant infants (Dickstein et al., 1984). Moreover, while most infants' social referencing declined over time, insecure/anxious infants' attention to the mother increased sharply when the stranger initiated interaction with the mother, perhaps because the mother's attention was diverted from the infant (see Ainsworth, 1992, for a similar interpretation). Similarly, another study reported that insecure/anxious infants in the Strange Situation were more likely to look to their mother during the stranger's entrance compared to secure or avoidant infants, and they spent significantly more time looking at the mother prior to the separation compared to secure infants (Cassidy, 1983).

The cost of such focus on the caregiver is that "the insecure/ambivalent infant [also known as an insecure/anxious infant] . . . seems unable to direct attention to the environment" (Main et al., 1985). In a study of 3-year-old children, those who had been categorized as insecure/anxious in infancy were more likely than secure

children to interact with their mothers and less likely to interact with an unfamiliar playmate or to study their environment (Jacobson & Wille, 1986); this pattern suggests a preference to attend to what is familiar (e.g. the mother, familiar toys) over what is novel (i.e. a new peer), and perhaps a reluctance to disengage from the mother.

Yet the specific attentional strategies of insecure/anxious children appear to be nuanced and complex. In the study by Kirsh and Cassidy (1997), insecure/anxious children behaved similarly to avoidant children, looking *away* from attachment-relevant drawings more than secure children, contrary to predictions. The authors speculate that insecure/ambivalent children may shift attention away from potentially painful memories of an inconsistent caregiver (Kirsh & Cassidy, 1997); it is also possible that children's shifting attention reflects *ambivalence* in their representation of the caregiver.

Thus, in childhood, an insecure/anxious pattern involves preoccupation with caregivers' availability, as well as difficulty shifting attention away from attachment-related anxieties toward exploration of the environment. Although maximizing strategies may be adaptive for attracting the caregiver's attention (Cassidy & Berlin, 1994) and thus maintaining proximity to an unreliable secure base, over time they may contribute to the development of maladaptive patterns of attention: Meta-analytic evidence shows that insecure/anxious children are more likely to have attention problems than secure children ($ES = 0.21$), across a range of ages and assessment modalities (Pallini et al., 2019).

Memory

Given that insecure/anxious children show heightened attention to caregivers' availability and attachment-related threats, we might expect that their memory would reflect a strategy of heightened recall for attachment-related events. Little research has examined this issue. In the above study by Kirsh and Cassidy (1997), both secure and insecure/anxious children recalled the Responsive story type better than the other story types, whereas avoidant children did not. The authors suggest that experiences of caregiver responsiveness, though inconsistent, may be sufficiently integrated into young children's representations for them to show preferential memory for the responsive stories. Furthermore, longitudinal work has found that Israeli children who had been classified as insecure-anxious in the Strange Situation in infancy showed no differences from secure children in their short-term recall of stories depicting interactions with caregivers and peers at age 7; however, insecure-anxious children were more likely to expect *future* interactions to be negative compared to secure children (Ziv et al., 2004). Thus, in early and middle childhood, maximizing strategies may be less evident in children's memory for past events (assessed as recall of stories, rather than of autobiographical events), but more evident in other aspects of their social information processing, such as expectations of future events. One study examining this issue during adolescence demonstrated that preoccupied attachment on the AAI is associated with a maximizing strategy involving heightened memory specifically for emotional childhood events, as well as recall of more intense nondominant emotions, such as feeling angry during a sad event (Dykas et al., 2014). Given the dearth of research on this topic, more evidence is needed to uncover whether and how insecure-anxious children and adolescents use specific memory processes as part of a maximizing strategy.

Emotions

In Main's (1990) conceptualization of insecure/anxious children's conditional strategies, she highlighted the central role of heightened emotional responses to threat (p. 57):

The focus upon the attachment figure that is the essence of the type C strategy may be maintained by heightening responsiveness to what would ordinarily be only minimally arousing cues to danger. Thus, the type C infant may interpret a quiescent environment as threatening, in order to maintain the attention of the parent.

