Childhood attachment and adult personality: A life history perspective

Article *in* Self and Identity · July 2017

DOI: 10.1080/15298868.2017.1353540

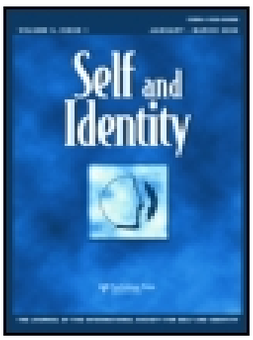
5 authors, including:

Ethan Scott Young
University of Minnesota Twin Cities
3 PUBLICATIONS **18** CITATIONS
SEE PROFILE

Jeffry A Simpson
University of Minnesota Twin Cities
200 PUBLICATIONS **13,024** CITATIONS
SEE PROFILE

Vladas Griskevicius
University of Minnesota Twin Cities
73 PUBLICATIONS **6,980** CITATIONS
SEE PROFILE

Chloe Huelsnitz
University of Minnesota Twin Cities
2 PUBLICATIONS **0** CITATIONS
SEE PROFILE



Routledge
Taylor & Francis Group

Self and Identity

ISSN: 1529-8868 (Print) 1529-8876 (Online) Journal homepage: http://www.tandfonline.com/loi/psai20

Childhood attachment and adult personality: A life history perspective

Ethan S. Young , Jeffry A. Simpson, Vladas Griskevicius, Chloe O. Huelsnitz & Cory Fleck

To cite this article: Ethan S. Young , Jeffry A. Simpson, Vladas Griskevicius, Chloe O. Huelsnitz & Cory Fleck (2017): Childhood attachment and adult personality: A life history perspective, Self and Identity

To link to this article: http://dx.doi.org/10.1080/15298868.2017.1353540

Published online: 20 Jul 2017.

SELF AND IDENTITY, 2017
https://doi.org/10.1080/15298868.2017.1353540

Routledge
Taylor & Francis Group

Childhood attachment and adult personality: A life history perspective

Ethan S. Young[a§], Jeffry A. Simpson[a§], Vladas Griskevicius[b], Chloe O. Huelsnitz[a] and Cory Fleck[a]

[a]Department of Psychology, University of Minnesota, Minneapolis, MN, USA; [b]Carlson School of Management, University of Minnesota, Minneapolis, MN, USA

ABSTRACT

According to attachment theory, being securely attached to one's primary caregiver early in life should be related to personality adulthood. However, no studies to date have investigated this key premise using prospective data. To address this gap, we discuss evolutionary-based models of attachment and use them to examine how secure versus insecure children might score differently on Big 5 traits that underlie the meta-trait stability. We modeled data from Minnesota Longitudinal Study of Risk and Adaptation (N = 170), which has followed participants across 30 years. Participant's early attachment status was assessed in Ainsworth's Strange at 12 and 18 months and personality was assessed on Big 5 measures at age 32. Being securely attached early in childhood predicted three of the Big 5 traits known to tap the meta-trait stability. Specifically, participants rated as secure early in life scored higher on agreeableness and conscientiousness and lower on neuroticism in adulthood, whereas those rated as insecure scored lower on agreeableness and conscientiousness and higher on neuroticism. Exploratory mediation analyses revealed that neither adult attachment representations nor internalizing/externalizing symptoms mediated the association between early security and stability. The implications of these findings for understanding the origins of personality variation are discussed.

ARTICLE HISTORY
Received 15 December 2016
Accepted 29 June 2017
Published online 20 July 2017

KEYWORDS
Attachment; adult personality; life history theory; social development

> Whilst especially evident during early childhood, attachment behavior is held to characterize human beings from the cradle to the grave.
>
> –John Bowlby *The Making and Breaking of Affectional Bonds* (Bowlby, 1979, p. 129)

At its core, attachment theory (Bowlby, 1969, 1973, 1980) attempts to explain social and personality development across the lifespan. No studies to date, however, have examined whether or how attachment patterns toward primary caregivers early in life are related to adult personality patterns using prospective research designs. As we shall see, there are compelling theoretical reasons to believe that systematic associations should exist between being securely (vs. insecurely) attached to one's caregivers early in life and scoring higher on certain personality traits in adulthood, particularly the meta-trait known as stability

CONTACT Ethan S. Young youn0737@umn.edu; Jeffry A. Simpson simps108@umn.edu
[§]Department of Psychology, University of Minnesota, Minneapolis, MN, USA.

(DeYoung, Peterson, & Higgins, 2002). Individual differences in stability reflect the ability and motivation to maintain stable relationships and emotional states known to facilitate cooperative, close interpersonal ties, as indexed by individuals being more agreeable, more conscientious, and less neurotic. The current research, which models data from the Minnesota Longitudinal Study of Risk and Adaptation (MLSRA; Sroufe, Egeland, Carlson, & Collins, 2005), addresses these issues across more than 30 years of longitudinal data. In doing so, it also explores whether certain variables mediate the hypothesized link between early attachment security and adult personality functioning, focusing on the meta-trait of stability.

We begin by discussing key concepts of attachment theory and the origins of developing secure as opposed to insecure attachment patterns toward caregivers in early childhood, which are assessed in the Strange Situation (Ainsworth & Wittig, 1969). We then discuss evolutionary-based models of attachment, examining the implications they have for anticipating why secure vs. insecure children should score differently on certain Big 5 traits in adulthood, especially those that underlie stability. We then review prior research consistent with these expectations, including one prior longitudinal study that has examined how being secure vs. insecure in the Strange Situation is associated with personality scores in middle childhood. Following this, we derive a confirmatory hypothesis – that being securely attached to one's primary caregiver early in life should prospectively predict being more stable (i.e. more agreeable, more conscientious, and less neurotic) on Big 5 trait measures in adulthood, whereas the reverse should be true of insecurely attached children when they are adults. We also propose and test two exploratory hypotheses for possible mediating variables that might link early attachment security with adult personality stability.

Attachment theory: Secure vs. insecure attachment patterns in children

According to attachment theory (Bowlby, 1969, 1973, 1980), children first begin to learn about the world based on how they are treated by their primary caregivers (their initial attachment figures), especially when they feel threatened or distressed (Simpson & Rholes, 2012). In these taxing situations, almost all young children seek proximity to their stronger, older, and wiser caregivers in some fashion. The way in which they seek proximity, however, depends on how children have been treated by their caregivers in the home environment (Ainsworth, Blehar, Waters, & Wall, 1978; Bakermans-Kranenburg & van IJzendoorn, 2016; van IJzendoorn, 1995).

