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Attachment within life history theory: an evolutionary perspective on individual differences in attachment

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In this article, we discuss theory and research on how individual differences in adult attachment mediate the adaptive calibration of reproductive strategies, cognitive schemas, and emotional expression and regulation. We first present an integration of attachment theory and life history theory. Then, we discuss how early harsh and/or unpredictable environments may promote insecure attachment by hampering parents' ability to provide sensitive and reliable care to their children. Finally, we discuss how, in the context of harsh and/or unpredictable environments, different types of insecure attachment (i.e. anxiety and avoidance) may promote evolutionary adaptive reproductive strategies, cognitive schemas, and emotional expression and regulation profiles.

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The attachment system is an innate psychobiological system that motivates individuals to seek or elicit proximity to supportive others in times of need [1]. As such, it provides a crucial evolutionary advantage to a species with relatively helpless offspring who cannot fend for themselves [2**]. But the evolutionary role of the attachment system does not end in childhood. The system continues to affect cognitive, emotional, and behavioral outcomes throughout life, many that have important consequences for evolutionary fitness. In this paper, we discuss the role of different attachment orientations (styles) as intermediaries between fitness-relevant environmental information and cognitive, emotional, and behavioral outcomes that might have increased fitness

in specific environments. To do so, we draw on recent advances in life history theory and attachment research.

Life history theory

Life history theory (LHT) is an evolutionary framework explaining individual differences [3]. According to LHT, allocating resources and energy to important life tasks such as growth and reproduction involves tradeoffs. Investing in growth, for example, often requires delaying reproduction, whereas investing in parenting (i.e. caring for existing offspring) often means less time and effort can be devoted to mating (i.e. creating new offspring). All organisms negotiate such tradeoffs and usually pursue an allocation strategy (i.e. a life-history strategy) that maximizes their evolutionary fitness. The optimal strategy, however, depends on the environment in which a strategy is enacted, such as an environment's harshness (i.e. local mortality rate) and/or unpredictability (i.e. rate of fluctuations in environmental conditions) [4]. In safe, predictable environments, the probability of dying (or one's children dying) before reproducing is lower, and the future is easier to predict. Such environments allow individuals to set long-term goals and accumulate embodied and material capital to achieve them. Accordingly, they promote a *slow* life history strategy entailing an extended growth period (e.g. late menarche, delayed puberty), delayed reproduction, and greater investment in current offspring (i.e. high parental effort). In harsh and/or unpredictable environments, however, the probability of dying (or one's children dying) before reproducing is higher, and the future is less certain. Such environments force individuals to set short-term goals and try to achieve as much as they can before an earlier death. Hence, they promote a *fast* life history strategy entailing accelerated growth (e.g. early menarche, pubertal timing), early reproduction, and producing more offspring (i.e. higher mating effort).

Integrating life history theory and attachment theory

The adaptive calibration of life history strategies occurs during development in response to early experiences that signal the amount of harshness and/or unpredictability in one's local environment. This requires physiological and psychological mechanisms capable of internalizing early experiences and producing phenotypes more likely to increase fitness in specific environments [2**,5]. The attachment system does exactly that. Across development, the attachment system encodes early experiences with caregivers in working models of self and others,

which are mental representations and expectations about the responsiveness and availability of significant others in response to specific attachment behaviors [1]. Working models guide the cognitive, emotional, and behavioral outputs of the attachment system throughout life, and they define whether individuals have secure or insecure attachment orientations. Sensitive/responsive parenting promotes secure attachment orientations [6], which include positive expectations about the availability and support of significant others in times of need and comfort with closeness and interdependence. Harsh, unreliable, or unresponsive parenting, conversely, promotes insecure attachment orientations, which take one of two prototypical forms: anxious attachment (a hyperactivating strategy involving unrestrained, effortful attempts at achieving emotional closeness to significant others ‘at all costs’), and attachment avoidance (a deactivating strategy involving a desire for emotional independence and rejection of emotional closeness and support) [7,8].

