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Attachment theory (Bowlby, 1973, 1980, 1969/1982) suggests that early interpersonal experiences lay the foundation for the ways people think, feel, and behave in close relationships throughout life. The present study examined this fundamental assumption, analyzing longitudinal data collected from 705 participants and their families over 3 decades, from the time participants were infants until they were approximately 30 years old ($M_{age} = 28.6$, $SD = 1.2$; 78.7% White, non-Hispanic, 53.6% female, 46.4% male). We examined the associations between early levels and growth (or changes) in the quality of people's close relationships during childhood—including with their parents, friends, peers, and romantic partners—and their attachment orientations in adulthood. The findings suggest that early experiences with caregivers play a foundational and enduring role in people's attachment-related functioning: Early levels of mother–child relationship quality predicted individual differences in *general* attachment anxiety and avoidance in adulthood, as well as adults' *relationship-specific* attachment orientations in each of their close relationships, including with their mothers, fathers, romantic partners, and best friends (median $R^2 = 3\%$ for attachment anxiety and avoidance across relationship domains). Early levels and growth in the quality of people's friendships during childhood also predicted general attachment orientations in adulthood ($R^2_{attachment\ anxiety} = 2\%$; $R^2_{avoidance} = 9\%$) and played a particularly important role in guiding the ways adults tended to think, feel, and behave in their friendships and romantic relationships ($R^2_{attachment\ anxiety} = 4\%$; $R^2_{avoidance} = 10\%–11\%$).

Keywords: attachment, early experiences, close relationships, childhood, adulthood

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A central assumption of attachment theory is that adults' attachment orientations—the characteristic ways in which adults think, feel, and behave toward close others—are reflections of their interpersonal histories (Mikulincer & Shaver, 2016; Shaver & Hazan, 1987). According to attachment theory (Bowlby, 1973, 1980, 1969/1982), people develop *internal working models* based on their early experiences with caregivers that guide their expectations and beliefs in close relationships. Children who experience

warm and responsive caregiving tend to develop *secure* working models, believing, for instance, that they can trust others to be available and responsive when needed. In contrast, children who have a history of interactions with caregivers who are unresponsive to their needs or inconsistent in their responses tend to develop *insecure* working models of attachment: They may feel uncomfortable being close to others and depending on them for support, reflecting *attachment avoidance*, or they might frequently worry that close others will reject or abandon them, demonstrating *attachment anxiety*. Attachment theorists believe that these early representations play an important role in guiding how people think, feel, and behave toward close others throughout life, because they are carried forward as an initial "prototype" for what people can expect in later relationships (Bowlby, 1973; Fraley, 2002).

Nonetheless, internal working models are not set in stone. Rather, as people continue to interact with their caregivers and accumulate new experiences with peers and romantic partners throughout childhood and adolescence, they revise their working models accordingly (Booth-LaForce et al., 2014; Sroufe et al., 1990, 2005; see Simpson et al., 2015, for a review). In addition, people construct new working models that reflect their unique experiences within specific relationships and domains (see Figure 1). Attachment scholars propose that, prior to reaching adulthood, people develop a *general* attachment working model, which guides the characteristic ways in which they relate to close others in general (i.e., their *general attachment orientations*), and a collection of more specific working models that guide the ways they relate to important, close others, including their mothers, fathers, romantic partners, and best friends (i.e., their *relationship-specific attachment orientations*; N. L. Collins & Read, 1994; Fraley et al., 2011; Overall et al., 2003).

Research has found that the correlations among adults' attachment orientations in different, specific relationships tend to be small-to-moderate in size, averaging around .20 (Fraley & Dugan, 2021; Klohnen et al., 2005). In other words, whereas people who are more secure in one relationship tend to be somewhat more secure in other relationships, there is also considerable heterogeneity in how adults feel and behave toward specific, close others, such as their parents and romantic partners. This raises a number of questions about how early experiences within different domains (e.g., early maternal sensitivity, childhood friendship quality, adolescents' romantic relationship quality) might contribute to these differences in adults'

attachment orientations across their close relationships. At the same time, particular early experiences may play a *broader* role in shaping adults' attachment security, contributing to the small, yet consistent associations found among adults' relationship-specific attachment orientations.

Although these questions are central to attachment theory, few prospective longitudinal studies have examined the links between early interpersonal experiences and adult attachment orientations (see Fraley & Roisman, 2019, for a review). Previous studies have also been limited in scope, typically involving one assessment of parental caregiving before age 18 years and focusing on either *general* attachment orientations or *general romantic* attachment orientations (i.e., toward romantic partners broadly defined) in adulthood. For example, Salo et al. (2011; $N = 1,070$) found that greater (mother-reported) maternal nurturance during childhood (~age 10, on average) predicted lower levels of general attachment avoidance, though not attachment anxiety, in adulthood. Similarly, Chopik et al. (2014; $N = 103$) found that people who experienced greater maternal nurturance at age 3 demonstrated a greater decline in general attachment avoidance from age 14 to age 23. Other research by Dinero et al. (2008, $N = 267$; see also Dinero et al., 2022) showed that adolescents (ages 15–16) who experienced more positive interactions with their parents reported lower levels of attachment anxiety and avoidance, on average, in adulthood.

In sum, our understanding of the interpersonal origins of adult attachment orientations remains limited in several important ways. Considering the variation in adults' attachment orientations across different relationships, we cannot predict how early experiences might contribute to adults' attachment security in specific, close relationships based on research that has focused primarily on general attachment orientations.[1] Moreover, contemporary attachment theory maintains that attachment orientations are shaped by a collection of experiences with *multiple* close others that *continue to evolve* across one's interpersonal history (Booth-LaForce et al., 2014; Simpson et al., 2015; Sroufe et al., 1990, 2005). Capturing these kinds of developmental processes requires multiwave, longitudinal data on a wide variety of early interpersonal experiences, not just experiences with parents.

In one of the most comprehensive reports to date, Fraley et al. (2013; see also Steele et al., 2014) examined some of the data to be analyzed in the present research, which derive from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (SECCYD), a prospective, longitudinal investigation of participants and their families assessed across multiple waves during childhood and adolescence. Specifically, they examined the associations between early levels and *growth* in four interpersonal variables—maternal sensitivity, maternal depression, friendship quality, and social competence—and participants' general attachment orientations and general romantic attachment

Figure 1
Hierarchy of Adult Attachment Orientations

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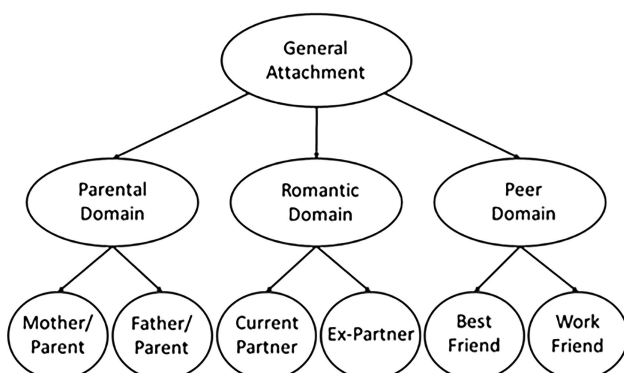
[1] Only one study, conducted by Zayas et al. (2011), has examined the prospective associations between quality of early caregiving and adults' relationship-specific attachment styles. Their results suggested that maternal sensitivity and controlling behavior at 18 months predicted adults' partner-specific attachment anxiety and avoidance ($N = 15$, $rs = |.52–.75|$) and best friend-specific avoidance at age 20 years ($N = 35$, $rs = |.37–.49|$), but not mother-specific, father-specific, or general attachment styles. However, due to the small size of the study sample, these associations could not be estimated with precision, and it is unclear what implications they have for theory and research.

orientations at age 18 years. They found that growth (specifically, increases) in maternal sensitivity across childhood was associated with lower attachment avoidance at age 18 years, and increases in maternal depression across childhood were associated with higher attachment anxiety at age 18 years. Fraley et al. also found that early levels and growth in friendship quality and social competence were negatively associated with adult attachment insecurity, providing initial evidence for the importance of assessing early experiences beyond the parental domain.

Despite the strengths of this work, the present research aims to make several critical advances beyond the analyses presented by Fraley et al. (2013). First, in Fraley et al.'s work, the most recent National Institute of Child Health and Human Development SECCYD assessment collected was when participants were 18 years old, around the spring or summer of their senior year of high school. As such, participants were at the cusp of emerging adulthood, and the vast majority were still living in the same caregiving environments in which their early experiences had been assessed. Research suggests that attachment relationships undergo important shifts when young people become more autonomous and begin to take on adult social roles; young adults must renegotiate their relationships with parents and build connections with new attachment figures (e.g., romantic partners, best friends) who typically become central to their attachment-related experiences during adulthood (Caron et al., 2012; Fraley & Davis, 1997). Recently, data were collected from the SECCYD participants about a decade later ($M_{age} = 28.6$; $SD = 1.2$), allowing us to examine the prospective associations between early experiences and later attachment security when people have fully entered adulthood. Therefore, the present study can offer a stronger test of the enduring nature of these links.

Second, in the most recent wave of the SECCYD (i.e., rebranded as the Study of Health in Early and Adult Life [SHINE]), participants' general *and* relationship-specific attachment orientations were assessed, allowing us the opportunity to capture attachment-related feelings and behaviors across relationships and domains. Third, because data from the SECCYD were previously limited to more general attachment orientations, Fraley et al. (2013) focused on a few early experiences that are theorized to have a broader impact on attachment security. In the present study, we will examine early levels and growth in 16 interpersonal experiences within three relationship domains (i.e., parental, peer, and romantic). To the best of our knowledge, this study is the first to examine the prospective associations between early experiences within multiple relationship domains and adults' general and relationship-specific attachment orientations.

Relationship and Domain Congruency

Because there has been little longitudinal research on how a variety of early experiences might be reflected in the ways adults relate to important people in their lives, it is not easy to derive predictions in an unambiguous manner. Nonetheless, there are a few broader themes in attachment theory and research that might guide our expectations. As described earlier, attachment researchers maintain that people develop *distinct* working models of their relationships with *specific*, close others, and these working models are theorized to be "tolerably accurate reflections of the experiences those individuals have actually had" (Bowlby, 1973, p. 235) within each relationship. As such, we might expect that early experiences

within specific relationships share the strongest prospective associations with adults' *relationship-congruent* attachment orientations. For example, we might expect that childhood experiences with mothers will be most strongly reflected in adults' mother-specific attachment orientations—how they tend to think, feel, and behave toward their mothers later in life (Fraley et al., 2011; Haydon et al., 2011; Sibley & Overall, 2008). Cross-sectional studies of adults have provided some initial support for this possibility, finding stronger associations between relationship-congruent attachment orientations and outcomes (e.g., father-specific attachment orientations → conflict with fathers), compared to relationship-incongruent attachment orientations and outcomes (e.g., Caron et al., 2012; Fraley et al., 2011; Klohnen et al., 2005). However, whereas this possibility pertains to mothers and fathers, adults' current best friends are typically *not the same individuals* as their childhood friends, and most people do not remain in a romantic relationship with their high school sweethearts.

An extension of this idea is that experiences within a domain—even when the specific others change—may be stronger predictors of adults' *domain-congruent* attachment orientations (e.g., experiences with ex-partners → partner-specific attachment orientations), compared to their attachment security in other domains (see Figure 1). The connectionist framework of attachment posits that internal working models can be thought of as networks of representational units containing both excitatory and inhibitory connections (Fraley, 2007). Attachment figures and experiences from the same relationship domain share a greater number of features and, therefore, tend to become simultaneously activated when people encounter relevant interpersonal experiences. For example, a fight with one's current partner can activate memories of similar experiences with ex-partners, a process that not only guides people's expectations in those moments but also strengthens the cognitive associations between attachment-related experiences from the same domain across time. Research has provided support for this perspective, finding, for instance, that the ways in which people view new romantic partners are more strongly predicted by their attachment to ex-partners than their attachment to their parents (Brumbaugh & Fraley, 2006; Brumbaugh & Fraley, 2007).