Children who receive better, more consistent care typically become securely attached to their caregivers, which motivates them to seek out their caregivers for comfort, reassurance, and support in order to manage and quell negative emotions when they are threatened or distressed (Ainsworth et al., 1978). Across development, these interpersonal experiences and tendencies generate positive internal working models (schemas) in which the self is viewed as worthy of love, care, and support, and significant others are perceived as being able, willing, and often effective at providing love, care, and support (Bowlby, 1973). Children who receive poor or inconsistent care, on the other hand, usually become insecurely attached. Insecure children are either not easily comforted and reassured by their caregivers when they feel threatened or distressed, or they try to comfort and soothe themselves in a self-reliant manner without depending on their caregivers (Ainsworth et al., 1978). These experiences and tendencies typically translate into negative internal working models of the self and significant others. Although new experiences with different attachment figures later in

life (e.g. close friends, romantic partners) can gradually change an individual's internal working models and, therefore, his or her attachment security (Fraley & Brumbaugh, 2004), early attachment patterns have unique, enduring effects on later adult outcomes. For example, individuals who were secure (as opposed to insecure) as children experience and display more positive relative to negative emotions during conflicts with their romantic partners in early adulthood (Simpson, Collins, Tran, & Haydon, 2007).

Early attachment patterns to caregivers are assessed in the Strange Situation (Ainsworth et al., 1978), a well-validated lab procedure that exposes 12–18 month-old children to two stressful events – being left alone in a room after his/her mother has departed, and being left alone with a stranger. A young child's secure or insecure attachment pattern is determined by coder ratings of how the child responds to her/his mother when she returns to the room. Children who have secure attachment patterns with their mothers are initially distressed upon reunion, but quickly make contact with their mother and use her as a source of comfort and reassurance, which helps secure children calm down fairly quickly and resume normal play activities. Children who have insecure attachment patterns with their mothers are also upset upon reunion, but they never fully calm down or resume normal play. In most studies with Western samples, 60–65% of children are classified as secure, and 35–40% are classified as some form of insecure (Marvin, Britner, & Russell, 2016).

Unlike many personality traits (including the Big 5), behavioral genetic studies have found relatively smaller heritability coefficients for Strange Situation scores (O'Connor & Croft, 2001) and considerably larger shared environment coefficients (Bokhorst, Bakermans-kranenburg, Fonagy, & Schuengel, 2003). This evidence, which indicates the stronger impact of the home environment in shaping early attachment patterns relative to other personality traits, is not surprising. Both attachment theory and meta-analytic reviews indicate that the quality of early care should be – and is – a major determinant of being classified as secure vs. insecure in the Strange Situation (see Fearon & Belsky, 2016).

Life history models of attachment

Evolutionary theorists have claimed that secure and insecure attachment patterns are both "adaptive" ways of behaving in response to the unique social and interpersonal environments in which each pattern develops. Main (1981), for instance, claims that directly turning to the primary caregiver for care, assistance, and support is the most adaptive care-soliciting strategy to adopt when one's caregiver is able and willing to provide such good care. Conversely, demanding more attention (as a reaction to an inexperienced, distracted, or inconsistent caregiver) or becoming more self-sufficient (in response to a rejecting or highly unmotivated caregiver) are often the best strategies when children are faced with these sub-optimal care-provision situations.

Speculating on the evolutionary functions of attachment security vs. insecurity over the life-course, Belsky and colleagues (Belsky, Steinberg, & Draper, 1991; Belsky, 1997) developed an evolutionary model of social development, which specifies how certain early-life experiences tend to shunt individuals down one of two developmental pathways. Children exposed to less stress and minimal interpersonal conflict early in life should become securely attached, mature sexually at a slower rate, form fewer but more stable romantic relationships, and be more investing parents. This *slow life history trajectory* involves greater investment in a relatively smaller number of close, stable, and cooperative relationships, which entails

focusing on the *quality* of social relationships, mates, and offspring rather than on their quantity. In contrast, children exposed to greater stress and more interpersonal conflict early in life should become insecurely attached, mature sexually at a faster rate, form more but less stable romantic relationships, and be less investing parents. This *fast life history trajectory* centers on taking advantage of opportunities when they arise and investing less in others, which culminates in focusing on the *quantity* and utility of social relationships, mates, and offspring rather than their quality (Griskevicius et al., 2013; see Simpson & Belsky, 2016, for a recent review of evidence relevant to the model).

More recently, evolutionary personality theorists have proposed that adult personality traits are relevant to these evolutionary lifespan models because certain dispositions are likely to facilitate the successful enactment of slow or fast life history strategies in adulthood (Nettle, 2010; Simpson, Griskevicius, & Kim, 2011). For example, individuals who grow up in less conflict-ridden, more cooperative environments (i.e. those who are secure and should have slower tendencies) have learned that they can generally trust and get along with others, that dedicated, cooperative effort usually results in achieving important goals, and that adopting a long-term, stable, communally-oriented view of the world often produces the best outcomes. By enacting these tendencies in adulthood, individuals who began life being securely attached should be able to enact a slow life history strategy more effectively and successfully (see Nettle, 2010; Simpson, Griskevicius, Szepsenwol, & Young, 2017).

In contrast, children who grow up in conflict-ridden, interpersonally competitive environments (i.e. those who are insecure and should have faster tendencies) have learned that they cannot necessarily trust and get along with others, that seizing opportunities and watching out for themselves is often the best way to obtain important goals, and that adopting a short-term, opportunistic, self-oriented view of the world usually results in the best outcomes. By enacting these tendencies as adults, individuals who were insecure as children can more efficiently and successfully carry out a fast life history strategy (Nettle, 2010; Simpson et al., 2017).

According to these evolutionary perspectives, one reason why so much variation exists in some personality traits is that certain traits may have evolved because they facilitated the enactment of slow and fast life history strategies in our ancestral past. If this is true, theoretically meaningful relations should exist between early attachment security and adult personality patterns, maybe even decades apart.

Stability, plasticity, and the Big 5

While personality psychologists often focus on the Big 5 traits, which include extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience, these traits are defined by two higher-order meta-traits known as stability and plasticity (DeYoung et al., 2002). This higher-level conceptualization of personality is important because it can clarify systematic ties between early attachment security and adult personality. The meta-trait known as stability reflects an individual's general ability and motivation to maintain stable relationships and emotional states known to foster good interpersonal relations. Stability is indexed by higher scores on agreeableness and conscientiousness and by lower scores on neuroticism. Individual differences in stability have been linked to the rostral serotonergic system, which regulates emotions and motivation (Meltzer, 1990). The meta-trait known as plasticity, in contrast, reflects an individual's degree of flexibility when engaging with the

world. Plasticity is indexed by higher scores on extraversion (i.e. experiencing more positive affect) and openness (i.e. remaining open to new experiences and exploration), which are associated with inhibition reduction moderated by the dopaminergic (DA) system (Gray et al., 1997).