Thus, insecure/anxious children may increase the chances of securing inconsistent caregiver's attention through "heightened display of emotionality and dependence on the attachment figure" (Main & Solomon, 1986) – that is, maximizing expression of emotional distress (Main & Hesse, 1990; see also Cassidy & Berlin, 1994).

Empirical work largely supports this view. Meta-analytic evidence shows that insecure/anxious children experience more negative affect and are also more likely to elicit negative affect from others (Cooke et al., 2019). A recent systematic review found that insecure/anxious parent – child attachment was most consistently related to greater emotional *reactivity*, whereas links to emotion *recovery* were mixed (Obeldobel et al., 2023). In particular, insecure/anxious children show heightened reactivity of *negative* emotions, including pain and fear/distress. For example, in a laboratory study of 5-year-olds, insecure/anxious attachment was associated with greater pain reactivity, as assessed by facial coding during a needle injection and maternal reports of reactivity to everyday experiences of pain (Walsh et al., 2008). Beyond pain reactivity, extensive evidence demonstrates that insecure/anxious attachment is linked to greater *fearfulness* (e.g. Calkins & Fox, 1992; Moran & Pederson, 1998; see also Calkins & Leerkes, 2004), behavioral inhibition (e.g. Stevenson-Hinde et al., 2011), and heightened displays of distress (e.g. Diener et al., 2002). In Ainsworth's (1967) post-hoc analyses of her Baltimore data, she noted that insecure/anxious infants were overrepresented among infants who expressed fear in the first portion of the Strange Situation, before the stranger entered when they were free to play in their mother's presence.

Longitudinal research by Kochanska (2001) has shown that of the three organized attachment patterns, children who were insecure/anxious with mothers in the Strange Situation at 14 months showed the most fear and the least joy across a range of laboratory tasks; indeed, fear was their strongest emotion – stronger than both anger and joy, even in situations designed to elicit joy. When examined over the second and third years of life, secure children became less angry over time, whereas insecure/anxious children became significantly less joyful (Kochanska, 2001). This general pattern shows developmental continuity into middle childhood, with research documenting heightened negative mood among 9- to 11-year-old children with insecure/anxious attachment, assessed using story stem interviews and questionnaires (Kerns et al., 2007).

Although most existing research has focused on attachment to mothers, work by Diener et al. (2002) reveals that infant attachment to both mothers and fathers is associated with observed emotional strategies during a competing demands task. As expected, infants classified as insecure/anxiously attached to fathers showed higher levels of distress and lower levels of positive affect with fathers than expected by chance;

moreover, they were less likely to use distraction as a strategy to regulate emotion and more likely to use self-soothing behaviors (e.g. thumb-sucking) (Diener et al., 2002).

When reactivity is assessed at the biological level, insecure/anxious attachment also appears to be related to heightened physiological responses to threat – suggesting that biological systems may become adaptively attuned to support a maximizing strategy. For example, insecure/anxious infants show the largest increases in cortisol from pre- to post-Strange Situation, particularly if their mothers are depressed (Luijk et al., 2010). In middle childhood, insecure/anxious children showed less suppression of high-frequency heart rate variability under stress (Abtahi & Kerns, 2017). In a study of internationally adopted adolescents' physiological reactivity during the AAI, preoccupied teens showed an increase in inter-beat interval (IBI) reactivity specifically during questions about separation and threat, whereas secure individuals showed a decrease in IBI reactivity (Beijersbergen et al., 2008).

Adolescents' maximizing strategies have also been shown to extend beyond the parent-child relationship: Preoccupied adolescents show greater negative emotion within peer relationships as well, including heightened social anxiety and hostility toward peers (Zimmermann, 2004). In sum, substantial evidence supports the idea that insecure/anxious children and adolescents show patterns of heightened negative emotion – assessed at both behavioral and physiological levels – as part of a maximizing strategy. Although maximizing negative emotion may be adaptive in the short term in drawing the attention of inconsistent caregivers, in the long term it may elicit negative reactions from others and undermine self- and socially mediated emotion regulation.