Offering further support for domain congruency, longitudinal research has found that changes in mother- and father-specific attachment orientations show greater coordination with one another than with changes in partner- or best friend-specific attachment orientations (Dugan et al., 2022). These findings, which demonstrate that attachment working models within the same domain "move" together over time, suggest that they may be molded simultaneously by the same experiences.

The Nature of Attachment Bonds: Vertical Versus Horizontal Relationships

Relationships with best friends and romantic partners also share several features worth highlighting, even though they are not typically grouped within the same relationship domain (see Figure 1). Attachment scholars propose that a critical distinction between parent–child bonds and relationships with friends and partners is the level of reciprocity in these relationships. Parents serve as the primary providers for children's attachment-related needs (Brumariu & Kerns, 2014), but parents normatively do not rely on their young children to fulfill their own needs, creating a *vertical* relationship

dynamic (i.e., attachment-related resources flow from parent to child, at least in the early life course). On the other hand, both friendships and romantic relationships are *horizontal* attachment relationships, in which each person provides for the other's attachment-related needs (Hazan & Zeifman, 1999). Relatedly, early experiences with friends and partners provide young people with important opportunities to begin practicing the skills and dynamics that characterize horizontal attachment relationships, including mutual disclosure, support provision, and joint conflict resolution. Early experiences with friends and partners might, therefore, play a larger role in guiding the ways that adults think, feel, and behave in their romantic relationships and friendships, respectively (i.e., cross-domain associations), both of which are founded on similar, horizontal dynamics, and a comparatively lesser role in adults' parent-specific attachment orientations, which begin developing earlier in life within the context of vertical, attachment-caregiving relationships.

Primacy Versus Recency of Attachment-Related Experiences

Certain early experiences might play a *broader* role in adults' attachment orientations, contributing to their security *across relationship domains*. A common theme in attachment theory and research is that early experiences with primary caregivers provide a foundation for subsequent social and emotional development (Sroufe et al., 2005). As described earlier, previous studies have found that quality of early caregiving predicts adults' general attachment orientations and general romantic attachment orientations, consistent with broader, enduring effects (Chopik et al., 2014; Dinero et al., 2008; Salo et al., 2011). Research suggests that most people view their mothers as their primary attachment figure throughout childhood, or the first person to whom they turn for their attachment-related needs (Brumariu & Kerns, 2014).[2] Therefore, early experiences *with mothers* may play a broader role in people's attachment security (compared to experiences with nonmothers), contributing to their attachment orientations across domains in adulthood.

However, research also suggests that people begin to turn to their best friends and romantic partners for most of their attachment-related needs during adolescence. Specifically, adolescents tend to demonstrate the greatest proximity-seeking to their romantic partners or best friends (e.g., spend the most time with them, call them first with good or bad news) and turn to their partners and friends as "safe havens" in times of distress (Fraley & Davis, 1997; Markiewicz et al., 2006). This trend continues into adulthood, such that most adults view their romantic partners as their primary attachment figures (Heffernan et al., 2012; Julal et al., 2017), or if they are not partnered, their best friends. This presents an interesting question of *primacy* versus *recency*. On the one hand, individuals' experiences with their *first* attachment figures might play a larger role in their attachment orientations across domains, being carried forward as a core "template" of what to expect in close relationships. On the other hand, adults' experiences in more *recently* developed, key attachment relationships (e.g., "first love" during adolescence) may be more salient and play a larger role in guiding their expectations and beliefs across relationships. Identifying the early experiences that hold the greatest weight in how adults think, feel, and behave in close relationships is not only important for addressing this theoretical question; it can also inform

the development of more targeted and effective interventions for improving people's long-term, attachment-related functioning.

The Present Research

In the present research, we analyzed data from a relatively large sample of participants and their families, who provided multi-informant reports of participants' early interpersonal experiences from infancy to late adolescence. Of the original study children, 705 completed an assessment of their general and relationship-specific attachment orientations between the ages of 26 and 31 years ($M_{age} = 28.6$ years, $SD = 1.2$). Leveraging this prospective, longitudinal data, we aimed to uncover the extent to which early experiences with parents, peers, and romantic partners are carried forward into adulthood, predicting the characteristic ways in which adults relate to close others in general and the ways they relate to important people in their lives.

Under this broader aim, we examined whether early experiences within specific relationships (a) share the strongest associations with adults' attachment orientations in the same, specific relationship, reflecting *relationship congruency*; (b) demonstrate relatively stronger associations with adults' attachment orientations in relationships that fall within the same domain, which tend to have more overlapping features, compared to relationships in other domains (i.e., *domain congruency*); and (c) share relatively stronger associations with adults' attachment orientations in the same "kinds" of relationships—either horizontal or vertical—which involve similar dynamics and levels of reciprocity. Moreover, we examined whether (d) certain interpersonal experiences tend to play a broader role in adults' attachment orientations across domains, testing theoretical ideas regarding the primacy and recency of attachment-related experiences.

Method

Procedure and Participants

Participants in the present study were originally recruited as part of the National Institute of Child Health and Human Development SECCYD, a prospective, longitudinal study of 1,364 children and their families followed from infancy (1 month old) until age 15 years (NICHD Early Child Care Research Network, 2005). Participants were recruited in 1991 from hospitals located near 10 research sites in the United States. The purpose of the SECCYD was to examine the impact of early child care environments and other child-rearing contexts on children's social, emotional, and cognitive development, as well as their physical health. After the SECCYD concluded, several follow-up assessments of the SECCYD participants were conducted, including one in 2009 when participants were around age 18 years (Booth-LaForce & Roisman, 2014). Recently, a new follow-up of the SECCYD participants, who are now adults, was conducted between 2018 and 2022. This investigation, rebranded the SHINE, aimed to leverage the longitudinal data collected in the SECCYD to examine the prospective associations between early childhood experiences and adult health and well-being. Data collection for SHINE was approved by the Institutional Review Board at the University of Washington. Detailed information about SHINE, including its goals, methods, and measures, is provided in Bleil et al. (2023).

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[2] In the SECCYD, a vast majority of families nominated the study children's mothers as their primary caregivers.

Of the original SECCYD participants, 705 agreed to participate in SHINE as young adults. Participants were between 26.2 and 31.3 years of age at the time of assessment, with a mean age of 28.6 years ($SD = 1.2$). The study sample reported a relatively high level of educational attainment, compared to U.S. population estimates: 55.6% of participants had completed a 4-year college degree or greater (vs. 23% of U.S. adults 25 years or older), and 30.8% had completed some college or an associate's degree, certificate, or trade school (vs. 25% of U.S. adults 25 years or older; United States Census Bureau, 2023). Most participants had entered the workforce (73.7% full-time, 12.1% part-time). A majority of participants were involved in a romantic relationship (71.6%), over one third were married or living as married (34.4%), and 26.1% of participants had one or more children.

Fifty-three percent of the sample were women, including 374 participants who were assigned female at birth and identify as women (via multiple choice responses) and one participant who self-described as a transgender woman (via text response); 46.5% of the sample were men, including 326 participants who were assigned male at birth and identify as men and two participants who self-described as transgender men; and 0.3% of the sample, or two participants, were nonbinary individuals. Participants were predominantly White, non-Hispanic (78.7%). Additional demographic information can be found in Table 1.

Measures

Adult Attachment Orientations

Participants completed the Experiences in Close Relationships-Relationship Structures (ECR-RS; Fraley et al., 2011) as part of the SHINE follow-up assessment when they were between 26 and 31 years old. The ECR-RS assesses people's general attachment orientations, as well as their relationship-specific attachment orientations in four close relationships—their relationships with their (1) mothers or mother-like figures, (2) fathers or father-like figures, (3) current romantic partners, and (4) best friends. Each subscale of the ECR-RS contains nine items. Six items measure attachment avoidance (e.g., "I don't feel comfortable opening up to this person"), and three items assess attachment anxiety (e.g., "I'm afraid that this person may abandon me"). Participants rated each item on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. Their responses to the items assessing attachment avoidance and attachment anxiety were averaged separately to create two composite scores within each relational domain ($\alpha_{\text{attachment anxiety}} = .90–.93$; $\alpha_{\text{attachment avoidance}} = .88–.94$).

Childhood and Adolescent Antecedents: Parental Domain

A standard procedure was used to handle missing data across all assessments collected in the SECCYD. If participants (a) completed at least 80% of the items included in a particular measure and (b) the standardized Cronbach's α for the measure was greater than or equal to $\alpha = .75$, their data were retained, and proportional weighting was used to account for missing data (i.e., missing items were replaced with the mean of the individual's nonmissing scores). A summary of the interpersonal variables assessed during childhood and adolescence is shown in Table 2.

As has been reported elsewhere (see Booth-LaForce & Roisman, 2014; Nivison et al., 2021), starting when children in the SECCYD were 54 months old, most of the measures administered distinguished

Table 1

Sample Demographic Characteristics

Demographic characteristic	Total[a] ($N = 705$) N (%) or M (SD), range
Age (in years)	28.6 (1.2), 26.2–31.3
Gender identity	
Women	375 (53.2%)
Men	328 (46.5%)
Nonbinary	2 (0.3%)
Sex assigned at birth	
Female	378 (53.6%)
Male	327 (46.4%)
Race/ethnicity	
Hispanic	45 (6.4%)
Asian or Pacific Islander, non-Hispanic	8 (1.1%)
Black, non-Hispanic	72 (10.2%)
Native American or Alaska Native, non-Hispanic	1 (0.2%)
White, non-Hispanic	555 (78.7%)
Mixed race, non-Hispanic	24 (3.4%)
Family composition	
People living in home	2.7 (1.4), 1–10
Married or living as married	241 (34.4%)
Current romantic relationship	501 (71.6%)
One or more children	183 (26.1%)
Education	
Less than a high school diploma	7 (1.0%)
High school diploma or General Educational Development test	88 (12.6%)
Some college, associate's degree, certificate, trade	216 (30.8%)
Bachelor's degree or greater	389 (55.6%)
Student status	
Part-time	34 (4.9%)
Full-time	61 (8.7%)
Employment	
Part-time, for pay	85 (12.1%)
Full-time, for pay	516 (73.7%)
Individual income	
U.S. $10,000	78 (11.1%)
U.S. $10,000–$29,999	167 (23.9%)
U.S. $30,000–$49,999	179 (25.6%)
U.S. $50,000–$99,999	213 (30.4%)
U.S. $100,000+	63 (9.0%)
Household income	
U.S. $20,000	75 (10.8%)
U.S. $20,000–$49,999	163 (23.5%)
U.S. $50,000–$99,999	248 (35.7%)
U.S. $100,000–$149,999	126 (18.1%)
U.S. $150,000+	83 (11.9%)

[a] Missing data: Five participants did not complete the questionnaire items pertaining to family composition, education, employment, and individual income. Seven participants did not complete the questionnaire items pertaining to student status. Ten participants did not complete the questionnaire items pertaining to household income.

between "primary caregivers" (i.e., mostly mothers, but some fathers) and "secondary caregivers" (i.e., mostly fathers but also others, such as maternal grandparents). Because the aim of the present study was to predict adults' attachment orientations in their relationships with their mothers and fathers specifically (i.e., as assessed by the ECR-RS; see above), we reorganized and filtered the data to identify responses *from* and *about* participants' mothers and fathers only.