Of the two meta-traits, stability should be related to early attachment security. Starting very early in life, securely attached children learn to adopt a more cooperative, communal, and long-term view of relating to other people. This broad interpersonal orientation, which is a key feature of a slow life history strategy (Griskevicius et al., 2013), should lead them to score higher in stability – to be more agreeable, more conscientious, and less neurotic – in adulthood. Conversely, insecurely attached children learn to adopt a more opportunistic, self-oriented, and short-term view of relating to others. People are perceived as largely instrumental in helping these individuals achieve their important goals, but relational ties are perceived as weaker, not lasting, and not worth too much investment. This broad interpersonal orientation, which is a key feature of a fast life history strategy (Griskevicius et al., 2013), should lead these individuals to score lower in stability – to be less agreeable, less conscientious, and more neurotic – in adulthood.

Early attachment and personality markers in children

Surprisingly little is known about the developmental experiences that contribute to specific personality traits in adulthood (John, Naumann, & Soto, 2008). One reason for this has been the strong focus on genetic contributions to adult personality (Bouchard, 2004; Bouchard & Loehlin, 2001), which at times has overshadowed environmental factors. Several personality scholars, however, have emphasized the contribution that genes, the environment, and their interaction are likely to make in shaping personality development into adulthood (e.g. Rothbart, Ahadi, & Evans, 2000; Shiner & Caspi, 2003). This is particularly true of early interpersonal experiences that lead children to become either secure or insecure in relation to their caregivers (Fraley & Shaver, 2008).

Early experiences with caregivers are the context in which future dispositions and abilities develop, ranging from social and interpersonal skills, to emotion regulation capacities, to cooperative versus competitive interpersonal tendencies (Sroufe et al., 2005; Weinfield, Sroufe, Egeland, & Carlson, 2008). The development of these dispositions and abilities in childhood should partially shape adult personality patterns. Research on early attachment security vs. insecurity offers indirect support for this premise. For example, early attachment security assessed in the Strange Situation predicts greater cooperation and more willingness to reciprocate with others in early and middle childhood, attributes that are associated with being more agreeable (Bohlin, Hagekull, & Rydell, 2000; Sroufe et al., 2005). Early attachment security also forecasts better delay of gratification abilities, higher executive (cognitive) capacities, and greater flexibility of attention (Belsky, Garduque, & Hrncir, 1984; Jacobsen, Huss, Fendrich, Kruesi, & Ziegenhain, 1997; Main, 2000), all of which correlate with higher conscientiousness. And early security is also associated with better emotion regulation abilities (e.g. Cassidy, 1994; Waters et al., 2010), which characterize individuals who score lower in neuroticism. All of these emerging abilities and attributes are likely early-life indicators of higher dispositional stability in adulthood. These findings, however, pertain only to children.

No longitudinal studies have examined relations between attachment security vs. insecurity assessed in the Strange Situation and personality traits measured in adulthood. The closest study is one by Hagekull and Bohlin (2003), who examined relations between children's Strange Situation scores and mother and teacher ratings of their personality between ages 8 and 9. Children who were secure early in life were rated as more sociable, more open to experience, and less neurotic in middle childhood. This study, however, was based on a relatively small sample ($N = 85$), and it focused on children at an age when personality patterns are still developing.

The current study

In the current study, we modeled data from the MLSRA (Sroufe et al., 2005), which has followed approximately 170 individuals from before they were born to the present. All individuals were the first-born children of mothers living below the poverty line at the time of their birth in 1975–1976. We investigated whether and how individuals' attachment security vs. insecurity, assessed at 12 and 18 months in the Strange Situation, prospectively predicted their Big 5 traits scores three decades later (at age 32). We also examined whether two sets of variables that might mediate the hypothesized link between early attachment and adult personality: (1) each individual's representations (i.e. memories and interpretations) of how they were treated by their parents (assessed by the Adult Attachment Interview (AAI) at ages 19 and 26), and (2) each individual's scores on internalizing and externalizing measures of psychopathology (assessed by well-validated self-report measures at ages 23 and 26). We sought to answer three questions representing knowledge gaps in the current literature. First, how is being securely vs. insecurely attached to one's primary caregiver early in life related to the Big 5 personality traits in adulthood? Second, how is early security vs. insecurity related to the meta-trait of stability? Third, do certain logical variables assessed in late adolescence and early adulthood mediate the link between early attachment and adult personality?

Based on both theory and the extant literature, we identified two potential mediators: (a) each individual's attachment representations of how s/he was treated in childhood by his/her parents, and (b) each individual's internalizing and externalizing symptoms. Representations of how one was treated in childhood were assessed by the AAI (Main, Goldwyn, & Hesse, 2003), an hour-long interview that asks respondents a series of questions about how they remember relating to and being treated by their parents between the ages of 5 and 12. The AAI is scored by trained raters for how coherently respondents discuss and reflect on how they were treated and raised by their parents (or other primary caregivers), with more coherent discourse indicating greater security and less coherent discourse indicating greater insecurity. Past research has revealed that being securely attached in the Strange Situation prospectively predicts having more secure representations of childhood on the AAI (see Hesse, 2016). Individuals classified as secure on the AAI also tend to score higher on the traits of conscientiousness and extraversion (Roisman et al., 2007). Thus, the hypothesized connection between early attachment security and the meta-trait of stability might be mediated through AAI security.

Children classified as insecure in the Strange Situation are also more likely to experience internalizing and/or externalizing problems in adolescence (DeKlyen & Greenberg, 2016). Moreover, some evidence indicates that internalizing and externalizing problems in

adolescence are associated with scoring higher on certain personality traits, such as neuroticism, conscientiousness, and agreeableness (Krueger & Markon, 2014; Markon, Krueger, & Watson, 2005). If so, the hypothesized link between early attachment security and the meta-trait of stability might be mediated through internalizing and/or externalizing problems in adolescence and early adulthood. Both of these mediation predictions, however, are speculative given the limited prior findings.

In summary, we derived one confirmatory hypothesis and two exploratory ones:

Confirmatory Hypothesis 1: Individuals who were securely attached early in life should score higher on the higher-order trait of stability in adulthood (at age 32), whereas those who were insecurely attached early in life should score lower on stability.