Empirical research examining attachment strategies in adults

The insecure/avoidant pattern and the minimizing strategy in adults

As in childhood, the main goal of the minimizing strategy is to protect avoidant adolescents and adults from experiencing or expressing feelings or needs that would activate the attachment system and increase the possibility of feeling vulnerable or being subject to rejection or abandonment. At the *intrapersonal* level, this strategy involves blocking awareness of, or cognitive access to, any emotion, thought, image, fantasy, or memory that might cause a wish or desire to seek help or support from a relationship partner (e.g. emotions such as fear, anxiety, and sadness; thoughts about the loss of a relationship partner). At the *interpersonal* level, the minimizing strategy involves attempts to reduce relational closeness and interdependence and to increase one's sense of autonomy and self-reliance. In this section, we review evidence concerning how the minimizing strategy is manifested in avoidant adults' (a) defensive suppression of thoughts, memories, and emotions, and (b) the construal of interpersonal relationships.

The intrapersonal level: defensive suppression of thoughts, memories, and emotions

There is extensive evidence of avoidant adults' suppression of distressing thoughts, memories, and emotions. In studies of emotional memories, attachment-related avoidance in adulthood has been associated with poorer access (longer recall latencies) to early childhood memories of experiences of sadness and anxiety (e.g. Mikulincer & Orbach, 1995). The same kind of suppression is also seen in studies examining the coherence

between self-reports of subjective experience and less conscious, more automatic indicators of thoughts and emotions. For example, Mikulincer et al. (1990) found that avoidant individuals scored relatively low on an explicit self-report measure of death anxiety, but their fear of death was revealed in stories written in response to pictures suggesting death or loss.

Avoidant people's minimizing strategy has also been noted in studies assessing thought suppression. For example, Fraley and Shaver (1997) asked participants to write about whatever thoughts and feelings they were experiencing while being asked to suppress thoughts of a romantic partner leaving them for someone else. Avoidant attachment was associated with greater ability to suppress separation-related thoughts, as indicated by less frequent thoughts of loss following the suppression task and by lower skin conductance during the task. This defensive inhibition is also evident in patterns of brain deactivation when avoidant individuals are thinking about breakups and losses and attempting to suppress such thoughts (Gillath et al., 2005). Importantly, other studies have shown that when a high cognitive load (an extra cognitive task) is imposed, avoidant people's ability to suppress negative thoughts is disrupted and they become flooded with the suppressed material (e.g. Mikulincer et al., 2004).

The fragility of the minimizing strategy was noted in a study by Chun et al. (2015) in which avoidant participants' ability to disengage attention from contempt faces was impaired when they were asked to rehearse a seven-digit number (imposing a cognitive load) while performing the attention task. The same fragility was noted by Pietromonaco et al. (2015) in their review of attachment studies on physiological reactions to stressors. Specifically, avoidant attachment was associated with decreased heart rate variability, impaired blood pressure recovery, increased skin conductance, and heightened diastolic blood pressure in response to various laboratory stressors, such as recalling a stressful situation, performing demanding tasks, or discussing relationship problems with a dating partner. Studies showing that avoidant individuals do sometimes display strong negative emotions in response to painful separation or loss of a loved one also suggest a breakdown of defenses when these people experience a heavy and prolonged emotional load (e.g. Bourassa et al., 2019).

Following this line of research, Vrtička et al. (2012) scanned the brains of adults who were asked to attend naturally or to cognitively reappraise their emotional responses to unpleasant scenes. Avoidant participants showed increased prefrontal and anterior cingulate activation to unpleasant scenes and exhibited increases in dorsolateral prefrontal cortex and left amygdala activity during reappraisal. That is, avoidant individuals may be less efficient in using reappraisal strategies and have to employ more effortful control when dealing with distress.

The interpersonal level: minimizing closeness and interdependence within close relationships

Avoidant individuals' tendency to minimize relational closeness is evident in the goals they report when describing what they seek in romantic relationships (e.g. Feeney, 1999), and studies using implicit measures of relational motives. Using the Core Conflictual Relational Themes method for coding open-ended narratives (Luborsky & Crits-Christoph, 1998), for example, Mikulincer et al. (2011) and

Waldinger et al. (2003) found that avoidant attachment was associated with wishes to retain relational distance in participants' dream narratives and interactions with romantic partners. Similarly, using the Implicit Association Test, Dewitte and De Houwer (2008) found that self-reports of avoidant attachment were related to quicker associations between distance-related words and words representing participants' desires (e.g. "I want").