Most traditional attachment approaches view secure attachment as the optimal mode of attachment-system activation [1,9]. Some attachment theorists, therefore, claim that secure attachment in adulthood serves an adaptive function by cementing long-term pair-bonds between mates [10]. A life-history approach, in comparison, notes that many of the positive outcomes of secure attachment should be less adaptive in harsh and/or unpredictable environments. Moreover, in such environments, the seemingly negative outcomes of anxious and avoidant attachment may yield surprising fitness benefits. Accordingly, *both* secure and insecure attachment may serve adaptive functions [11]. Life history models emphasize the environmentally-contingent, organizing function that is built into the attachment system.

According to life history models [12–14], the attachment system is an important psychological mechanism that bridges the gap between early exposure to environmental harshness and/or unpredictability and life-history strategies enacted in adulthood. It does so because (a) the environmental input to which the attachment system is responsive (i.e. early caregiving experiences) is a key indicator of the degree of harshness and/or unpredictability in the local environment, and (b) the attachment orientations shaped by this environmental input mediate contingently-adaptive cognitive, emotional, and behavioral reactions. Specifically, secure attachment (rooted in positive caregiving experiences) is associated with slow life-history traits that should increase fitness in safe, predictable environments, whereas insecure attachment (rooted in negative caregiving experiences) is associated with fast life-history traits that should increase fitness in harsh and/or unpredictable environments. These two alternative developmental trajectories are displayed in [Figure 1](#). We now review the empirical support for this model and suggest future directions for research.

Early caregiving experiences are markers of harshness and/or unpredictability

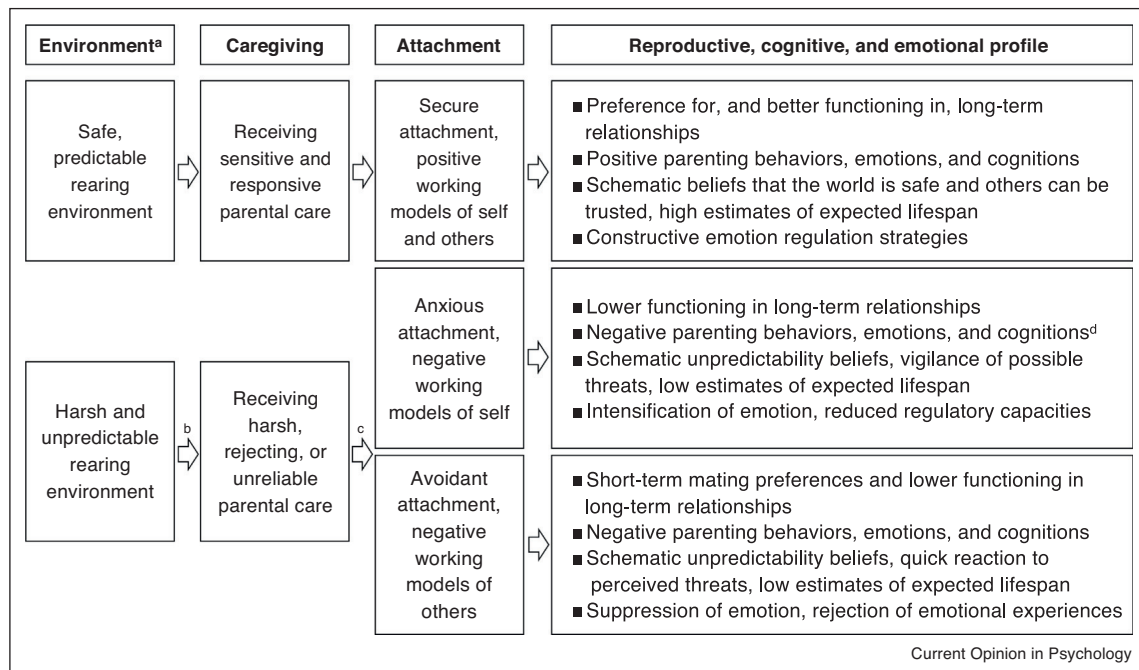
Belsky *et al.* [12] originally proposed that early experiences with caregivers serve an evolutionary function by signaling to the child the availability and predictability of resources and the trustworthiness of others, information vital to the strategic allocation of reproductive effort. Chisholm [13] extended this model by proposing that early caregiving experiences also signal local mortality rates (i.e. harshness). Many studies have confirmed that parents struggle to provide sensitive, reliable caregiving in harsh and/or unpredictable environments. Parenting quality suffers, for example, under conditions of war and famine [15], lower-quality neighborhoods [16], and low socioeconomic conditions [17,18], all predictors of higher mortality rates. Parenting quality is also reduced when the immediate environment — especially within the family — is unstable (e.g., frequent marital conflict and familial unrest, inconsistent financial resources) [19]. For the child, therefore, the quality of parental caregiving is a valid, albeit imperfect, marker of the level of harshness and/or unpredictability in the environment. In response to this, children should develop traits that increase their fitness within the type of environment in which they are raised.