Exploratory Hypothesis 2a: The connection between early attachment security and personality stability might be mediated through AAI security, such that individuals who were securely attached early in life have more secure representations of their childhood in adolescence and early adulthood, which then predicts higher scores on stability.

Exploratory Hypothesis 2b: The connection between early attachment security and personality stability might be mediated through internalizing and/or externalizing symptoms, with individuals who were securely attached as children reporting fewer internalizing and/or externalizing symptoms in adolescence and early adulthood, which in turn predicts higher scores on stability.

Method

Participants

In 1975–1976, 267 mothers in their third trimester of pregnancy were recruited for the MLSRA (Sroufe et al., 2005) (M_{age} = 20.6 years, age range 12–34 years). All mothers were living below the poverty line and receiving free health care services from a public health clinic. The participants were first-born children from these mothers. At birth, 48% of the mothers were teenagers, 65% were single, and 42% had no high school education. The current analyses included participants with non-missing data for each predictor and complete personality data at age 32. Of the 164 participants for whom we obtained personality data at age 32, there were 12 had missing data on the relevant predictors. Thus, the current analyses are based on 152 participants (79 females and 73 males) who had complete data for all variables.

Measures

Strange situation

Attachment was assessed using the Ainsworth Strange Situation Procedure (SSP; Ainsworth & Wittig, 1969) when participants were 12 and 18 months old. The SSP is a 20-min laboratory procedure during which the infant is exposed to a series of stressful separations from and reunions with his or her primary caregiver. Certified raters classified each participant's attachment relationship with his/her primary caregiver at both 12 and 18 months. Classifications were coded based on how each participant (infant) responded to the separations and reunions with his or her mother. Rater agreement for attachment classification at 12 months was 89% and was 93% at 18 months (Egeland & Farber, 1984).

The stability of attachment security was assessed by summing the number of times each infant was classified as secure at the 12 and 18-month SSP assessments. Secure attachment was coded 1, and insecure attachment was coded 0 at both the 12 and 18-month assessments. Thus, individuals with a score of 2 were securely attached at both time-points ($N = 66$, 41%), those with a score of 1 were securely attached at one time-point ($N = 53$, 33%), and those with a score of 0 were insecurely attached at both time-points ($N = 42$, 26%). This aggregate variable[1] is a psychometrically sound measure of attachment security because it is less prone to measurement error.

Adult attachment representations

When participants were ages 19 and 26, their adult attachment representations were assessed by the AAI (Main et al., 2003). As part of this hour-long interview, respondents are asked a series of questions about how they remember relating to and being treated by their parents between the ages of 5 and 12. The AAI interviews were transcribed and then scored by certified raters for how coherently respondents discussed and reflected on how they had been treated and raised by their parents (or other primary caregivers). More coherent discourse is indicative of greater security, whereas less coherent discourse indicates greater insecurity (Main et al., 2003). Thus, participants' coherence scores (ICC = .77) on the age 19 and age 26 AAIs were averaged to create an index of adult attachment security.

Internalizing and externalizing symptoms

At ages 23 and 26, internalizing and externalizing symptoms were each assessed by the Young Adult Self-Report (YASR for ages 18–30; Achenbach, 1997). This standardized measure consists of 119 items screens for various emotional and behavioral problems in young adults. Participants rated how true each item was for them on a 3-point scale (0 = *not true*, 1 = *somewhat or sometimes true*, and 2 = *very true or often true*). The 119 items can be aggregated into eight subscales, which include anxious-depressed, somatic complaints, withdrawn, thought problems, attention problems, intrusive, aggressive behavior, and delinquent behavior. It is common to combine these scores into internalizing (the anxious-depressed and withdrawn subscales) and externalizing (the intrusive, aggressive behavior, and delinquent subscales) scales to assess psychopathology more broadly. All of the analyses conducted on the YASR used internalizing and externalizing scale scores.

Personality

At age 32, participants completed the Berkeley Personality Profile questionnaire (BPP; John, Donahue, & Kentle, 1991). Participants indicated their level of agreement with 35 statements on 5-point Likert-type scales (1 = disagree strongly; 5 = agree strongly). The BPP taps each Big Five trait with seven items. After reverse-scoring all relevant items, we computed mean scores for each trait: Extraversion ($M = 3.34$, SD = 0.85, $\alpha = .86$), Agreeableness ($M = 3.76$, SD = .66, $\alpha = .75$), Conscientiousness ($M = 3.61$, SD = .61, $\alpha = .68$), Neuroticism ($M = 2.66$, SD = .87, $\alpha = .84$), and Openness ($M = 3.55$, SD = .63, $\alpha = .65$). We then computed each participant's Stability and Plasticity scores. Stability reflects the shared variance between Agreeableness, Conscientiousness, and Neuroticism, whereas Plasticity reflects the shared variance between Extraversion and Openness. To compute Stability and Plasticity scores, we averaged the relevant Big Five scores for each meta-trait (Stability, $M = 3.57$, SD = .55, $\alpha = .77$;

Plasticity, $M = 3.44$, SD = .61, $\alpha = .81$). We conducted analyses on both the Big Five traits and the two meta-traits to test our hypotheses.

Covariates

We used a standard set of covariates in our analyses. These included two socioeconomic variables: mother's education at birth (i.e. her highest level of education) and the Duncan Socioeconomic Index (SEI; Duncan, 1961), which assesses each mother's occupational prestige and family income. We also included gender (coded 1 = female, −1 = male) and each participant's race, coded 1 = White/non-Hispanic and 0 = otherwise. All of these control variables were entered as main effects in the analyses reported below.

Results

Table 1 provides zero-order correlations for all of the variables used in our analyses. Consistent with the confirmatory hypotheses (Hypothesis 1), individuals who were rated as being more insecurely attached at 12 and 18 months scored lower on the meta-trait of Stability. Attachment security was also significantly correlated with each of the traits that constitute Stability: scoring lower on Agreeableness and Conscientiousness, and scoring higher on Neuroticism.

Our primary analyses were conducted in two parts. First, we conducted multiple regression analyses to test our confirmatory hypothesis – that early attachment security should predict the meta-trait Stability at age 32. Second, we conducted exploratory analyses in an attempt to identify potential mediator of the early security adult stability effect. In particular, we hypothesized that the effect of attachment security might be carried forward by AAI scores at ages 23 and 26 (exploratory Hypothesis 2a) or by psychopathology scores at ages 23 and 26 (exploratory Hypothesis 2b).