Although avoidant individuals seem predisposed to maintain distance in their dyadic interactions, we should keep in mind that this is a defensive response that might be particularly activated during interactions that reactivate attachment-related memories and feelings. Indeed, Mashek et al. (2011) found that more avoidant people reported wanting less closeness in their romantic relationships mainly after being contextually primed with separation-related words. In addition, using a diary methodology, Overall and Sibley (2009) found that more avoidant individuals tended to downplay closeness-related goals and withdraw emotionally from their romantic partner on days when they reported experiencing insufficient independence or control (i.e. on days that posed a threat to their sense of autonomy).

Avoidant people's preference for relational distance is also evident in their aversion to psychological or emotional intimacy. Self-reports of avoidant attachment are associated with higher scores on fear-of-intimacy scales (e.g. Doi & Thelen, 1993) and with a tendency to place relationship partners at a greater distance from self in a relationship-mapping task (Rowe & Carnelley, 2005). However, there is also evidence that their tendency to prefer emotional distance from a romantic partner is reduced following positive and harmonious couple interactions (e.g. Slotter & Luchies, 2014), suggesting the possibility of productive clinical interventions (Johnson, 2019).

Analysis of partners' nonverbal behavior during couple conversations has confirmed avoidant people's tendency to minimize relational closeness and emotional involvement. For example, Guerrero and Burgoon (1996) video-recorded couple conversations about personal problems and found that more avoidant partners were rated by external observers as showing lower levels of facial gaze, facial pleasantness, interest in the conversation, and attentiveness to their partner's disclosures. Similarly, Tucker and Anders (1998) found that more avoidant people laughed less, touched their partner less, looked less at their partner, and smiled less during a video-recorded conversation about positive aspects of their relationship. Avoidant people's lack of emotional involvement is also found in studies analyzing the contents of text messages and electronic mail written to a dating partner during a lab task in which the partner was given a stressful task to complete (e.g. Morey et al., 2013).

Avoidant individuals also tend not to show genuine empathy or to provide useful help when a romantic partner asks for comfort and support. Studies have consistently found that self-reports of avoidant attachment are associated with lower scores on scales measuring responsiveness to a needy partner (e.g. "When my partner is troubled or upset, I move closer to provide support or comfort") and sensitivity to a partner's needs (e.g. "I am very attentive to my partner's nonverbal signals for help and support") (e.g. Péloquin et al., 2014). More avoidant people are also less likely to feel empathy and compassion toward a needy romantic partner during daily interactions (e.g. Davila & Kashy, 2009). And they are rated by external observers as being less responsive and providing less effective support to their romantic partner during laboratory interactions

in which the partner is facing a threatening situation or disclosing a personal problem (Mikulincer et al., 2013; Simpson et al., 1992).

The sexual arena is another domain in which we can observe avoidant individuals' tendency to maintain psychological distance. The physical and emotional closeness inherent in sexual interactions can cause avoidant people to feel uncomfortable, which can inhibit sexual arousal and behavior. More avoidant people express less love for their partner during sexual intercourse, experience fewer positive emotions, and at other times engage in less positive sexual fantasies (e.g. Birnbaum et al., 2006, 2011). They are less likely to engage in sex in order to enjoy psychological closeness and more likely to report other reasons for having sex, such as reducing stress or increasing prestige among peers (e.g. Davis et al., 2004).

Reluctance to engage in interdependent, intimate dyadic exchanges can also be observed in the context of psychotherapy. Several studies have shown that more avoidant clients and therapists report weaker emotional bonds between themselves and less agreement regarding therapeutic tasks and goals (e.g. Marmarosh et al., 2009). Avoidant clients are rated by external observers as more disconnected from their therapist, speaking less, and expressing more contempt during therapeutic sessions (e.g. Talia et al., 2014). Clients who have an avoidant attachment to their therapist engage in less self-disclosure during therapeutic sessions and perceive these sessions as relatively tense and shallow (Saypol & Farber, 2010).