Maternal and Paternal Sensitivity (Observer Ratings). Mother–child interactions were videotaped as they engaged

Table 2
Number of Observations for the Relationship Variables Assessed During Childhood and Adolescence

Variable	6M	15M	24M	36M	54M	K	G1	G2	G3	G4	G5	G6	15Y	18Y
Parental relationships														
Maternal sensitivity (observer ratings)	684	689	667	668	649		642		628		621		614	
Paternal sensitivity (observer ratings)					457		436		420		424		349	
Mother–child conflict and closeness (mother reports)					665	660	648		662	662	668	672	656	487
Father–child conflict and closeness (father reports)					471		444		448	430	454	430	427	287
Maternal hostility and warmth (participant reports)												669	585	561
Paternal hostility and warmth (participant reports)												482	515	552
Friendships and romantic relationships														
Friendship quality (participant reports)									667	681	667	686	684	581
Social competence with peers (mother reports)					649	659	649		662	661	670	670	652	484
Social competence with peers (father reports)					466		448		447	429	454	430	426	
Social competence with peers (teacher reports)						637	607	638	611	626	572			
Romantic relationship conflict and support (participant reports)												115	142	240

Note. The values reported in each cell reflect the number of observations for that wave. For parental hostility and warmth and parent–child conflict and closeness, we report the number of observations based on the subscale (e.g., either conflict or closeness) with the larger number of nonmissing values. Across waves, the number of nonmissing values for the two subscales of these measures never differed by greater than $n = 3$. 6M–54M = assessment waves at which participants were 6 months old to 54 months old; K = Kindergarten; G1–G6 = Grades 1 through 6; 15Y = 15 years old; 18Y = 18 years old.

in developmentally appropriate activities at the following assessment waves: 6 months, 15 months, 24 months, 36 months, and 54 months old; in Grades 1, 3, and 5; and at age 15 years. Similarly, father–child interactions were videotaped as they engaged in developmentally appropriate activities at the following assessment waves: 54 months old; in Grades 1, 3, and 5; and at age 15 years. The measures of sensitivity differed slightly across assessment waves to be developmentally tailored. At ages 6 months, 15 months, and 24 months old, trained coders rated mothers' sensitivity/responsivity to nondistress, positive regard for the child, and intrusiveness during the interactions on a scale from 1 = "not at all characteristic" to 4 = "highly characteristic." These three ratings were summed with intrusiveness reverse scored to create a composite for maternal sensitivity ($\alpha_{mothers}$ = .70–.79; mean $\alpha_{mothers}$ = .75). At 36 months old, 54 months old, Grades 1, 3, and 5, trained coders rated parents' supportive presence, respect for autonomy, and hostility during the interactions on a scale from 1 = *very low* to 7 = *very high*. These ratings were summed with hostility reverse scored to create a composite for sensitivity ($\alpha_{mothers}$ = .78–.85, mean $\alpha_{mothers}$ = .82; $\alpha_{fathers}$ = .71–.82, mean $\alpha_{fathers}$ = .78). During adolescence (i.e., at the age 15 assessment), the parent–child interactions consisted of a discussion between the adolescent and parent selected by the adolescent from a list of possible topics (e.g., homework, use of free time). Trained coders rated the extent of validation/agreement, engagement, inhibiting relatedness, hostility/devaluing, respect for autonomy, and valuing/warmth that parents demonstrated during the interactions on a scale from 1 = *very low* to 7 = *very high*. These ratings were summed with the ratings for inhibiting relatedness and hostility/devaluing reverse scored to create a composite for sensitivity ($\alpha_{mothers}$ = .81, $\alpha_{fathers}$ = .79).

Because the measures for sensitivity differed across assessment waves, we focused on examining the higher order composites for

sensitivity calculated at each wave. Specifically, the sensitivity composites calculated at 6, 15, and 24 months had a theoretical range of 3–12; the sensitivity composites calculated at all waves from 36 months through Grade 6 had a theoretical range of 3–21; and the sensitivity composite at age 15 had a theoretical range of 6–42. We used interpolation to rescale the composites calculated at 6, 15, and 24 months and age 15 years to be on a common scale ranging from 3 to 12. In supplemental analyses, we also examined the associations between early levels and growth in each set of common measures (Set 1: 6 months, 15 months, and 24 months; Set 2: 36 months old, 54 months old, Grades 1, 3, and 5; Set 3: age 15 years as a single predictor) and adult attachment orientations.

Parent–Child Conflicts and Closeness (Mother and Father Reports). Mothers completed the Parent Child Relationship Scale (PCRS; Pianta, 1994), a measure of how warmly parents view their relationship with their child, when their children were 54 months old; in Kindergarten, Grades 1, 3, 4, 5, and 6; and age 15 and 18 years. Fathers completed the PCRS when their children were 54 months old; in Grades 1, 3, 4, 5, and 6; and age 15 and 18 years. The PCRS contains eight items that assess closeness with child (e.g., "I share an affectionate, warm relationship with my child") and seven items that assess conflict with child (e.g., "My child and I always seem to be struggling with each other"). Each item was rated on a scale from 1 = *definitely does not apply* to 5 = *definitely applies*. The same 15 items were used across all assessment waves. A few additional developmentally appropriate items were added to the PCRS at the age 54 months assessment wave, but were not used in calculating the composites to maintain consistency. Parents' responses to the seven items assessing conflict and eight items assessing closeness were summed separately to create two composite scores. The parent–child conflict subscale demonstrated good

internal consistency across all assessment waves ($\alpha_{mothers}$ = .78–.89, mean $\alpha_{mothers}$ = .84; $\alpha_{fathers}$ = .75–.87, mean $\alpha_{mothers}$ = .82). Cronbach's alphas for mother–child closeness were somewhat lower at the 54 months through Grade 3 assessments ($\alpha_{mothers}$ = .64–68), but the subscale demonstrated sufficient reliability at all later waves ($\alpha_{mothers}$ = .73–.84). Cronbach's α for father–child closeness was 0.68 at the 54 months assessment wave, but otherwise ranged from α = .74 to .85, with a mean of α = .79 across all waves.

Parental Warmth and Hostility (Participant Reports). Study children completed a measure of their parents' warmth and hostility toward them (Conger & Ge, 1999; Conger et al., 2002) when they were in Grade 6 and at ages 15 and 18 years. At the Grade 6 and age 15 assessment waves, children were asked to complete the questionnaire with respect to their "primary caregivers" first and indicate who that person was (e.g., their mothers) and then were asked to complete the questionnaire with respect to their "secondary caregivers," again, indicating who that person was. At the age 18 years assessment, the questionnaire items referred to participants' "mothers" and "fathers" specifically. We filtered participants' responses at all three assessment waves (i.e., Grade 6, age 15 years, and age 18 years) into data on mothers and fathers only. The questionnaire asked children to rate the frequency with which their parents engaged in 17 behaviors on a scale from 1 = *never* to 4 = *always*. Eight of the items assessed hostile behaviors (e.g., "Criticize you or your ideas?"), and nine items assessed warm/supportive behaviors (e.g., "Help you do something that is important to you?"). Participants' responses to the items related to parental hostility ($\alpha_{mothers}$ = .75–.82; $\alpha_{fathers}$ = .80–.86) and parental warmth/support ($\alpha_{mothers}$ = .89–.94; $\alpha_{fathers}$ = .94–.96)[3] were summed separately to create two composite scores.

Childhood and Adolescent Antecedents: Friendships and Romantic Relationships

Friendship Quality (Participant Reports). Study children completed the Friendship Quality Questionnaire (Parker & Asher, 1993) about their relationship with their current best friend in Grades 3, 4, 5, and 6, and at ages 15 and 18 years. This questionnaire assesses six aspects of friendship: validation and caring, conflict resolution, conflict and betrayal (reversed), help and guidance, companionship and recreation, and intimate exchange. Children rated each item on a 5-point scale from *not at all true* to *really true*. The same 20 items were used across all assessments. A few additional developmentally appropriate items were added to the Friendship Quality Questionnaire in sixth grade and at ages 15 and 18. Participants' responses to the 20 items that were consistent across all waves were averaged to create a composite score (α = .87–.91).

Social Competence With Peers (Mother and Father Reports). Mothers completed the Social Skills Questionnaire (SSQ) from the Social Skills Rating System (Gresham & Elliott, 1990) when their children were 54 months old; in Kindergarten, Grades 1, 3, 4, 5, and 6; and at age 15 and 18 years. Fathers completed the SSQ when their children were 54 months old; in Grades 1, 3, 4, 5, and 6; and at age 15 and 18 years. Parents were asked to indicate the frequency with which their children engaged in various behaviors using a 3-point scale (0 = *never*, 1 = *sometimes*, 2 = *very often*). The SSQ contains nine items in the preschool version (54 months in the present study), 10 items in the elementary school version (Kindergarten through Grade 6), and 11 items in the adolescent

version (age 15 and 18 years) that assess social skills in interactions with friends/peers (e.g., "Acknowledges compliments or praise from friends," "Controls temper when arguing with other children"). Parents' responses to these items were summed to create a composite score for social competence with peers ($\alpha_{mother-reported}$ = .70–.82, mean $\alpha_{mother-reported}$ = .76; $\alpha_{father-reported}$ = .64–.83, mean $\alpha_{father-reported}$ = .75).

Because the number of items used to assess social competence with peers differed across assessments, we used interpolation to rescale the composites calculated at 54 months, 15 years, and 18 years to be on a common scale ranging from 0 to 18 (i.e., nine items scored from 0 to 2). In supplemental analyses, we also examined the associations between early levels and growth in each set of common measures (Set 1: 54 months; Set 2: Kindergarten, Grades 1, 3, 4, 5, and 6; Set 3: age 15 and 18 years) and adult attachment orientations.

Social Competence With Peers (Teacher Reports). Teachers completed the 30-item school version of the SSQ from the Social Skills Rating System (Gresham & Elliott, 1990) when the study children were in Kindergarten and Grades 1, 2, 3, 4, 5, and 6. Teachers were asked to indicate the frequency with which the children engaged in various behaviors using a 3-point scale (0 = *never*, 1 = *sometimes*, 2 = *very often*). Ten of the items assess social skills in interactions with friends/peers (e.g., "Initiates conversations with peers," "Makes friends easily"). Teachers' responses to these 10 items were summed to create a composite score for social competence with peers (α = .84–.88).

Of note, both the parent version and the teacher version of the SSQ contain some items that refer to "friends," but also some items that refer to "peers," more broadly defined, which could include romantic partners. Therefore, in the present research, we conceptualize these measures as capturing social skills in peer relationships, which involve horizontal dynamics (i.e., reciprocity of support seeking and provision), and equally likely to predict attachment orientations to best friends or romantic partners in adulthood.

Conflict and Support in Adolescents' Romantic Relationships (Participant Reports). Study children who indicated that they were involved in a romantic relationship at the time they completed the Grade 6, age 15, and age 18 assessments were administered the romantic relationship items from the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985). At all three time points, the three-item conflict subscale was administered (e.g., "How much do you and this person argue with each other?"), as well as the seven subscales/facets that comprise the social support scale of the NRI: companionship, instrumental aid, intimacy, nurturance, affection, admiration, and reliable alliance (21 items total). At age 15, one of the items was missing from the companionship subscale/facet, so it was replaced with the mean of participants' scores for the other two companionship items. Items were rated on a 5-point frequency scale from *little or none* to *the most* at each time point. Participants' responses to the items assessing conflict and social support were averaged to create two composite scores. The three-item conflict subscale demonstrated somewhat lower internal consistency at the Grade 6 assessment wave (α = .64) but showed sufficient reliability at the age 15 (α = .88) and age 18 years assessment waves (α = .90).

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[3] Most of the present analyses were conducted using the composite-level data from the SECCYD and corresponding documentation. The reliability coefficients reported here were calculated based on the original SECCYD sample versus the analytic subsample (N = 705) who participated in the SHINE follow-up assessment.

Cronbach's α for the social support scale was α = .94 at all three waves.

Childhood Demographic Characteristics

When examining the associations between early interpersonal experiences and adults' attachment orientations, it is critical to account for the broader sociocultural context in which the development of attachment unfolds (Bronfenbrenner, 1994; Stern et al., 2022; Szepsenwol & Simpson, 2019). In the present study, we conducted secondary analyses in which we controlled for demographic characteristics that have been shown to correlate with early interpersonal experiences and predict adult attachment orientations.