Confirmatory analyses

We tested our confirmatory hypothesis using multiple regression. For all analyses, we entered early attachment security and our covariates (gender, race, maternal education, and early occupational prestige) into the model as main effects. Then, we ran two analyses: one treating Stability as the dependent measure, and one treating Plasticity as the dependent measure. In addition, we ran a separate set of five multiple regression analyses treating each of the Big Five trait scores as dependent measures.

As shown in Table 2, early attachment security significantly predicted Stability, but not Plasticity, 30 years later. As depicted in Figure 1, greater attachment security predicted higher scores on the meta-trait of Stability, but it had no effect on Plasticity. Greater attachment security also significantly predicted scores on each of the three Big Five traits that constitute Stability (Agreeableness, Conscientiousness, and Neuroticism), but not those that make up Plasticity (Extraversion and Openness). To our knowledge, this is the first time attachment security measured in the first 18 months of life has been linked to personality traits in adulthood. This finding is important because it demonstrates how early interpersonal experiences play an important role in shaping not only later interpersonal functioning, but also personality stability, which reflects variation in interpersonal, motivational, and emotional regulation.

Table 1. Zero-order correlations among the variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Early security	–										
2. Agreeableness	.22**	–									
3. Conscientiousness	.18*	.33**	–								
4. Neuroticism	−.19*	−.40**	−.41**	–							
5. Extraversion	.08	.36**	.21**	−.30**	–						
6. Openness	−.05	.23**	.09	−.19*	.33**	–					
7. Stability	.26**	.73**	.72**	−.84**	.38**	.22**	–				
8. Plasticity	.03	.37**	.19*	−.31**	.87**	.75**	.38**	–			
9. Gender	.03	−.00	.14	.22**	.03	−.17*	−.07	−.06	–		
10. Maternal education	.19*	−.01	.07	−.14	−.01	.33**	.10	.17*	−.12	–	
11. Household income	.21*	.00	.00	−.00	−.02	−.02	.00	−.03	−.05	.32**	–

Note: $N = 152$ participants (79 females and 73 males).
* $p < .06$; ** $p < .01$

Table 2. Unstandardized and standardized effects of early attachment security on personality at age 32.

	Gender			Income			Maternal education			Early security			
	B (SE)	*β*	*p*	*B* (SE)	*β*	*p*	*B* (SE)	*β*	*p*	*B* (SE)	*β*	*p*	R^2
Stability	−.04 (.04)	−.07	.38	−.04 (.05)	−.07	.38	.03 (.05)	.06	.46	.18 (.06)	.26**	.002	.08
Agreeableness	−.01 (.05)	−.02	.81	−.02 (.06)	−.03	.70	−.03 (.06)	−.05	.57	.19 (.07)	.24**	.005	.05
Conscientiousness	.08 (.05)	.14	.09	−.03 (.05)	−.05	.59	.04 (.05)	.07	.41	.13 (.06)	.17*	.044	.05
Neuroticism	.19 (.07)	.22**	.007	.07 (.07)	.08	.31	−.09 (.07)	−.11	.20	−.21 (.09)	−.20*	.015	.10
Plasticity	−.03 (.05)	−.05	.57	−.05 (.05)	−.09	.29	.11 (.05)	.19*	.033	.01 (.06)	.01	.87	.04
Extraversion	.02 (.07)	.03	.74	−.03 (.07)	−.04	.69	−.01 (.07)	−.01	.94	.09 (.09)	.09	.30	.01
Openness	−.08 (.05)	−.13	.10	−.08 (.05)	−.13	.12	.23 (.05)	.37**	>.001	−.07 (.06)	−.09	.24	.15

Note: $N = 152$ participants (79 females and 73 males).
* $p < .05$; ** $p < .01$

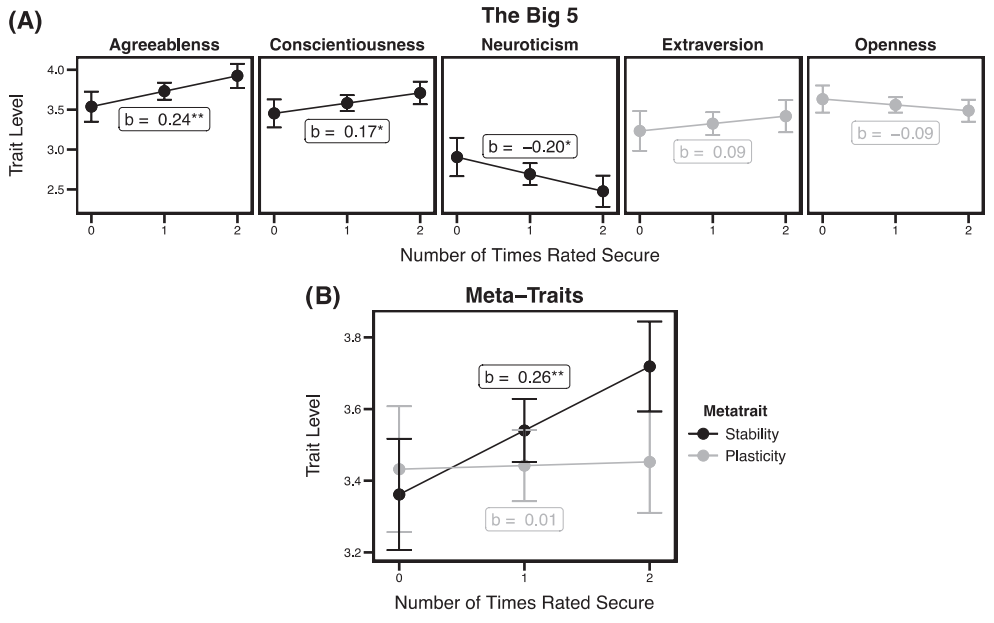


Figure 1. Early attachment security and adult personality. (A) Predicted Big 5 trait levels for each level of attachment security in childhood. Traits that define Stability are plotted in black, whereas traits plotted in gray underlie plasticity. (B) Predicted meta-trait values for each level of attachment security in childhood. Notes: For both plots, unstandardized betas reflect the slope of attachment security. All error bars reflect standard errors. $^{**}p < .01$, $^{*}p < .05$.

Exploratory analyses

In an attempt to identify what might mediate this early attachment security adult stability effect, we conducted two sets of exploratory mediation analyses. The first set of analyses, which tested Hypothesis 2a, examined adult representations of early experience (measured by the AAI) as a possible mediator. We reasoned that the effect of early attachment security may, in part, be carried forward by representations (i.e. memories and interpretations) of how an individual was treated by his/her primary caregiver early in life. If such representations are associated with early attachment security, they may partially account for the relation between early attachment security and adult Stability.