The insecure/anxious pattern and the maximizing strategy in adults

As in childhood, the main goal of the maximizing strategy in late adolescence and adulthood is to urge a relationship partner, perceived as unreliable or insufficiently responsive, to pay more attention and provide better protection and support. This strategy includes excessive demands for attention and care; an overly strong desire for closeness (sometimes including enmeshment or merger); attempts to minimize cognitive, emotional, and physical distance from a relationship partner; and clinging or controlling behavior aimed at attaining others' reliable care and attention. It also includes a tendency to exaggerate the seriousness of threats; verbalize self-related doubts and relational concerns; complain about a partner's inattention; and overemphasize feelings of helplessness and vulnerability, partly because stressing one's weakness and neediness has sometimes recaptured a neglectful or self-preoccupied partner's attention (Overall et al., 2022). If necessary to gain support, attachment-anxious adults will admit – and perhaps even exaggerate – their fears and pains, criticize themselves, and attempt to remake themselves (e.g. by undergoing cosmetic surgery; Davis & Vernon, 2002).

The intrapersonal level: intensification of distress

Several studies have found that self-reports of attachment anxiety are associated with cognitive appraisals that exaggerate the seriousness of life adversities and the resulting distress – appraising adversities as extreme threats and one's coping resources to deal with them or to regulate distress as deficient (e.g. Berant et al., 2001; Creasey & Ladd, 2004). Distress intensification has also been documented in studies of the recollection of anger-provoking experiences (Mikulincer, 1998): Attachment-anxious people's recollections are more likely to include an uncontrollable flood of angry feelings intertwined with

expressions of sadness and despair and with persistent rumination on distress and pain. This spread of negative emotions was evident, for example, in Mikulincer and Orbach's (1995) study of emotional memories. Attachment anxiety was associated with faster access to sad and anxious childhood memories and with reporting more intense negative emotions when asked to retrieve memories of them.

There is diverse evidence that attachment-anxious adults tend to exaggerate overt expressions of distress. For example, Magai et al. (2000) found that self-reports of attachment anxiety were associated with heightened facial expression of negative emotions (as coded by external judges) during an emotion-induction procedure. And a similar negative bias in facial expressions was noted by Sonnbly-Borgstrom and Jonsson (2003), who presented people with pictures of happy and angry faces and assessed the activity of smile and frown muscles. More attachment-anxious people had more active "frown" muscles while watching either happy or angry faces, implying a heightened tonic expression of negative emotions.

Attachment anxiety is also associated with biased attention to signs of others' rejection. For example, adults scoring higher on attachment anxiety are quicker to recognize rejection-related words in lexical decision tasks and have more difficulty in inhibiting rejection-related thoughts (Baldwin & Kay, 2003; Baldwin & Meunier, 1999). Baldwin and Kay (2003) exposed people to tones paired with rejecting (frowning) or accepting (smiling) faces, and then administered a lexical decision task in which rejection-related words were paired with each of the tones. People who were secure with respect to attachment were slower to react to rejection-related words when they were paired with rejection tones (compared to a neutral tone), but attachment-anxious people reacted faster to these words even in the presence of the acceptance tone. However, Westphal et al. (2014) found that more attachment-anxious individuals diverted attention away from rejecting faces in a dot probe task, possibly reflecting an automatic defensive response against the potential threat of rejection.

The interpersonal level: maximizing closeness and dependence within close relationships

The maximizing strategy – insistent and demanding search for relational closeness and a partner's attention and care – is evident even in the initial stages of a romantic relationship (flirtation, dating). For example, self-reported attachment anxiety is associated with a heightened tendency to indiscriminately disclose personal information to a dating partner without considering their current needs and preferences (Tan et al., 2012). Moreover, adults scoring higher on attachment anxiety tend to disclose more personal problems and painful memories even before their dating partner is prepared for intense involvement or intimacy (Bradford et al., 2002). This tendency for premature self-disclosure seems to be so automatic that attachment-anxious people become cognitively depleted when asked by researchers to inhibit it (Carmichael & Tyler, 2012).