Childhood Socioeconomic Status. Research has found associations between socioeconomic status and parent–child relationship features, including parental warmth, harshness, and psychological control, reflecting the additional stressors faced by parents toward the lower end of socioeconomic spectra (Ayoub & Bachir, 2023; Jackson & Choi, 2018). Research has also found that children from lower socioeconomic backgrounds experience greater peer exclusion and lower acceptance from peers (Bukowski et al., 2020). Relatedly, both theory and research suggest that lower childhood socioeconomic status is a risk factor for attachment insecurity throughout the life course (Johnson et al., 2018; Murdock & Fagundes, 2017; Szepsenwol & Simpson, 2019). Therefore, in the present analyses, we controlled for two indicators of childhood socioeconomic status: income-to-needs ratio and maternal education.

Income-to-Needs Ratio. Families' income-to-needs ratio was assessed at 14 waves between the time participants were 1 month old and age 18 years. Income-to-needs was operationalized as family income divided by the year-specific poverty threshold for the appropriate family size at each assessment, consistent with the definition used by the United States Census Bureau (2019). For thepurposes of the present analyses, we averaged these values to derive an aggregate of participants' socioeconomic experiences during childhood.[4]

Maternal Education. Mothers' education was assessed when children were 1 month old and coded on an ordered metric reflecting the number of years of education mothers had completed at that time.[5]

Race/Ethnicity. Research has linked experiences of racial discrimination to increased caregiving stress and worsened caregiver mental health, with spillover effects on parent–child relationship quality (Condon et al., 2022; Murry et al., 2022). Research also suggests that parents of color adaptively calibrate their parenting practices (e.g., autonomy support, distress coregulation) to promote their children's safety and socioemotional development as they navigate a racist social world (Dunbar et al., 2022). In terms of peer relationships, youth of color regularly experience racial discrimination when interacting with their peers at school, reporting even greater discrimination in schools in which the percentage of students belonging to their racial/ethnic group is smaller (Graham, 2022). The stressors experienced by minoritized racial groups can increase the risk of developing insecure attachment orientations (see Stern et al., 2022, for a discussion). Thus, we controlled for participants' race/ethnicity in the present analyses. Due to the smaller numbers of individuals in specific racial and ethnic categories, race/ethnicity was coded as 0 = White/non-Hispanic (n = 555) and 1 = not White/non-Hispanic (n = 150).

Sex Assigned at Birth. Research has found differences in the early interpersonal experiences of children assigned female at birth and children assigned male at birth (Morawska, 2020; Rose & Rudolph, 2006). For example, when interacting with infants assigned female at birth, parents tend to demonstrate greater sensitivity and engage in greater emotional socialization, than when interacting with infants assigned male at birth (Morawska, 2020). Additionally, friendships and peer relationships among children assigned female at birth tend to be characterized by greater self-disclosure, support seeking, responsivity to distress, and emotional provisions, than those among children assigned male at birth (see Rose & Rudolph, 2006, for a review). Furthermore, meta-analytic research by Del Giudice (2011) found evidence for sex differences in attachment orientations, suggesting that individuals assigned female at birth report somewhat higher attachment anxiety and lower attachment avoidance, on average, than individuals assigned male at birth.

Unfortunately, most research on this topic has conflated sex assigned at birth and gender identity, failing to distinguish between these characteristics. We want to emphasize the importance of recognizing the distinction between these characteristics and interpreting any observed effects of sex assigned at birth accordingly. In the present research, participants' gender identities were not assessed until the most recent assessment wave of the SECCYD/SHINE when they were between the ages of 26 and 31 years old; only sex assigned at birth was assessed previously in the SECCYD (coded as 0 = female and 1 = male). Therefore, we do not have information regarding whether transgender and nonbinary participants in the SECCYD/SHINE may have disclosed their gender identities to others during childhood or adolescence and, relatedly, how they may have been treated with regard to gender during these early years. As such, the data cannot support clear inferences about how gender identity may relate to the prospective associations of interest (e.g., interpersonal experiences during childhood/adolescence → adult attachment orientations). It is important for future studies of children and adolescents to use more inclusive demographic questionnaires that distinguish between sex assigned at birth and gender.

Transparency and Openness

We report how we determined our sample size, all data exclusions, and all measures in the present study, following the American Psychological Association Style Journal Article Reporting Standards (Kazak, 2018). The present study was conducted as a registered report, in which the analyses were planned and peer-reviewed in

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[4] We decided to calculate an aggregate of families' income-to-needs ratio during childhood because income-to-needs ratio was highly stable across the SECCYD assessment waves. In other words, we would not gain much information by modeling income-to-needs ratio as a time-varying covariate in the present analyses; doing so would add unnecessary complexity to the models (see "Data Analysis Plan").

[5] The only other wave at which maternal education was assessed was when participants were 18 years old, which marks the "end" of the childhood and adolescent assessment waves collected as part of the SECCYD. This assessment also did not ask mothers to specify when their educational attainment had changed, if they had experienced a change. Because of this, we used the assessment of maternal education collected when study children were 1 month old, which reflects families' socioeconomic status at approximately the time at which participants' socioemotional development began to unfold.

advance. A copy of the Stage 1 Registered Report is available on the project's Open Science Framework page at https://osf.io/eu3qh/ (Dugan, 2025). After Stage 1 Registered Report was accepted, we also uploaded a corresponding preregistration describing the analysis plan to the Open Science Framework. Although the childhood and adolescent data from the SECCYD have been examined in other research, the age 26–31 attachment data had not been examined prior to conducting the analyses reported here.

Raw data and documentation for all SECCYD data collected from birth to age 15 years are publicly available on the Inter-university Consortium for Political and Social Research's website at https://www.icpsr.umich.edu/web/ICPSR/series/233 (United States Department of Health and Human Services, National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2018a, 2018b, 2018c, 2018 d). Data from the age 18 years and SHINE (ages 26–31 years) follow-up assessments of the SECCYD are bound by existing data agreements. These agreements include restrictions related to the process by which the data may be disseminated due to the terms of the informed consent procedure. However, the data and documentation from the age 18 years and SHINE assessments necessary to reproduce the present analyses can be acquired by contacting Glenn I. Roisman (roism001@umn.edu). All code is available on the Open Science Framework (https://osf.io/eu3qh/).

We made only a few minor deviations from the analysis plan described in the Stage 1 Registered Report. First, due to a minor miscommunication regarding the data documentation for the age 18 years assessment wave, we previously believed that we had data for father-reported social competence with peers at age 18 years, but only mothers were asked to report on participants' social competence with peers at that wave. Therefore, we did not include an age 18 assessment wave in the growth curve models for father-reported social competence with peers, and we modified the planned robustness checks for father-reported social competence accordingly (see the Supplemental Materials). We also did not realize that families' income-to-needs ratio was assessed at age 18 years, in addition to the 13 other SECCYD waves noted in our Stage 1 Registered Report. Therefore, we included this assessment in calculating the cross-wave aggregates of families' income-to-needs ratio, to stay true to our proposed plan of averaging across all assessments of income-to-needs ratio collected during childhood and adolescence.

Second, in our Stage 1 Registered Report, we planned to filter the parent–child relationship data into two groups: data on "mothers" and also alternative "primary maternal caregivers" (in cases in which mothers were not present in children's lives) and, similarly, "fathers" and alternative "primary paternal caregivers." The purpose of this approach was to retain as much data as possible, while only analyzing responses from or about parental figures whom participants might reasonably think of when completing the ECR-RS (Fraley et al., 2011) at age 30 years (i.e., "mothers or mother-like figures," "fathers or father-like figures"). However, after examining the data, it became clear that this was not a feasible strategy for several reasons. For maternal hostility and warmth, the instructions were slightly different at the age 18 years assessment wave and referred to participants' "mothers" and "fathers" specifically; therefore, only relationships with mothers and fathers could be examined if we were to include three assessments pertaining to the *same* relationships, which is essential for estimating growth trajectories. Additionally, although in most cases "secondary caregivers" were

participants' fathers, among the subset of participants who had "alternative secondary caregivers" participate, most of those individuals were their mothers' romantic partners. It was not possible to determine whether these "secondary caregivers" were the same individuals across waves, however, complicating the interpretation of *growth* in relationship quality, especially as early relationships with mothers and fathers were used to test our hypothesis about *relationship congruency* (see Table 3). In the few cases in which "secondary caregivers" were grandparents, it was only sometimes possible to determine whether those grandparents were "grandmothers" (i.e., "mother-like figures") or "grandfathers" (i.e., "father-like figures"). For these reasons, we decided to filter the data into responses from and about mothers and fathers only. Importantly, the sample sizes were still more than sufficient across waves (see Table 2)—we had just originally hoped to retain as much data as possible.

Last, we had originally planned to estimate growth curve models examining early levels and growth in teacher-reported positive and negative friendship qualities as predictors of adult attachment orientations. However, the data distributions for teacher-reported positive and negative friendship qualities were unusually "compressed"; in brief, teachers reported that nearly all their students had friendships with highly positive and little-to-no negative features, producing scores with minimal variance (see Supplemental Figures S1 and S2). Consequently, our planned growth curve models involving teacher-reported positive and negative friendship qualities failed to converge, despite using 500 random starts in all analyses. For transparency, we provide the output of modified models in which we constrained the slope variance to zero in the Supplemental Tables S2–S9 but would encourage caution in interpreting the results.

Results

Descriptive statistics and correlations among the study variables were calculated in R (Version 4.3.1; R Core Team, 2023). A full correlation matrix of the study variables, including each time-specific assessment of the interpersonal variables, is provided in Supplemental Table S1. Tables 4 and 5 show the correlations between adult attachment orientations and person-specific (i.e., across-wave) averages of each parent–child relationship (Table 4) and peer relationship (Table 5) variable assessed during childhood.

Growth Curve Models With Distal Outcomes

The main analyses were conducted in R (Version 4.3.1; R Core Team, 2023) using the Mplus Automation package (Hallquist & Wiley, 2018) to interface with M*plus* Version 8.8 (Muthén & Muthén, 2017). The broad aim of the present study was to examine the prospective associations between individuals' early trajectories of interpersonal experiences and their attachment orientations in adulthood. To do so, we estimated a series of latent growth curve models with distal outcomes (see Figure 2). In each model, participants' general and relationship-specific attachment orientations in adulthood were regressed on a latent intercept, representing their *early levels* of an interpersonal variable (e.g., levels of friendship quality during childhood), and a latent slope, capturing participants' *rates of change* in the interpersonal variable across childhood and/or adolescence. The loadings of the latent slope factor reflected the

Table 3
Potential Patterns of Findings Based on Attachment Theory and Research

Potential pattern based on theory	Empirical evidence
Relationship congruency	a. Early levels and growth in maternal sensitivity, mother–child conflict and closeness, and maternal hostility and warmth will share stronger associations with adults' mother-specific attachment orientations, than with their father-, partner-, or best friend-specific attachment orientations.
	b. Early levels and growth in paternal sensitivity, father–child conflict and closeness, and paternal hostility and warmth will share stronger associations with adults' father-specific attachment orientations, than with their mother-, partner-, or best friend-specific attachment orientations.
Domain congruency	c. Early levels and growth in maternal sensitivity, mother–child conflict and closeness, and maternal hostility and warmth will share stronger associations with adults' father-specific attachment orientations, than with their partner- or best friend-specific attachment orientations.
	d. Early levels and growth in paternal sensitivity, father–child conflict and closeness, and paternal hostility and warmth will share stronger associations with adults' mother-specific attachment orientations, than with their partner- or best friend-specific attachment orientations.
	e. Early levels and growth in friendship quality will share stronger associations with adults' best friend-specific attachment orientations, than with their mother-, father-, or partner-specific attachment orientations.
	f. Romantic relationship conflict and support during adolescence will demonstrate stronger associations with adults' partner-specific attachment orientations, than with their mother-, father-, or best friend-specific attachment orientations.
Vertical versus horizontal attachment relationships	Points c and d (see above) would also support the theoretical distinction between vertical (e.g., parent–child attachment relationships) and horizontal attachment relationships (e.g., friendships and romantic relationships).
	g. Early levels and growth in friendship quality will share stronger associations with adults' partner-specific attachment orientations, than with their mother- or father-specific attachment orientations.
	h. Romantic relationship conflict and support during adolescence will demonstrate stronger associations with adults' best friend-specific attachment orientations, than with their mother- or father-specific attachment orientations.
	i. Early levels and growth in social competence with peers (i.e., experiences with friends/peers broadly defined)[a] will share stronger associations with adults' best friend- and partner-specific attachment orientations, than with their mother- or father-specific attachment orientations.
Primacy and recency of attachment-related experiences	j. Support for *primacy*: We will evaluate the relative frequency of nontrivial associations between early experiences with mothers[b]—including early levels and growth in maternal sensitivity, mother–child conflict and closeness, and maternal hostility and warmth—and adults' *general* and *noncongruent* attachment orientations (i.e., father-, partner-, and best friend-specific). Such associations would indicate that people's experiences with their first, primary caregivers play a broader role in how they think, feel, and behave in close relationships across domains.
	k. Support for *recency*: We will evaluate the relative frequency of nontrivial associations between experiences with close friends and romantic partners—including friendship quality and romantic relationship conflict and support—and adults' *general* and *noncongruent* attachment orientations: mother-specific, father-specific, partner-specific (for experiences with close friends), and best friends (for experiences with romantic partners).