Using standard mediation analysis techniques (Lavaan *R*-package, Rosseel, 2012), we tested the indirect path from early attachment security to adult attachment scores (assessed by AAI when participants were ages 23 and 26, which were then averaged) to adult Stability scores. There was no significant indirect effect ($\beta = .00$, 95% CI = −.03, .02), which did not support our initial exploratory hypothesis (hypothesis 2a). Nonetheless, the direct path from early attachment security to adult stability remained significant when the mediator (AAI scores) was controlled ($\beta = .26$, $p = .002$, 95% CI = .09, .42). However, the path from early attachment security to age 23 and 26 AAI scores was nonsignificant ($\beta = .12$, $p = .16$, 95% CI = −.05, .30), as was the path from AAI scores to personality stability (β =−.02, $p = .78$, 95% CI = −.18, .14), indicating that AAI scores were unrelated to both early attachment security and personality Stability. In short, our mediation analysis revealed that AAI scores did not mediate the link between early attachment security and personality stability. Despite this

lack of mediation, early attachment security remained a significant predictor of adult personality.

The second set of exploratory analyses, which tested Hypothesis 2b, examined whether internalizing or externalizing symptoms mediated the early security adult stability effect. Because early attachment insecurity is associated with the development of these forms of psychopathology (DeKlyen & Greenberg, 2016), which in turn could result in scoring lower on stability in adulthood, we reasoned that the effect of early attachment security on adult stability might be carried forward by these forms of psychopathology. In addition, previous research has found associations between variation in personality traits and individual differences in psychopathology (Krueger & Markon, 2014; Markon et al., 2005).

We tested Hypothesis 2b by examining the indirect effect of attachment security on adult stability through internalizing and externalizing scores at ages 23 and 26, both of which were averaged. Once again, the direct effect of early attachment security remained significant (for the model with internalizing as the mediator, $\beta = .19$, $p = .004$, 95% CI = .06, .33; for the model with externalizing as the mediator, $\beta = .22$, $p = .003$, 95% CI = .07, .37). However, we found null effects for the indirect path (internalizing, $\beta = .06$, $p = .24$, 95% CI = –.04, .16; externalizing, $\beta = .04$, $p = .33$, 95% CI = –.04, .10). However, the paths from both internalizing and externalizing to Stability were significant, indicating that psychopathology at ages 23 and 26 predicted Stability at age 32. Specifically, both more internalizing and more externalizing symptoms predicted less Stability (internalizing, $\beta = -.54$, $p < .001$, 95% CI = –.66, –.41; externalizing, $\beta = -.40$, $p < .001$, 95% CI = –.54, –.25). Importantly, gender did not moderate any of these mediation pathways.

Lastly, we ran a mediation analysis involving all three mediation paths. We did this to control for each mediator simultaneously and to ensure there were no suppression effects among the mediators. Again, the direct effect of early attachment security on Stability was significant ($\beta = .20$, $p = .005$, 95% CI = .06, .34), consistent with the findings of all previous models. Likewise, all indirect paths were nonsignificant (AAI, $\beta = .00$, $p = .45$, 95% CI = –.03, .01; internalizing, $\beta = .06$, $p = .24$, 95% CI = –.04, .15; externalizing, $\beta = .00$, $p = .58$, 95% CI = –.02, .03). Thus, even when controlling for each of the proposed mediators, AAI scores and internalizing/externalizing scores did not mediate the connection between early attachment security and adult Stability.

In sum, the effect of early attachment security on adulthood Stability is not mediated by AAI scores, internalizing symptoms, no externalizing symptoms. In each of these mediation models, however, the direct effect of attachment security remained significant. That is, when controlling for the impact of each mediator, early attachment security still significantly predicted adult Stability scores, providing further evidence for Hypothesis 1.

Discussion

Informed by attachment theory and life history theory, this research examined whether and how key early interpersonal experiences prospectively predict personality patterns in adulthood. Specifically, we examined how attachment security vs. insecurity with one's primary caregiver (assessed during the first 18 months of life) predicted scores on the Big 5 personality traits at age 32, focusing on the traits that constitute the meta-trait known as stability. Because early attachment security status is an indicator of the life history trajectory that an individual is likely to adopt later in life (Simpson & Belsky, 2016), it should be meaningfully

associated with personality traits that typically facilitate the enactment of slow or fast life history strategies. We focused on the meta-trait of stability because being more vs. less stable should map onto specific life history behavioral profiles, such as having long-term vs. short-term personal and relational goals, preferring the quality of romantic partners vs. the quantity, etc. (see Nettle, 2010).

Based on this logic, we derived one confirmatory hypothesis – that individuals who were securely attached early in life should score higher on stability in adulthood, whereas those who were insecurely attached early in life should score lower on stability as adults. To complement this hypothesis, we also examined two exploratory hypotheses that focused on two possible mediation pathways through which early attachment security might forecast greater stability in adulthood. The first pathway involved adult attachment representations of childhood, and the second one involved psychopathology symptoms indexed by internalizing and externalizing behaviors.

We found support for the confirmatory hypothesis, both at the Big 5 trait level and at the meta-trait level. As expected, early attachment security, which was assessed twice in the Strange Situation in first 18 months of life, independently predicted each of the Big 5 traits that constitute stability (agreeableness, conscientiousness, and neuroticism) at age 32, but not those that underlie plasticity (extraversion and openness). Moreover, attachment security significantly predicted variation in stability at age 32. Specifically, children rated as more secure early in life scored higher on the meta-trait of stability in adulthood, whereas those rated as more insecure scored lower on stability as adults. These effects remained significant when we statistically controlled for a set of early-life socio-economic variables, offering further evidence that the interpersonal environments that children experience early in life exert a unique impact on personality development.

Despite demonstrating the predicted link between early attachment security and adult personality stability, the exploratory analyses did not reveal any significant mediators of this association. Although early attachment security did predict adult attachment representations assessed at ages 23 and 26, AAI representations did not significantly predict adult stability scores. Similarly, neither internalizing nor externalizing psychopathology symptoms explained how early attachment security was related to stability in adulthood.