Early adult attachment studies, conducted more than 30 years ago, revealed another facet of the maximizing strategy within romantic relationships: Attachment-anxious people were more likely than secure or avoidant people to endorse a "mania" style of love (possessive, dependent love) and to score higher on scales assessing love addiction and desperate love (e.g. Feeney & Noller, 1990). This hunger for closeness and affection may explain Hudson and Fraley's (2017) later finding that attachment-anxious people are

likely to require higher levels of partner affection and self-disclosure in order to appraise a relationship as “close.” It seems that attachment-anxious people feel that a partner is distant and cool even in relationships that less anxious people would view as comfortably warm and close.

Attachment-anxious people’s maximizing strategy may cause them to be intrusive. This tendency was assessed in a 14-day diary study conducted by Lavy et al. (2013). Members of dating couples reported on their attachment insecurities and completed daily measures of relationship satisfaction and intrusive behavior (e.g. “I invaded my partner’s privacy,” “I called my partner often during the day,” “I stopped my partner from doing something without me”). Attachment-anxious people reported higher levels of daily intrusiveness. Interestingly, this association was stronger when anxious people had been dissatisfied with their relationship the previous day, implying that intrusiveness may be part of an effort to restore relational closeness. Conceptually similar findings were reported by Reed et al. (2015), who assessed engagement in “digital intrusion” (e.g. looking at a partner’s private e-mails without permission, monitoring a partner’s whereabouts using social media).

Their intense desire for love and care might underlie attachment-anxious people’s tendency to engage in excessive reassurance seeking, the inappropriately strong tendency to demand assurance from others that one is desirable and loved (“If I can elicit assurances that my partner loves me, I won’t need to worry as much about rejection”). This tendency has been documented in several correlational studies linking anxious attachment with reassurance seeking, as reported by both the people themselves and their partners (e.g. Evraire et al., 2014). In a 14-day diary study, Shaver et al. (2005) found that participants who scored higher on attachment anxiety were more likely to seek daily reassurance from their dating partner. In addition, more anxious participants sought more reassurance following days on which they experienced relationship conflicts than following days on which little or no conflict was reported. Thus, it seems that attachment-anxious people, as expected theoretically, seek reassurance as a way of quelling relational worries and temporarily somewhat restoring felt security.

Guerrero and Burgoon (1996) studied another manifestation of attachment-anxious people’s maximizing strategy, the inability to withdraw from an unsatisfactory interaction. Couples participated in two conversations, and after the first, one partner was asked to decrease involvement in the second conversation. More anxious people became more involved in the conversations following a scripted decrease in their partner’s involvement, probably reflecting compensatory efforts to restore relational closeness. This tendency to persist in an unpleasant interaction, which might on its face seem laudable or beneficial, can take a destructive turn when anxious people become aggressive or violent toward their partner or prove unable or unwilling to leave a dysfunctional relationship.

Attachment-anxious people’s sexual attitudes also seem to be affected by their hunger for proximity, attention, and care. They are, for example, more likely to report having sex to foster greater closeness and gain a partner’s reassurance (e.g. Schachner & Shaver, 2004). They are more likely to entertain sexual fantasies constructed around wishes for intimacy and love (e.g. Birnbaum et al., 2011). Also, attachment anxiety is associated with higher rates of physical coercion on the part of sexual partners and more involvement in unwanted but consensual sex (e.g. Brassard et al., 2007). Impett and Peplau (2002) found

that attachment-anxious women more often reported accepting unwanted sex in order to increase closeness.