[a] The measures of social competence with peers used in the present research contain some items that refer to friends and some items that refer to "peers," more broadly defined, which could include romantic partners. Therefore, we conceptualize these measures as capturing social skills in peer relationships, which involve horizontal dynamics (i.e., reciprocity of support seeking and provision), and equally likely to predict attachment orientations to best friends or romantic partners in adulthood. [b] In the Study of Early Child Care and Youth Development, a vast majority of families nominated the study children's mothers as their primary caregivers.

Table 4

Correlations Among Early Parent–Child Relationship Variables and Adult Attachment Orientations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. General anxiety	—																							
2. General avoidance	.45	—																						
3. Mother-specific anx.	.41	.30	—																					
4. Mother-specific avoid.	.31	.47	.54	—																				
5. Father-specific anx.	.32	.13	.31	.09	—																			
6. Father-specific avoid.	.31	.33	.23	.28	.54	—																		
7. Partner-specific anx.	.52	.27	.30	.20	.28	.27	—																	
8. Partner-specific avoid.	.32	.27	.25	.24	.15	.21	.49	—																
9. Best friend-specific anx.	.62	.38	.35	.26	.20	.20	.45	.33	—															
10. Best friend-specific avoid.	.22	.30	.17	.28	.03	.16	.12	.37	.42	—														
11. Maternal sensitivity	-.05	-.12	-.23	-.14	-.20	-.15	-.14	-.17	-.07	-.08	—													
12. Paternal sensitivity	-.07	-.05	-.15	-.06	-.04	.00	-.06	-.07	-.09	-.04	.41	—												
13. Mother–child conflict	.14	.12	.11	.11	.13	.11	.11	.13	.09	.13	-.14	-.18	—											
14. Mother–child closeness	-.06	-.15	-.09	-.14	-.06	-.06	-.11	-.14	-.04	-.15	.15	.09	-.42	—										
15. Father–child conflict	.13	.07	.03	.05	.14	.14	.09	.10	.07	.08	.15	-.23	.53	-.21	—									
16. Father–child closeness	-.07	-.08	-.02	-.05	-.09	-.16	-.13	-.12	-.06	-.08	.10	-.11	-.21	.25	-.36	—								
17. Maternal hostility	.23	.18	.22	.26	.19	.16	.13	.21	.15	.09	-.23	.22	.24	-.21	.18	-.12	—							
18. Maternal warmth	-.24	-.25	-.18	-.36	-.15	-.18	-.18	-.22	-.18	-.18	.07	-.10	-.19	.27	-.11	.11	-.56	—						
19. Paternal hostility	.20	.09	.16	.10	.02	.11	.07	.08	.10	.08	-.06	.07	.15	-.06	.21	-.16	.44	-.25	—					
20. Paternal warmth	-.20	-.20	-.12	-.18	-.32	-.40	-.16	-.14	-.14	-.10	.11	-.14	-.14	.14	-.13	.23	-.25	.42	-.32	—				
21. Income-to-needs	-.05	-.08	-.12	-.03	-.12	-.15	-.08	-.11	-.04	-.06	.41	.12	-.10	.03	-.10	.07	-.13	.02	-.07	.13	—			
22. Maternal education	-.06	-.06	-.16	-.07	-.16	-.14	-.06	-.08	-.06	-.05	.49	.20	-.10	.05	-.08	.09	-.12	.01	-.06	.10	.53	—		
23. Race/ethnicity	.02	.16	.15	.05	.11	.21	.10	.23	.07	.14	-.38	-.11	-.06	-.06	-.10	.01	.16	-.01	.10	-.14	-.23	-.24	—	
24. Sex assigned at birth	.02	.21	-.05	.07	-.07	-.02	.07	.16	.08	.22	-.06	-.07	-.06	-.14	.06	-.08	.01	-.05	.09	-.05	.00	-.01	.04	—
M	2.47	2.91	1.46	2.53	1.63	3.32	2.09	1.91	1.69	2.16	9.73	10.07	16.33	36.61	15.42	34.73	11.56	29.87	11.09	27.88	4.09	14.65	0.21	0.46
SD	1.60	1.27	1.10	1.54	1.31	1.73	1.56	1.11	1.11	1.13	0.97	0.89	4.88	2.27	4.46	2.98	2.36	4.36	2.55	5.90	2.91	2.39	0.41	0.50

Note. For each of the childhood relationship variables, person-specific averages were calculated across all assessment waves completed by participants. Sex assigned at birth was coded as 0 = female and 1 = male. Race/ethnicity was coded as 0 = White/non-Hispanic and 1 = not White/non-Hispanic. anx. = attachment anxiety; avoid. = attachment avoidance.

Table 5

Correlations Among Early Peer Relationship Variables and Adult Attachment Orientations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. General anxiety	—																			
2. General avoidance	.45	—																		
3. Mother-specific anxiety	.41	.30	—																	
4. Mother-specific avoidance	.31	.47	.54	—																
5. Father-specific anxiety	.32	.13	.31	.09	—															
6. Father-specific avoidance	.31	.33	.23	.28	.54	—														
7. Partner-specific anxiety	.52	.27	.30	.20	.28	.27	—													
8. Partner-specific avoidance	.32	.38	.25	.24	.15	.21	.49	—												
9. Best friend-specific anx.	.62	.30	.35	.26	.20	.20	.45	.33	—											
10. Best friend-specific avoid.	.22	.51	.17	.28	.03	.16	.12	.37	.42	—										
11. Friendship quality	-.10	-.21	.03	-.16	-.03	-.09	-.11	-.19	-.12	-.22	—									
12. Peer competence (mother)	-.13	-.18	-.12	-.11	-.14	-.14	-.10	-.16	-.10	-.19	.15	—								
13. Peer competence (father)	-.11	-.17	-.08	-.11	-.13	-.13	-.17	-.16	-.12	-.15	.14	.57	—							
14. Peer competence (teacher)	-.13	-.17	-.17	-.09	-.25	-.19	-.15	-.13	-.11	-.14	.21	.45	.42	—						
15. Romantic conflict	.07	.12	.10	.02	.12	.16	.16	.12	.09	.00	-.03	-.05	-.10	-.06	—					
16. Romantic support	-.09	-.04	.02	-.07	.02	.01	-.05	-.12	-.07	-.05	.28	.07	-.05	.11	.04	—				
17. Family income-to-needs	-.05	-.08	-.12	-.03	-.12	-.15	-.08	-.11	-.04	-.06	-.06	.22	.20	.23	-.12	-.08	—			
18. Maternal education	-.06	-.06	-.16	-.07	-.16	-.14	-.06	-.08	-.06	-.05	-.03	.24	.20	.26	-.12	-.11	.53	—		
19. Race/ethnicity	.02	.16	.15	.05	.11	.21	.10	.23	.07	.14	.01	-.21	-.08	-.22	.19	-.06	-.23	-.24	—	
20. Sex assigned at birth	.02	.21	-.05	.07	-.07	-.02	.07	.16	.08	.22	-.43	-.09	-.12	-.19	-.09	-.11	.00	-.01	.04	—
M	2.47	2.91	1.46	2.53	1.63	3.32	2.09	1.91	1.69	2.16	4.10	14.25	13.88	15.27	1.59	3.67	4.09	14.65	0.21	0.46
SD	1.60	1.27	1.10	1.54	1.31	1.73	1.56	1.11	1.11	1.13	0.42	1.98	2.06	2.73	0.73	0.77	2.91	2.39	0.41	0.50

Note. For each of the childhood relationship variables, person-specific averages were calculated across all assessment waves completed by participants. Sex assigned at birth was coded as 0 = female and 1 = male. Race/ethnicity was coded as 0 = White/non-Hispanic and 1 = not White/non-Hispanic. Peer competence (mother) = mother-reported social competence with peers; peer competence (father) = father-reported social competence with peers; peer competence (teacher) = teacher-reported social competence with peers. anx. = attachment anxiety; avoid. = attachment avoidance.

Figure 2
Growth Curve Model With Distal Outcome
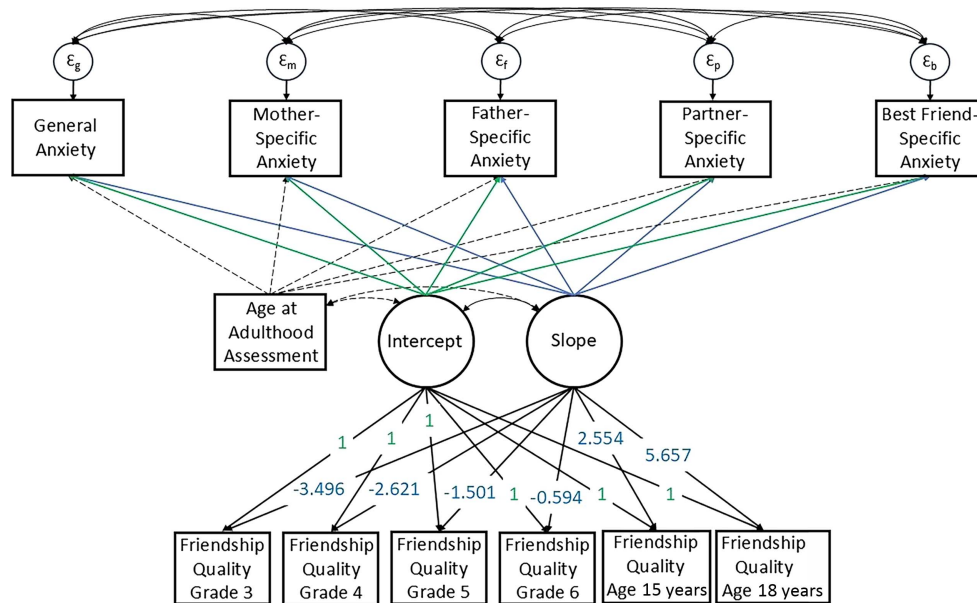
Note. See the online article for the color version of this figure.

average age of participants at each childhood assessment wave and were centered at the "average time point" at which the interpersonal variable was assessed. For example, friendship quality was assessed at Grades 3, 4, 5, and 6 and at age 15 and 18 years (see Table 2). The average age of participants at these assessment waves was 9.021, 9.896, 11.016, 11.923, 15.071, and 18.174 years, respectively. Therefore, the slope loadings were centered at 12.517 years or the "average time point" at which friendship quality was assessed, that is, (9.021, 9.896, 11.016, 11.923, 15.071, and 18.174)/6 = 12.517, and were coded as −3.496, −2.621, −1.501, −0.594, 2.554, 5.657. Using this coding scheme, we can interpret the associations between the intercept and distal attachment outcomes as capturing the effects of participants' "average" levels of friendship quality during childhood (i.e., the period of childhood during which friendship quality was assessed) on their adult attachment orientations. The associations between the slope factor and distal attachment outcomes reflect the effects of participants' growth in friendship quality during childhood on their adult attachment orientations, holding constant the differences in friendship quality at the average time point at which this variable was assessed.[6] In each model, we regressed the distal attachment outcomes on participants' age at this most recent assessment wave (mean-centered at 28.6 years) to control for minor differences in the age at which participants completed the adult attachment measures (see Figure 2).