We did, however, find that the direct path between early attachment security and adult stability scores remained significant when each of the mediators were statistically controlled. This could indicate a "programming" effect of early experience. For example, even though individuals may encounter other experiences later in development, early attachment security may remain predictive of later personality patterns through its impact on biological systems that are sensitive to input from the early rearing environment. This notion is consistent with studies in the animal literature that have examined the impact of early maternal grooming on the development of rat pups (e.g. Meaney, 2001). In these seminal studies, maternal grooming is experimentally manipulated, with one group of rats being randomly assigned to receive poor care and the other to receive better care from the beginning of life. As rat pups grow up, the quality of care they received strongly affects the level of stress reactivity and exploration they display as adults (Meaney, 2001). Rats who received higher-quality early care are less stress reactive and explore their environments significantly more than do rats who received poor early care.

In the current study, we find that the quality of the relationship with one's mother, as indexed by the child's attachment security or insecurity in the Strange Situation,

longitudinally predicts his or her degree of stability in adulthood. The meta-trait of stability encompasses individual differences in the stability of psychosocial functioning (DeYoung, 2006). This is because low neuroticism is conceptualized as emotional stability, high conscientiousness reflects motivational stability and the ability to create and work toward long-term goals, and agreeableness is conceptualized as the tendency to maintain stable relationships (DeYoung, 2006). Together, the combination of these traits underpins general stability across different domains (e.g. relationships, goal orientations, stress proneness). Furthermore, stability is believed to reflect the operation of the serotonergic system, which regulates emotions and motivation (Meltzer, 1990). This system could, in turn, be calibrated by early experience programming. In light of both animal models and the known biological substrates of stability, it makes sense that the quality of early interpersonal experiences could play a unique role in the formation of certain personality traits in humans.

Although less stability is often viewed negatively given the negative impact it has on mental and physical health (Krueger & Markon, 2014; Markon et al., 2005), stability and instability can both be adaptive and may play important functional roles within certain environments (Nettle, 2010; Simpson et al., 2017). For example, in safe environments populated with trustworthy and cooperative people, higher levels of stability could help individuals capitalize on the long-term benefits of social reciprocity and pursue their long-term plans and goals more successfully. In safe and cooperative environments, the combination of high conscientiousness and high agreeableness is likely to pay off across time, and individuals do not need to be neurotic since threat levels are low.

However, in more challenging environments populated with less trustworthy and uncooperative people, higher levels of instability should be more adaptive. Greater instability in these environments should facilitate an opportunistic strategy because these individuals can use their impulsivity and short-term orientation to remain present-focused, which would be particularly adaptive when what is rewarding or punishing in the environment changes rapidly. In these more difficult and unpredictable environments, the combination of low conscientiousness and low agreeableness should keep individuals present-focused on their short-term goals, and individuals may also benefit from being more neurotic and vigilant in response to the higher threat levels.

This study has some limitations. For example, we were unable to document mediators of the relation between early attachment security and adult personality stability, despite examining two sets of theoretically compelling potential mediators (adult attachment representations and internalizing and externalizing psychopathology symptoms). In addition, the Big Five measures were collected only at age 32. Big 5 trait scores were not collected on MLSRA participants at early ages. If they had been, we could have determined when during development the early secure attachment greater stability effect starts to emerge. We also cannot rule out possible genetic effects that could have impacted either children's early attachment security status or the caregiving styles of their parents. Although prior research has found relatively small heritability coefficients for Strange Situation attachment classifications (O'Connor & Croft, 2001) and fairly substantial shared environment coefficients (Bokhorst et al., 2003), genetic factors could still impact whether a child is classified as secure vs. insecure or how a child was treated early in life.

In conclusion, while recognizing that all of the Big 5 traits are moderately heritable (Bouchard, 2004), the current findings suggest that examining the impact of certain early environmental factors can extend our understanding how and why so much variability exists

on certain personality traits in adulthood. The current study offers the first prospective evidence that attachment security early in life is reliably and meaningfully related to the meta-trait of stability across a 30-year span of time. Attachment theory and life history theory can both contribute to our understanding of personality development because they articulate how and why certain individual differences in adulthood might have been shaped by the early environments to which individuals were exposed.

Note

1. Usually, only about 10–15% of children are classified as anxious-resistant (Fearon & Belsky, 2016). Thus, developmental psychologists usually compare the secure group with an aggregated insecure group (e.g. grouping together the two types of insecurity into a single group) in order to maximize sample size and improve statistical power.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Ethan S. Young http://orcid.org/0000-0002-8232-0184

References

Achenbach, T. M. (1997). *Manual for the young adult self-report and young adult behavior checklist*. Burlington: Department of Psychiatry, University of Vermont.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Lawrence Erlbaum.

Ainsworth, M. D. S., & Wittig, B. A. (1969) Attachment and exploratory behavior of one-year-olds in a strange situation. In B. M. Foss (Ed.), *Determinants of infant behavior* (vol. 4, pp. 49–67). London: Methuen.

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2016). Attachment, parenting, and genetics. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 155–179). New York, NY: Guilford Press.

Belsky, J. (1997). Attachment, mating, and parenting: An evolutionary interpretation. *Human Nature, 8*, 361–381.

Belsky, J., Garduque, L., & Hrncir, E. (1984). Assessing performance, competence, and executive capacity in infant play: Relations to home environment and security of attachment. *Developmental Psychology, 20*, 406–417.

Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62*, 647–670.

Bohlin, G., Hagekull, B., & Rydell, A. M. (2000). Attachment and social functioning: A longitudinal study from infancy to middle childhood. *Social Development, 9*, 24–39.

Bokhorst, C. L., Bakermans-kranenburg, M. J., Fonagy, P., & Schuengel, C. (2003). The importance of shared environments in mother-infant attachment security: A behavioral genetic study. *Child Development, 74*, 1769–1782.

Bouchard, T. J. (2004). Genetic influence on human psychological traits: A survey. *Current Directions in Psychological Science, 13*, 148–151.

Bouchard, T. J., & Loehlin, J. C. (2001). Genes, evolution, and personality. *Behavior Genetics, 31*, 243–273.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York, NY: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation*. New York, NY: Basic Books.