Another window onto the maximizing strategy is provided by examining attachment-related differences in scores on the Inventory of Interpersonal Problems (IIP; Horowitz et al., 1988). In this inventory, people are asked about the extent to which they feel that they are overly autocratic, competitive, cold, introverted, exploitable, nurturant, or expressive/demanding. Across several studies involving nonclinical undergraduates as well as outpatients in clinical settings, more attachment-anxious people reported more problems related to their demands for closeness, attention, and care (being overly expressive and demanding; e.g. Bailey et al., 2018; Maxwell et al., 2014). Along similar lines, Tolmacz and Mikulincer (2011) found that more attachment-anxious people were likely to report exaggerated/inflated forms of relational entitlement from their romantic partner (i.e. expecting that their needs and wishes would be satisfied by a partner even at the price of denying his or her own needs and rights).

Some of the studies that have assessed attachment-related differences in scores on the IIP indicate that attachment-anxious individuals are more likely to report being both overly demanding and overly unassertive (e.g. Cummings-Robbeau et al., 2009). These two somewhat antithetical attitudes (echoing Ainsworth's calling the anxious pattern in infancy "anxious/ambivalent;" Ainsworth et al., 1978) have been documented in the ways attachment-anxious people deal with relational conflicts. Because conflicts threaten their desire to gain closeness, attachment-anxious people may try to dominate and control the interaction as a means of getting their own needs met, but sometimes might accede submissively to a partner's demands in order to avoid rejection. Indeed, attachment-anxious people have been found to endorse a demanding, coercive, and hostile orientation toward a disagreeing partner that can result in conflict escalation (e.g. Nelson et al., 2018). But they also endorse a submissive stance aimed at ending a disagreement (e.g. Cann et al., 2008). More important, MacDonald et al. (2019) found that attachment-anxious people were more demanding and hostile during a conflictual interaction with a romantic partner when this conflict did not pose a threat to the relationship, but they were more likely to defer to a partner's demands when threats of rejection and separation were made salient.

These findings regarding conditional strategies in adult close relationships are just a few examples from a literature comprising thousands of studies conducted in different countries and languages (reviewed by Mikulincer & Shaver, 2016, 2023a), with adults of all ages – although the literature is still heavy on studies involving white, relatively well-educated Western adults. It is impressive to see that the central results are consistently replicated across countries, languages, and types of measures.⁵ Main frequently referred to Mary Ainsworth's work as "cutting nature at its joints;" the same can be said about Main's work.

Concluding comments

Mary Main's brilliant and meticulous combination of Bowlby's ideas concerning goal-oriented behavioral systems, Ainsworth's discovery of different categories of infant attachment behavior, and biologists' observations of conditional goal-oriented strategies

in various animal species resulted in Main's concepts of minimizing and maximizing attachment strategies. In the present review we have shown some of the many ways in which these concepts have been applied in studies of infants, children, adolescents, and adults.

As voluminous and fascinating as the resulting literature is, it represents only a fraction of Main's ideas and contributions to the field. Her discovery and detailed description of the D (disorganized) pattern of infant attachment behavior in the Strange Situation (along with Judith Solomon and Erik Hesse), viewed as a collapse of coherent strategies; her extension of attachment research into stages of childhood beyond infancy (with Jude Cassidy and Nancy Kaplan); and her creation of the Adult Attachment Interview (with Carol George, Nancy Kaplan, Ruth Goldwyn, and Erik Hesse) have also been extremely influential, greatly expanding the nature, range, and applicability of attachment theory. Main's willingness, along with that of Erik Hesse, her second husband and long-time collaborator, to explain her ideas and methods in detail to students and fellow professionals during in-person workshops around the world has helped researchers understand and employ her unique insights and methodological techniques.

There are several ways in which the literatures we have reviewed can be bolstered, extended, and applied. As mentioned, the majority of research has been conducted in Western cultures with predominantly White samples. Future research should examine how minimizing and maximizing strategies manifest across diverse contexts and cultures, and in response to specific threats in the environment (e.g. resource scarcity, extreme gender inequality, neighborhood violence, exposure to racial discrimination). Relatedly, little research has examined how an individual may simultaneously develop different strategies in different types of relationships or in diverse family structures (for example, a child whose most adaptive strategy is to minimize attachment-related needs with her father but maximize with mother or extended family members).