To address our research questions regarding the *relative strengths* of the associations between early interpersonal experiences within specific relationships and domains and adults' general and relationship-specific attachment orientations, we used MODEL CONSTRAINTS in Mplus (Version 8.8; Muthén & Muthén, 2017) to directly compare the magnitude of associations between the growth factors and each of the distal attachment outcomes. The distal attachment outcomes were standardized to allow for intuitive comparisons across domains. For

each growth curve model estimated in M*plus* (Muthén & Muthén, 2017), we calculated all 20 possible pairwise differences among the path coefficients linking early levels (i.e., intercepts) and growth (i.e., slopes) in the quality of people's interpersonal experiences to the five attachment orientations assessed in adulthood (see Figure 2). In other words, we fit the models and tested these differences all in one step, versus first identifying whether the growth factors were associated with each of the distal attachment outcomes and then conducting follow-up analyses comparing the nonzero paths. However, in summarizing the results, we focus on the comparisons in which at least one (or both) of the estimated path coefficients were significantly different from zero, which allow for clearer substantive interpretations.[7] The full parameter estimates from all models are provided in the Supplemental Tables S10–S73. Table 3 details the patterns of results we might expect based on each of the theoretical ideas discussed earlier.

Controlling for Childhood Demographic Characteristics

In a series of secondary analyses, we reexamined each of our primary growth curve models, controlling for the following childhood

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[6] Of note, because the interpersonal variables were assessed at different time points during childhood and adolescence (see Table 2), the average time point at which each variable was assessed also differed. To facilitate accurate interpretations of each model's results, the time point at which the slope loadings were centered are shown in the tables reporting the model estimates.

[7] Some significant differences emerged between associations that were slightly positive in direction, but had confidence intervals containing zero, and associations that were slightly negative, with confidence intervals containing zero. However, these differences should be interpreted with caution, as they may reflect random variation around zero, rather than meaningful effects. Supplemental Tables S10–S73 report all the pairwise differences among the estimated associations between early experiences and adult attachment orientations.

demographic characteristics: income-to-needs ratio, maternal education, race/ethnicity, and sex assigned at birth. Specifically, we regressed the distal attachment outcomes on these four time-invariant covariates. The demographic variables were allowed to covary with the intercept and slope factors, participants' age at the adulthood assessment, and each other. All other model specifics remained the same as the primary analyses. For clarity and conciseness, we provide a joint summary of the primary and secondary growth curve model results for each interpersonal variable in the following sections, noting whether any of the effects identified in the primary analyses were no longer significant after accounting for childhood demographic characteristics.[8]

Maternal Sensitivity (Observer Ratings)

Intercept Effects (Early Levels → Adult Attachment Orientations). People who experienced higher levels of maternal sensitivity during childhood (i.e., represented by the latent intercepts) tended to report lower levels of general attachment anxiety and avoidance in adulthood, and lower attachment anxiety and avoidance in each of the specific, adult relationships assessed—including their relationships with their mothers, fathers, romantic partners, and best friends (see Table 6).

Slope Effects (Growth → Adult Attachment Orientations). Maternal sensitivity decreased, on average, from the time children were 6 months old to when they were 15 years old. We did not find any significant associations between growth, or changes, in maternal sensitivity from infancy to adolescence (i.e., represented by the latent slopes) and adult attachment orientations.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. Consistent with the relationship congruency hypothesis (see Table 3), we found that early levels of maternal sensitivity shared a stronger association with adults' mother-specific attachment anxiety, than with their best friend-specific anxiety[9] (estimate, $Est._{MI\_BI} = -0.150$, $SE = 0.070$, $p = .032$) or general attachment anxiety ($Est._{GI\_MI} = 0.152$, $SE = 0.067$, $p = .024$). Early levels of maternal sensitivity also shared a stronger association with adults' partner-specific attachment avoidance, than with their best friend-specific avoidance ($Est._{PI\_BI} = -0.159$, $SE = 0.069$, $p = .021$); this latter difference neither supports nor contradicts the theoretical possibilities outlined in Table 3.

Controlling for Childhood Demographic Covariates. When we controlled for childhood demographic characteristics (see Supplemental Tables S12 and S13), only five of the 10 associations we initially found between early levels of maternal sensitivity and adult attachment orientations remained significant. Specifically, early levels of maternal sensitivity shared robust associations with adults' mother-specific attachment anxiety ($b_{MI} = -0.272$, $SE = 0.067$, $p < .001$) and avoidance ($b_{MI} = -0.213$, $SE = 0.068$, $p = .002$), father-specific attachment anxiety ($b_{DI} = -0.224$, $SE = 0.068$, $p = .001$), and partner-specific attachment anxiety ($b_{PI} = -0.184$, $SE = 0.068$, $p = .007$) and avoidance ($b_{PI} = -0.180$, $SE = 0.068$, $p = .008$). However, the associations between early levels of maternal sensitivity and general attachment anxiety ($b_{GI} = -0.086$, $SE = 0.070$, $p = .222$) and avoidance ($b_{GI} = -0.107$, $SE = 0.066$, $p = .103$), father-specific avoidance ($b_{DI} = -0.039$, $SE = 0.067$, $p = .556$), and best friend-specific anxiety ($b_{BI} = -0.097$, $SE = 0.070$, $p = .164$) and avoidance ($b_{BI} = -0.054$, $SE = 0.067$, $p = .415$) were

reduced and no longer significant. Additionally, we no longer found a difference between the estimated effects of early levels of maternal sensitivity on adults' partner-specific avoidance versus their best friend-specific avoidance ($Est._{PI\_BI} = -0.125$, $SE = 0.078$, $p = .108$).

Paternal Sensitivity (Observer Reports)

The results of the models examining paternal sensitivity during childhood and adult attachment orientations are detailed in Supplemental Tables S14–S17 and summarized here. The primary model results showed negative associations between early levels of paternal sensitivity and adults' general attachment anxiety, mother-specific anxiety, and best friend-specific anxiety. However, none of these associations were robust to controlling for childhood demographic characteristics. Furthermore, neither early levels nor growth in paternal sensitivity predicted individual differences in adult attachment avoidance.

Mother–Child Conflict (Mother Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). People who experienced greater conflict with their mothers during childhood tended to report higher levels of general attachment anxiety and avoidance as adults and greater attachment anxiety and avoidance in each of the specific, adult relationships assessed, including their relationships with their mothers, fathers, romantic partners, and best friends (see Table 7).

Slope Effects (Growth → Adult Attachment Orientations). Mother–child conflict increased, on average, from early childhood to late adolescence. We found a positive association between growth in mother–child conflict and adults' mother-specific attachment anxiety, suggesting that people who experienced greater increases in the amount of conflict they tended to have with their mothers from early childhood to late adolescence reported higher levels of mother-specific anxiety, on average, in adulthood ($b_{MS} = 0.429$, $SE = 0.148$, $p = .004$).

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. Directly aligning with the relationship congruency hypothesis (see Table 3), the results suggested that growth in mother–child conflict was a stronger predictor of adults' mother-specific attachment anxiety than their father-specific anxiety ($Est._{MS\_DS} = 0.447$, $SE = 0.172$, $p = .010$), partner-specific anxiety ($Est._{MS\_PS} = 0.403$, $SE = 0.169$, $p = .017$), best friend-specific anxiety ($Est._{MS\_BS} = 0.519$, $SE = 0.166$, $p = .002$), or general attachment anxiety ($Est._{GS\_MS} = -0.430$, $SE = 0.155$, $p = .006$).

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[8] There were a handful of cases in which an effect(s) emerged *only* when controlling for childhood demographic characteristics. We do not summarize those cases here, because they similarly reflect effects which may not be robust. The full estimates from all models are provided in the Supplemental Materials.

[9] Throughout the text, differences between parameter estimates are denoted by the label "Est." with a subscript that indicates that two effects are being compared. For example, "$Est._{MI\_BI}$" corresponds to the difference between the estimated effect of early levels of maternal sensitivity on adults' mother-specific attachment anxiety (MI) and the effect of early levels of maternal sensitivity on adults' best friend-specific attachment anxiety (BI). Similarly, "$Est._{MS\_BS}$" refers to the difference between the estimated effect of growth in maternal sensitivity on adults' mother-specific attachment anxiety (MS) and the effect of growth in maternal sensitivity on adults' best friend-specific attachment anxiety (BS). All pairwise differences between the path coefficients are reported in Supplemental Tables S10–S73.

Table 6
Models Predicting Adult Attachment Orientations From Early Levels and Growth in Maternal Sensitivity

Model term	Attachment anxiety			Attachment avoidance		
	Est	SE	p	Est	SE	p
Regressions						
General attachment ~ I (GI)	−0.143[a]	0.062	.022	−0.185[a]	0.060	.002
General attachment ~ S (GS)	−2.706	1.744	.121	−0.703	1.636	.667
Mother-specific attachment ~ I (MI)	−0.295	0.060	<.001	−0.178	0.060	.003
Mother-specific attachment ~ S (MS)	0.136	1.635	.934	0.492	1.649	.765
Father-specific attachment ~ I (DI)	−0.280	0.060	<.001	−0.163[a]	0.061	.007
Father-specific attachment ~ S (DS)	−1.210	1.648	.463	0.904	1.660	.586
Partner-specific attachment ~ I (PI)	−0.199	0.060	.001	−0.296	0.061	<.001
Partner-specific attachment ~ S (PS)	−0.208	1.664	.901	−2.692	1.698	.113
Best friend-specific attachment ~ I (BI)	−0.145[a]	0.062	.020	−0.137[a]	0.061	.024
Best friend-specific attachment ~ S (BS)	−1.441	1.731	.405	−0.965	1.672	.564
General attachment ~ age	−0.017	0.034	.617	−0.030	0.033	.362
Mother-specific attachment ~ age	0.025	0.032	.446	−0.043	0.033	.190
Father-specific attachment ~ age	0.045	0.033	.170	0.006	0.033	.861
Partner-specific attachment ~ age	−0.052	0.033	.114	0.004	0.033	.900
Best friend-specific attachment ~ age	−0.052	0.034	.127	−0.020	0.034	.547
Covariances (exogenous)						
I with age	−0.077	0.044	.081	−0.077	0.044	.082
I with S	−0.018	0.004	<.001	−0.018	0.004	<.001
S with age	0.012	0.005	.009	0.012	0.005	.009
Means (time centered at age 5.9 years)						
Age at adulthood assessment	0.000	0.047	1.000	0.000	0.047	1.000
I	9.810	0.036	<.001	9.811	0.036	<.001
S	−0.020	0.004	<.001	−0.020	0.004	<.001
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	0.741	0.048	<.001	0.740	0.048	<.001
S	0.003	0.001	<.001	0.003	0.001	<.001
Residual variances (distal outcomes)						
Mother-specific attachment	0.930	0.051	<.001	0.970	0.053	<.001
Father-specific attachment	0.945	0.052	<.001	0.973	0.053	<.001
Partner-specific attachment	0.969	0.053	<.001	0.943	0.054	<.001
Best friend-specific attachment	0.988	0.054	<.001	0.989	0.054	<.001
General attachment	0.980	0.056	<.001	0.976	0.053	<.001

Note. Est = estimate; *SE* = standard error; I = intercept; S = slope.
[a] Estimate was no longer significant at α = .05 when childhood demographic covariates were added to the model. Time was centered at age 5.9 years in the models for maternal sensitivity. Participants' ages at the adulthood assessment were mean-centered (*M* = 28.6 years). The distal attachment outcomes were standardized.