Bowlby, J. (1979). *The making and breaking of affectional bonds*. London: Tavistock.
Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss, sadness and depression*. New York, NY: Basic Books.
Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monographs of the Society for Research in Child Development, 59*, 228–249.
DeKlyen, M., & Greenberg, M. T. (2016). Attachment and psychopathology in childhood. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed.) (pp. 639–666). New York, NY: Guilford Press.
DeYoung, C. G. (2006). Higher-order factors of the big five in a multi-informant sample. *Journal of Personality and Social Psychology, 91*, 1138–1151.
DeYoung, C. G., Peterson, J. B., & Higgins, D. M. (2002). Higher-order factors of the big five predict conformity: Are there neuroses of health? *Personality and Individual Differences, 33*, 533–552.
Duncan, O. (1961). A socioeconomic index for all occupations. In A. J. Reiss Jr. (Ed.), *Occupations and social status* (pp. 109–138). New York, NY: Free Press.
Egeland, B., & Farber, E. A. (1984). Infant-mother attachment: Factors related to its development and changes over time. *Child Development, 55*, 753–771.
Fearon, P. R., & Belsky, J. (2016). Precursors of attachment security. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment. Theory, research, and clinical applications* (3rd ed., pp. 291–313). New York, NY: Guilford Press.
Fraley, R. C., & Brumbaugh, C. C. (2004). A dynamical systems approach to conceptualizing and studying stability and change in attachment security. In S. W. Rholes, & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 86–132). New York, NY: Guilford Press.
Fraley, R. C., & Shaver, P. R. (2008). Attachment theory and its place in contemporary personality research. In O. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 518–541). New York, NY: Guilford Press.
Gray, J. A., Moran, P. M., Grigoryan, G., Peters, S. L., Young, A. M. J., & Joseph, M. H. (1997). Latent inhibition: The nucleus accumbens connection revisited. *Behavioural Brain Research, 88*, 27–34.
Griskevicius, V., Ackerman, J. M., Cantú, S. M., Delton, A. W., Robertson, T. E., Simpson, J. A., … Tybur, J.M. (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environments. *Psychological Science, 24*, 197–205.
Hagekull, B., & Bohlin, G. (2003). Early temperament and attachment as predictors of the five factor model of personality. *Attachment and Human Development, 5*, 2–18.
Hesse, E. (2016). The adult attachment interview: Protocol, method of analysis, and selected empirical studies: 1985–2015. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment. Theory, research, and clinical applications* (3rd ed.) (pp. 553–597). New York, NY: Guilford Press.
van IJzendoorn, M. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117*, 387–403.
Jacobsen, T., Huss, M., Fendrich, M., Kruesi, M. J., & Ziegenhain, U. (1997). Children's ability to delay gratification: Longitudinal relations to mother—child attachment. *The Journal of Genetic Psychology, 158*, 411–426.
John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The big five inventory: Versions 4a and 54 [Technical Report]*. Berkeley, CA: University of California.
John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative big five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114–158). New York, NY: Guilford Press.
Krueger, R. F., & Markon, K. E. (2014). The role of the DSM-5 personality trait model in moving toward a quantitative and empirically based approach to classifying personality and psychopathology. *Annual Review of Clinical Psychology, 10*, 477–501.
Main, M. (1981). Avoidance in the service of attachment: A working paper. In K. Immelmann, G. Barlow, L. Petrinovich, & M. Main (Eds.), *Behavioral development: The bielefeld interdisciplinary project* (pp. 651–693). New York, NY: Cambridge University Press.
Main, M. (2000). The organized categories of infant, child, and adult attachment: Flexible vs. inflexible attention under attachment-related stress. *Journal of the American Psychoanalytic Association, 48*, 1055–1096.

Main, M., Goldwyn, R., & Hesse, E. (2003). *Adult attachment scoring and classification systems.* Berkeley,CA: Department of Psychology, University of California. Unpublished manuscript.
Markon, K. E., Krueger, R. F., & Watson, D. (2005). Delineating the structure of normal and abnormal personality: An integrative hierarchical approach. *Journal of Personality and Social Psychology, 88*, 139–157.
Marvin, R. S., Britner, P. A. & Russell, B. S. (2016). Normative development: The ontogeny of attachment in childhood. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment. Theory, research, and clinical applications* (3rd ed., pp. 273–290). New York, NY: Guilford Press.
Meaney, M. J. (2001). Maternal care, gene expression, and the transmission of individual differences in stress reactivity across generations. *Annual Review of Neuroscience, 24*, 1161–1192.
Meltzer, H. Y. (1990). Role of serotonin in depression. *Annals of the New York Academy of Sciences, 600*, 486–499.
Nettle, D. (2010). Dying young and living fast: Variation in life history across English neighborhoods. *Behavioral Ecology, 21*, 387–395.
O'Connor, T. G., & Croft, C. M. (2001). A twin study of attachment in preschool children. *Child Development, 72*, 1501–1511.
Roisman, G. I., Holland, A., Fortuna, K., Fraley, R. C., Clausell, E., & Clarke, A. (2007). The adult attachment interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology, 92*, 678–697.
Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*, 1–36. Retrieved from https://www.jstatsoft.org/v48/i02/
Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78*, 122–135.
Shiner, R., & Caspi, A. (2003). Personality differences in childhood and adolescence: Measurement, development, and consequences. *Journal of Child Psychology and Psychiatry, 44*, 2–32.
Simpson, J. A., & Belsky, J. (2016). Attachment theory within a modern evolutionary framework. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 91–116). New York, NY: Guilford Press.
Simpson, J. A., Collins, W. A., Tran, S., & Haydon, K. C. (2007). Attachment and the experience and expression of emotions in romantic relationships: A developmental perspective. *Journal of Personality and Social Psychology, 92*, 355–367.
Simpson, J. A., Griskevicius, V., & Kim, J. S. (2011). Evolution, life history theory, and personality. In L. M. Horowitz, & S. Strack (Eds.), *Handbook of interpersonal psychology: Theory, research, assessment, and therapeutic interventions* (pp. 75–89). New York, NY: Wiley.
Simpson, J. A., Griskevicius, V., Szepsenwol, O., & Young, E. S. (2017). An evolutionary life history perspective on personality and mating strategies. In A. T. Church (Ed.), *Evolutionary, ecological, and cultural contexts of personality*. New York, NY: Praeger/Greenwood.
Simpson, J. A., & Rholes, W. S. (2012). Adult attachment orientations, stress, and romantic relationships. In P. Devine, & A. Plant (Eds.), *Advances in experimental social psychology*, Vol. 45 (pp. 279–328). Burlington, MA: Academic Press.
Sroufe, L. A., Egeland, B., Carlson, E., & Collins, W. A. (2005). *The development of the person*. New York, NY: Guilford Press.
Waters, S. F., Virmani, E. A., Thompson, R. A., Meyer, S., Raikes, H. A., & Jochem, R. (2010). Emotion regulation and attachment: Unpacking two constructs and their association. *Journal of Psychopathology and Behavioral Assessment, 32*, 37–47.
Weinfield, N. S., Sroufe, A. L., Egeland, B., & Carlson, E. (2008). Individual differences in infant-caregiver attachment: Conceptual and empirical aspects of security. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 637–665). New York, NY: Guilford Press.