Attachment orientations mediate life-history effects

Mating

Extensive research indicates that attachment security promotes more committed, long-term romantic relationships [7]. Anxious and avoidant individuals typically find it harder to maintain long-term relationships, and avoidant individuals prefer casual, short-term relationships in which they can maintain emotional independence [20,21]. Long-term romantic relationships have many adaptive advantages, the foremost of which is biparental investment in children [22]. In harsh and/or unpredictable environments, however, it may be more adaptive to accelerate one’s reproductive schedule and increase offspring quantity by capitalizing on short-term mating opportunities. Indeed, when individuals are experimentally primed with mortality cues, those who grew up in harsher (low-SES) environments prefer having children sooner rather than later [23]. Moreover, several longitudinal studies have shown that early exposure to harsh or unpredictable environments promotes various accelerated and short-term mating behaviors, including earlier sexual debut and greater sexual risk-taking [24], earlier age of first pregnancy [25], and more sexual partners [26,27]. In a recent longitudinal study, the effect of early-life unpredictability on unrestricted sexuality at age 23 was serially mediated by less supportive mothering and insecure attachment in adolescence [28**], indicating that attachment orientations mediate the link between early environments and adult mating behavior.

Figure 1



The effects of harsh and/or unpredictable environments on attachment orientations and reproductive, cognitive, and emotional outcomes. This figure is an extension of Belsky *et al.*'s [12] model of psychosocial acceleration. Harshness and unpredictability are two distinct environmental parameters that can have divergent influences on important life history outcomes in adulthood [4]. Parenting behavior in adulthood, for example, may have a stronger linear association with early-life unpredictability than with early-life harshness [33], and cognitive representations of unpredictability may differ from cognitive representations of harshness (see the Cognitions section).

^a Environmental harshness is typically indexed by variables that are linearly related to local mortality rates. In Western societies, socioeconomic status is often used as a proxy for harshness. Unpredictability is typically indexed by frequent changes in the micro-environment (i.e. economic, residential, and familial changes) [26,27,28**,33].

^b Environmental harshness and unpredictability may have different effects on certain parenting behaviors. For example, harsh environments may promote consistently harsh parenting, whereas unpredictable environments may promote inconsistent or chaotic parenting. Empirical evidence supporting these ideas, however, remains lacking.

^c According to attachment theory, harsh and rejecting parenting should typically produce avoidant attachment in children, whereas inconsistent parenting should typically produce resistant (anxious) attachment. At present, we do not know whether this also holds true for adult attachment orientations, although there is evidence that attachment insecurity in adulthood is partly rooted in lower quality caregiving environments [8]. Del Giudice [14] suggested that the specific type of insecurity is determined in middle-childhood in response to intrasexual competition and is influenced by the sex of the child, with males being more likely to become avoidantly attached, and with females being more likely to become anxiously attached.

^d Empirical evidence regarding the specific parenting profiles of anxiously attached parents is mixed, especially compared to the profiles of avoidantly attached parents [30]. There is some consensus, however, that securely attached parents enact or experience more positive parenting behaviors, emotions, and cognitions than insecurely attached parents do.