Controlling for Childhood Demographic Covariates. We found the same pattern of results as is described immediately above when childhood demographic covariates were included in the models (see Supplemental Tables S20 and S21).

Mother–Child Closeness (Mother Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). People who experienced greater closeness with their mothers during childhood tended to report less attachment anxiety in their relationships with their mothers ($b_{MI} = -0.059$, $SE = 0.026$, $p = .021$), fathers ($b_{DI} = -0.051$, $SE = 0.025$, $p = .045$), and romantic partners in adulthood ($b_{PI} = -0.069$, $SE = 0.025$, $p = .006$). Early levels of mother–child closeness were also negatively associated with adults' general attachment avoidance ($b_{GI} = -0.058$, $SE = 0.025$, $p = .018$), father-specific avoidance ($b_{DI} = -0.055$, $SE = 0.025$, $p = .028$), partner-specific avoidance ($b_{PI} = -0.051$, $SE = 0.025$, $p = .040$), and best friend-specific avoidance ($b_{BI} = -0.058$, $SE = 0.025$, $p = .018$; see Table 8).

Slope Effects (Growth → Adult Attachment Orientations). Mother–child closeness decreased, on average, from early childhood to late adolescence. We found a negative association between growth in mother–child closeness and adults' mother-specific attachment avoidance ($b_{MS} = -0.619$, $SE = 0.242$, $p = .010$), suggesting that people who experienced greater decreases in closeness with their mothers during childhood and adolescence tended to be more avoidant toward their mothers as adults, compared to those who experienced lesser decreases (or increases) in mother–child closeness.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. Early levels of mother–child closeness shared a stronger association with adults' mother-specific attachment anxiety than with their best friend-specific anxiety ($Est._{MI\_BI} = -0.067$, $SE = 0.029$, $p = .020$), consistent with the relationship congruency hypothesis (see Table 3). Early levels of mother–child closeness also shared a stronger association with adults' partner-specific attachment anxiety, compared to their general attachment anxiety or best friend-specific anxiety ($Est._{GI\_PI} = 0.058$,

Table 7
Models Predicting Adult Attachment Orientations From Early Levels and Growth in Mother–Child Conflict

Model term	Attachment anxiety			Attachment avoidance		
	Est	SE	p	Est	SE	p
Regressions						
General attachment ~ I (GI)	0.030	0.009	<.001	0.024	0.008	.004
General attachment ~ S (GS)	−0.001	0.140	.996	0.060	0.138	.667
Mother-specific attachment ~ I (MI)	0.018	0.009	.037	0.019	0.009	.026
Mother-specific attachment ~ S (MS)	0.429	0.148	.004	0.224	0.142	.114
Father-specific attachment ~ I (DI)	0.029	0.008	.001	0.027	0.009	.002
Father-specific attachment ~ S (DS)	−0.018	0.143	.901	−0.156	0.140	.265
Partner-specific attachment ~ I (PI)	0.024	0.009	.006	0.027	0.009	.002
Partner-specific attachment ~ S (PS)	0.026	0.141	.852	0.108	0.141	.445
Best friend-specific attachment ~ I (BI)	0.021	0.009	.018	0.029	0.008	.001
Best friend-specific attachment ~ S (BS)	−0.090	0.142	.527	−0.088	0.141	.530
General attachment ~ age	−0.028	0.031	.367	−0.022	0.031	.469
Mother-specific attachment ~ age	0.049	0.031	.114	−0.025	0.031	.426
Father-specific attachment ~ age	0.054	0.031	.083	0.024	0.031	.447
Partner-specific attachment ~ age	−0.040	0.031	.192	0.002	0.031	.947
Best friend-specific attachment ~ age	−0.054	0.031	.083	−0.018	0.031	.556
Covariances (exogenous)						
I with age	−0.169	0.232	.466	−0.168	0.232	.470
I with S	0.376	0.098	<.001	0.377	0.098	<.001
S with age	−0.016	0.024	.496	−0.018	0.024	.466
Means (time centered at age 10.3 years)						
Age at adulthood assessment	0.000	0.047	1.000	0.000	0.047	1.000
I	16.336	0.187	<.001	16.329	0.187	<.001
S	0.068	0.020	.001	0.066	0.020	.001
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	22.850	1.314	<.001	22.841	1.313	<.001
S	0.145	0.014	<.001	0.144	0.014	<.001
Residual variances (distal outcomes)						
Mother-specific attachment	0.956	0.053	<.001	0.978	0.053	<.001
Father-specific attachment	0.976	0.053	<.001	0.982	0.053	<.001
Partner-specific attachment	0.983	0.053	<.001	0.980	0.053	<.001
Best friend-specific attachment	0.993	0.054	<.001	0.983	0.053	<.001
General attachment	0.980	0.053	<.001	0.983	0.053	<.001

Note. Est = estimate; SE = standard error; I = intercept; S = slope.

$SE = 0.025$, $p = .017$; Est.$_{\text{PI\_BI}} = −0.077$, $SE = 0.026$, $p = .003$). We found a difference between the negative effect of growth in mother–child closeness on adults' mother-specific avoidance and the positive association between growth in mother–child closeness and adults' father-specific avoidance (Est.$_{\text{MS\_DS}} = −0.950$, $SE = 0.292$, $p = .001$). This finding could point toward a *compensatory* family dynamic, in which children who began to experience greater conflict with their mothers tended to become more avoidant toward their mothers, but less avoidant toward their fathers, seeking closeness with and support from their fathers instead, the consequences of these changes persisting into adulthood.

Controlling for Childhood Demographic Covariates. When childhood demographic covariates were added to the models (see Supplemental Tables S24 and S25), six of the seven associations that we initially found between early levels of mother–child closeness and adults' attachment orientations were reduced and no longer significant. Only the association between early levels of mother–child closeness and partner-specific attachment anxiety was robust to controlling for demographic covariates ($b_{\text{PI}} = −0.057$, $SE = 0.026$, $p = .025$). We still found a significant, negative association between growth in mother–child closeness and adults'

mother-specific attachment avoidance ($b_{\text{MS}} = −0.660$, $SE = 0.252$, $p = .009$).

Father–Child Conflict (Father Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). The results of the models examining father–child conflict and adult attachment orientations are shown in Supplemental Tables S26–S29. People who experienced greater conflict with their fathers during childhood reported higher levels of father-specific attachment anxiety ($b_{\text{DI}} = 0.040$, $SE = 0.015$, $p = .007$), father-specific avoidance ($b_{\text{DI}} = 0.036$, $SE = 0.014$, $p = .009$), and best friend-specific avoidance ($b_{\text{BI}} = 0.026$, $SE = 0.013$, $p = .045$) as adults, compared to those who had less conflict with their fathers during childhood.

Slope Effects (Growth → Adult Attachment Orientations). People who experienced greater growth, or increases, in the amount of conflict they had with their fathers from early childhood to late adolescence tended to report greater mother-specific attachment anxiety in adulthood ($b_{\text{MS}} = 0.673$, $SE = 0.292$, $p = .021$).

Table 8

Models Predicting Adult Attachment Orientations From Early Levels and Growth in Mother–Child Closeness

Model term	Attachment Anxiety			Attachment Avoidance		
	Est	SE	p	Est	SE	p
Regressions						
General attachment ~ I (GI)	−0.011	0.025	.676	−0.058[a]	0.025	.018
General attachment ~ S (GS)	−0.169	0.241	.483	−0.136	0.235	.563
Mother-specific attachment ~ I (MI)	−0.059[a]	0.026	.021	−0.025	0.025	.314
Mother-specific attachment ~ S (MS)	0.163	0.252	.517	−0.619	0.242	.010
Father-specific attachment ~ I (DI)	−0.051[a]	0.025	.045	−0.055[a]	0.025	.028
Father-specific attachment ~ S (DS)	0.257	0.244	.293	0.331	0.239	.166
Partner-specific attachment ~ I (PI)	−0.069	0.025	.006	−0.051[a]	0.025	.040
Partner-specific attachment ~ S (PS)	0.321	0.240	.181	−0.251	0.238	.291
Best friend-specific attachment ~ I (BI)	0.008	0.025	.751	−0.058[a]	0.025	.018
Best friend-specific attachment ~ S (BS)	−0.442	0.244	.070	−0.284	0.238	.232
General attachment ~ age	−0.026	0.031	.415	−0.014	0.031	.664
Mother-specific attachment ~ age	0.046	0.031	.142	−0.009	0.031	.783
Father-specific attachment ~ age	0.051	0.031	.107	0.021	0.031	.505
Partner-specific attachment ~ age	−0.042	0.031	.180	0.012	0.031	.703
Best friend-specific attachment ~ age	−0.045	0.032	.154	−0.004	0.031	.895
Covariances (exogenous)						
I with age	0.231	0.110	.035	0.229	0.110	.037
I with S	0.352	0.036	<.001	0.353	0.036	<.001
S with age	0.039	0.017	.025	0.039	0.017	.023
Means (time centered at age 10.3 years)						
Age at adulthood assessment	0.000	0.047	1.000	0.000	0.047	1.000
I	36.686	0.089	<.001	36.683	0.089	<.001
S	−0.295	0.014	<.001	−0.297	0.014	<.001
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	4.765	0.295	<.001	4.761	0.295	<.001
S	0.076	0.007	<.001	0.076	0.007	<.001
Residual variances (distal outcomes)						
Mother-specific attachment	0.984	0.053	<.001	0.954	0.053	<.001
Father-specific attachment	0.987	0.053	<.001	0.989	0.054	<.001
Partner-specific attachment	0.982	0.053	<.001	0.973	0.053	<.001
Best friend-specific attachment	0.989	0.054	<.001	0.967	0.053	<.001
General attachment	0.997	0.054	<.001	0.975	0.053	<.001

Note. Est = estimate; SE = standard error; I = intercept; S = slope.
[a] Estimate was no longer significant at $\alpha = .05$ when childhood demographic covariates were added to the model. Time was centered at age 10.3 years in the models for mother–child closeness. Participants' ages at the adulthood assessment were mean-centered ($M = 28.6$ years). The distal attachment outcomes were standardized.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. We found no differences among the relative strengths of the intercept-adult attachment associations or among the slope-adult attachment associations.

Controlling for Childhood Demographic Covariates. We found the same pattern of results when childhood demographic covariates were included in the models (see Supplemental Tables S28 and S29).

Father–Child Closeness (Father Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). Supplemental Tables S30 and S31 report the full estimates from the models examining father–child closeness and adult attachment orientations. Early levels of father–child closeness did not predict individual differences in adult attachment orientations.

Slope Effects (Growth → Adult Attachment Orientations). Father–child closeness decreased, on average, from early childhood to late adolescence. Growth in father–child closeness was negatively associated with adults' general attachment anxiety

($b_{GS} = −0.705$, $SE = 0.345$, $p = .041$) and partner-specific attachment avoidance ($b_{PS} = −0.735$, $SE = 0.350$, $p = .036$).

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. We found no differences among the relative strengths of the intercept-adult attachment associations or among the slope-adult attachment associations.

Controlling for Childhood Demographic Covariates. We found the same pattern of results when controlling for childhood demographic covariates (see Supplemental Tables S32 and S33).