Moreover, while minimizing and maximizing strategies have been well characterized in adulthood, comparatively less work has examined these strategies in childhood and adolescence (particularly regarding attention and memory processes). Longitudinal research may uncover predictors of stability and change in attachment strategies over time and across different types of relationships (e.g. close friendships or natural mentoring relationships during adolescence). Such work may be enhanced by integrating behavioral and biological measures, including neuroimaging, to examine the biological signatures of minimizing and maximizing strategies, as well as their potential long-term health consequences.

In addition, much more can be done to explore and evaluate how the insights from attachment research can be applied educationally and clinically to enhance healthy security in children and adults (Mikulincer & Shaver, 2023b). In this work, we can rely on Mary Main as a worthy model and source of inspiration, an exceptional scientist and scholar to whom we owe a great debt of gratitude.

Notes

1. Hesse (personal communication, 2024) noted that although Robert Hinde, one of the Bielefeld colleagues who introduced Main to ideas of conditional behavioral strategies, initially disagreed with her about this distinction, he later came to agree with her thinking.

2. Within the developmental literature, the Strange Situation behavior of a fourth group of infants is viewed as *a failure of the capacity to develop an organized strategy* in response to reunion with the parent: the insecure/disorganized group (the “D” group; Hesse & Main, 2000; Main & Solomon, 1986). As Main et al. (2005, p. 288) noted, “Rather than indicating either flexibility or inflexibility in attention [i.e. organized strategic responses to parental behavior], infant D behavior and its adult ... equivalents represent ... collapses of behavioral, attentional, or linguistic strategy.”). Thus, in this paper focusing on organized minimizing and maximizing strategies, we do not discuss this fourth group.
3. A note on terminology: Main (1990) introduced the terms “minimizing/maximizing” to refer to secondary attachment strategies. Main also at times labeled these contrasting terms in terms of inhibition vs. maximizing, as follows: “Thus the capacity to inhibit (or, in contrast, maximize) the display of attachment behavior under certain circumstances can be seen as an indication of the operation of what are currently called ‘contingent decision rules’ or, similarly, ‘conditional behavioral strategies’ available for use in alternate and perhaps somewhat less psychologically ‘optimal’ environments (see Hinde & Stevenson-Hinde, 1990; see also Belsky, 1999; Main, 1979, 1981, 1990; Simpson, 1999; Trivers, 1974)” (Main et al., 2005, p. 257). We note that other researchers use the related terms “deactivating/hyperactivating” (e.g. Cassidy & Kobak, 1988; Dozier & Kobak, 1992; Kobak, 1993; Mikulincer & Shaver, 2016, 2023a). Here we follow Main’s usage and refer to minimizing/maximizing throughout.
4. Main’s focus on multiple processes working together is reflected in her choice to underscore the presence of this idea in Ainsworth’s earliest writings. In 2000 (p. 1063), Main noted:

“By 1967, concluding the write-up of her Uganda study, [Ainsworth] stated: ‘We [have been] concerned here with nothing less than the nature of love and its origins in the attachment of a baby to his mother ... Attachment is internal ... This internalized something that we call attachment has aspects of feelings, memories, wishes, expectancies, and intentions, all of which ... serves as a kind of filter for the reception and interpretation of interpersonal experience and as a kind of template shaping the nature of outwardly observable response [(Ainsworth, 1967), p. 429].”

 Notably, when building on Ainsworth’s thinking and expanding her own work to include a focus on strategies, Main recognized that all of these same “aspects of feelings, memories, wishes, expectancies, and intentions” can be strategically manipulated in the service of obtaining attachment-related goals.
5. As one example, the strategy of minimizing emotions in the adult studies reviewed above converges with studies based on attachment measured with the AAI (wherein suppression takes the form of idealization, dismissal, and lack of memory). For instance, Roisman et al. (2004) revealed that dismissing individuals express relatively few negative feelings about their parents during the AAI, but show high levels of physiological arousal and more intense facial expressions of anger and sadness when thinking about these relationships. Nonetheless, it is important to recognize that although the two measurement approaches likely tap similar phenomena, the two cannot be treated as interchangeable (e.g. *avoidance* as assessed in the adult style research is not identical with a *dismissing state of mind* in the AAI.).

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