Parenting

Securely attached individuals typically provide more supportive and sensitive parenting to their children than insecure parents [29,30]. Consequently, the children of secure parents are more likely to benefit from the many adaptive advantages of greater parental effort [22]. But parental effort is also affected by environmental conditions [31*,32]. In harsh and/or unpredictable environments, individuals cannot be sure their long-term parental investments will eventually pay off. Moreover, by investing in parenting, individuals incur an opportunity cost by necessarily investing less in mating. This mating-parenting tradeoff is particularly relevant for men, who can greatly increase their number of offspring by mating

with different women and, therefore, face a larger opportunity cost [14]. Indeed, in a recent longitudinal study, early-life unpredictability forecasted less sensitive parental behavior and more negative parental attitudes in men, but not women [33]. This effect was serially mediated by less supportive mothering and insecure attachment in adolescence and early adulthood.

Cognitions

Securely attached individuals have positive expectations and mental representations regarding the availability and support of significant others in times of need [34–36]. This fosters a view of the world as being relatively safe and predictable, with most people being trustworthy. Such

beliefs facilitate trusting and cooperative relationships with romantic partners and others, but they should not be adaptive when the world is unsafe and unpredictable. In harsh and/or unpredictable environments, it makes more sense to be vigilant and mindful of possible environmental dangers or risks. Studies on the cognitive schemas of insecurely attached individuals suggest that they are better prepared for such environments. Anxiously attached individuals, for example, have a more accessible sentinel schema, which makes them more vigilant and quicker to detect possible threats. Avoidantly attached individuals have a more accessible rapid fight-flight schema and are quicker to react to perceived threats [37,38].

Individuals also have specific cognitive representations of the amount of harshness and/or unpredictability in their environments. High local mortality rates (harshness) are represented in lower estimates of life expectancy [13], which are more common in insecurely attached individuals [39]. Environmental unpredictability and inconsistent parenting is represented in an unpredictability schema—a pervasive belief that the world is chaotic and people are undependable [40,41*]. Unpredictability schemas are associated with insecure attachment, greater risk-taking, and lower estimates of life-expectancy [42]. They are also associated with lower self-efficacy and an external locus of control [43], suggesting that these individuals feel less capable of shaping their own destiny in part because they perceive the world as unpredictable. Indeed, one recent study found that economic unpredictability primes reduce the sense of control in individuals who grew up in harsh (low-SES) environments, which mediated their impulsive behaviors, reflecting a fast life-history strategy [44].

Future directions: emotion regulation

An important area for future research is emotion regulation. Emotional expression and regulation serve important evolutionary functions [45]. Securely attached individuals' positive expectations of support bolster their well-regulated emotional expression and constructive emotion regulation strategies [34]. Avoidantly attached individuals, in comparison, habitually suppress emotional expression, whereas anxiously attached individuals typically intensify it ([46,47*], see also Mikulincer and Shaver, this issue). These seemingly dysfunctional emotion regulation strategies may offer avoidant and anxious individuals some advantages in harsh and/or unpredictable environments. Suppression of potentially distracting emotions may be adaptive when one cannot count on others for support or cannot afford to get emotionally distressed in response to others' distress. Alternatively, intensification of certain negative emotions (e.g. anger) may expedite the achievement of certain short-term goals, especially if one can disregard the long-term consequences of such expressions. Early exposure to harshness and/or unpredictability does,

in fact, forecast dysregulated behavior, including externalizing problems, substance use, and intimate partner violence [48,49], with the effect on intimate-partner violence mediated by attachment anxiety. What remains unclear is whether exposure to harshness and/or unpredictability also forecasts dysregulated emotions via insecure attachment. Future studies need to shed light on the socio-emotional predictors of risky and violent behavior and their evolutionary underpinnings [50].

Conclusions

Individual differences in attachment serve an evolutionary function by mediating the effects of early exposure to harshness and/or unpredictability on adult life-history strategies. Rather than reflecting suboptimal attachment-system functioning, avoidant and anxious attachment orientations are likely to be alternative, conditionally-adaptive strategies. Originally theorized to mediate effects on adult reproductive strategies, attachment orientations may also play an important role in the adaptive calibration of certain cognitive schemas. Future research should examine whether and when attachment orientations alter emotional expression and regulation in evolutionary adaptive ways.

Conflict of interest statement

None declared.

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