Maternal Hostility (Participant Self-Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). People whose mothers showed greater hostility toward them during adolescence tended to report higher levels of general attachment anxiety and avoidance in adulthood and greater attachment anxiety and avoidance in each of the specific, adult relationships assessed, including their relationships with their mothers, fathers, romantic partners, and best friends (see Table 9).

Table 9

Models Predicting Adult Attachment Orientations From Early Levels and Growth in Maternal Hostility

Model term	Attachment anxiety			Attachment avoidance		
	Est	*SE*	*p*	Est	*SE*	*p*
Regressions						
General attachment ~ I (GI)	0.147	0.026	<.001	0.094	0.023	<.001
General attachment ~ S (GS)	−0.248	0.246	.314	0.255	0.205	.213
Mother-specific attachment ~ I (MI)	0.136[a]	0.024	<.001	0.138	0.023	<.001
Mother-specific attachment ~ S (MS)	0.061	0.242	.802	0.366	0.217	.091
Father-specific attachment ~ I (DI)	0.126	0.026	<.001	0.102	0.024	<.001
Father-specific attachment ~ S (DS)	−0.321	0.253	.203	−0.147	0.201	.463
Partner-specific attachment ~ I (PI)	0.090	0.025	<.001	0.120	0.023	<.001
Partner-specific attachment ~ S (PS)	−0.099	0.234	.670	0.086	0.200	.667
Best friend-specific attachment ~ I (BI)	0.108	0.028	<.001	0.050[a]	0.023	.032
Best friend-specific attachment ~ S (BS)	−0.492	0.282	.081	0.111	0.199	.576
General attachment ~ age	−0.019	0.031	.544	−0.012	0.031	.705
Mother-specific attachment ~ age	0.059	0.031	.054	−0.008	0.031	.787
Father-specific attachment ~ age	0.059	0.031	.056	0.031	0.031	.311
Partner-specific attachment ~ age	−0.035	0.031	.261	0.012	0.031	.685
Best friend-specific attachment ~ age	−0.052	0.032	.102	−0.014	0.031	.656
Covariances (exogenous)						
I with age	−0.180	0.112	.110	−0.173	0.113	.125
I with S	0.192	0.067	.004	0.200	0.068	.003
S with age	−0.026	0.027	.342	−0.022	0.027	.424
Means (time centered at age 15.1 years)						
Age at adulthood assessment	0.000	0.047	1.00	0.000	0.047	1.000
I	11.597	0.090	<.001	11.604	0.090	<.001
S	0.059	0.022	.007	0.061	0.022	.005
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	4.159	0.330	<.001	4.244	0.334	<.001
S	0.103	0.033	.002	0.117	0.033	<.001
Residual variances (distal outcomes)						
Mother-specific attachment	0.915	0.052	<.001	0.880	0.052	<.001
Father-specific attachment	0.934	0.053	<.001	0.959	0.053	<.001
Partner-specific attachment	0.965	0.053	<.001	0.933	0.052	<.001
Best friend-specific attachment	0.949	0.056	<.001	0.987	0.054	<.001
General attachment	0.918	0.052	<.001	0.943	0.053	<.001

Note. Est = estimate; *SE* = standard error; I = intercept; S = slope.
[a] Estimate was no longer significant at α = .05 when childhood demographic covariates were added to the model. Time was centered at age 15.1 years in the models for maternal hostility. Participants' ages at the adulthood assessment were mean-centered (*M* = 28.6 years). The distal attachment outcomes were standardized.

Slope Effects (Growth → Adult Attachment Orientations). Maternal hostility increased, on average, from early to late adolescence. Growth, or changes, in maternal hostility during adolescence did not predict individual differences in adult attachment orientations.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. Consistent with the relationship congruency hypothesis (see Table 3), maternal hostility during adolescence was a stronger predictor of adults' mother-specific attachment avoidance than their best friend-specific avoidance (Est.$_{\text{MI\_BI}}$ = 0.088, *SE* = 0.028, *p* = .001). Early levels of maternal hostility also shared a stronger association with adults' general attachment anxiety, compared to their partner-specific anxiety (Est.$_{\text{GI\_PI}}$ = 0.057, *SE* = 0.024, *p* = .017), and a stronger association with adults' partner-specific avoidance, compared to their best friend-specific avoidance (Est.$_{\text{PI\_BI}}$ = 0.070, *SE* = 0.026, *p* = .007). These latter two differences neither support nor contradict the theoretical possibilities outlined in Table 3.

Controlling for Childhood Demographic Covariates. Nine of the 10 associations we observed between early levels of maternal hostility and adult attachment orientations were robust to controlling for childhood demographic covariates (see Supplemental Tables S36 and S37). Only the association between early levels of maternal hostility and adults' best friend-specific avoidance was no longer significant (b_{BI} = 0.036, *SE* = 0.024, *p* = .139).

Maternal Warmth (Participant Self-Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). People whose mothers showed greater warmth toward them during adolescence reported lower levels of general attachment anxiety and avoidance, on average, in adulthood and lower levels of attachment anxiety and avoidance in nearly every specific relationship assessed (see Table 10). The one exception was the association between early levels of maternal warmth and adults' mother-specific attachment anxiety, which was also negative, but not statistically significant (b_{MI} = −0.037, *SE* = 0.022, *p* = .085). Nonetheless, we did not find any significant differences when we directly compared the strengths of the associations between early levels of maternal warmth and adults' attachment orientations (see

Table 10

Models Predicting Adult Attachment Orientations From Early Levels and Growth in Maternal Warmth

Model term	Attachment anxiety			Attachment avoidance		
	Est	SE	p	Est	SE	p
Regressions						
General attachment ~ I (GI)	−0.089	0.018	<.001	−0.076	0.017	<.001
General attachment ~ S (GS)	0.094	0.177	.597	−0.144	0.183	.430
Mother-specific attachment ~ I (MI)	−0.037	0.022	.085	−0.079	0.025	.002
Mother-specific attachment ~ S (MS)	−0.480	0.263	.068	−0.625	0.320	.051
Father-specific attachment ~ I (DI)	−0.066	0.018	<.001	−0.075	0.020	<.001
Father-specific attachment ~ S (DS)	0.111	0.171	.519	0.195	0.200	.329
Partner-specific attachment ~ I (PI)	−0.061	0.017	<.001	−0.070	0.017	<.001
Partner-specific attachment ~ S (PS)	−0.040	0.168	.813	−0.135	0.184	.464
Best friend-specific attachment ~ I (BI)	−0.081	0.022	<.001	−0.068	0.018	<.001
Best friend-specific attachment ~ S (BS)	0.289	0.220	.189	0.058	0.181	.748
General attachment ~ age	0.025	0.031	.418	0.031	0.032	.332
Mother-specific attachment ~ age	0.090	0.034	.008	0.049	0.034	.146
Father-specific attachment ~ age	0.090	0.032	.004	0.064	0.032	.045
Partner-specific attachment ~ age	0.000	0.032	.992	0.050	0.032	.118
Best friend-specific attachment ~ age	−0.013	0.033	.688	0.022	0.032	.487
Covariances (exogenous)						
I with age	1.053	0.212	<.001	1.023	0.211	<.001
I with S	1.047	0.223	<.001	1.049	0.219	<.001
S with age	0.071	0.048	.141	0.063	0.048	.195
Means (time centered at age 15.1 years)						
Age at adulthood assessment	0.000	0.047	1.000	0.000	0.047	1.000
I	29.697	0.171	<.001	29.673	0.170	<.001
S	−0.551	0.040	<.001	−0.556	0.040	<.001
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	14.181	1.123	<.001	14.081	1.110	<.001
S	0.297	0.104	.004	0.284	0.102	.005
Residual variances (distal outcomes)						
Mother-specific attachment	0.873	0.064	<.001	0.701	0.071	<.001
Father-specific attachment	0.947	0.052	<.001	0.942	0.053	<.001
Partner-specific attachment	0.940	0.052	<.001	0.909	0.052	<.001
Best friend-specific attachment	0.934	0.056	<.001	0.947	0.053	<.001
General attachment	0.908	0.051	<.001	0.893	0.052	<.001

Note. Est = estimate; SE = standard error; I = intercept; S = slope.

below), suggesting that early levels of maternal warmth explained equivalent portions of the variance in adults' mother-specific attachment anxiety, compared to their attachment anxiety in other relationships (Supplemental Tables S38 and S39).

Slope Effects (Growth → Adult Attachment Orientations). Maternal warmth decreased, on average, from early to late adolescence. We did not find any significant associations between growth in maternal warmth during adolescence and adult attachment orientations.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. We found no differences among the relative strengths of the intercept-adult attachment associations or among the slope-adult attachment associations.

Controlling for Childhood Demographic Covariates. Controlling for childhood demographic characteristics did not alter the pattern of results we observed (see Supplemental Tables S40 and S41).

Paternal Hostility (Participant Self-Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). The results of the growth curve models for paternal hostility can be found in Supplemental Tables S42 and S43.

People whose fathers showed greater hostility toward them during adolescence tended to report higher levels of general attachment anxiety ($b_{GI} = 0.157$, $SE = 0.042$, $p < .001$), mother-specific anxiety ($b_{MI} = 0.100$, $SE = 0.041$, $p = .013$), and best friend-specific anxiety in adulthood ($b_{BI} = 0.099$, $SE = 0.040$, $p = .012$). Early levels of paternal hostility also shared positive associations with adults' general attachment avoidance ($b_{GI} = 0.097$, $SE = 0.039$, $p = .014$), mother-specific avoidance ($b_{MI} = 0.076$, $SE = 0.038$, $p = .046$), father-specific avoidance ($b_{DI} = 0.078$, $SE = 0.040$, $p = .049$), and partner-specific avoidance ($b_{PI} = 0.088$, $SE = 0.041$, $p = .030$).

Slope Effects (Growth → Adult Attachment Orientations). On average, paternal hostility increased from early to late adolescence. Growth, or changes, in paternal hostility did not predict individual differences in adult attachment orientations.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. Early levels of paternal hostility (i.e., during adolescence) shared a stronger association with adults' general attachment anxiety than with their father-specific attachment anxiety ($Est._{GI\_DI} = 0.112$, $SE = 0.050$, $p = .025$). Although we did not specify any expectations regarding the relative strengths of the

associations between early experiences with specific others (e.g., fathers) and relationship-congruent *versus general* attachment styles (see Table 3), this finding is inconsistent with what we might expect based on attachment research and theory (Fraley et al., 2011). The results also suggested that early levels of paternal hostility shared a stronger association with adults' general attachment anxiety, compared to their partner-specific anxiety (Est.$_{GI\_DI}$ = 0.124, SE = 0.045, p = .005).

Controlling for Childhood Demographic Covariates. When childhood demographic characteristics were added to the models (see Supplemental Tables S44 and S45), the four associations that we initially found between early levels of paternal hostility and adults' attachment avoidance were reduced and no longer significant (*general attachment avoidance:* b_{GI} = 0.069, SE = 0.036, p = .053; *mother-specific avoidance:* b_{MI} = 0.066, SE = 0.037, p = .071; *father-specific avoidance:* b_{DI} = 0.068, SE = 0.037, p = .065; *partner-specific avoidance:* b_{PI} = 0.062, SE = 0.037, p = .094). We did, however, find the same pattern of associations between early levels of paternal hostility and adults' general attachment anxiety (b_{GI} = 0.150, SE = 0.038, p < .001), mother-specific anxiety (b_{MI} = 0.092, SE = 0.038, p = .015), and best friend-specific anxiety (b_{BI} = 0.086, SE = 0.036, p = .017).

Paternal Warmth (Participant Self-Reports)

Neither early levels nor growth in paternal warmth predicted individual differences in adult attachment orientations (see Supplemental Tables S48 and S49).

Friendship Quality (Participant Self-Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). As shown in Table 11, people who had higher quality friendships during childhood tended to report lower levels of general attachment anxiety (b_{GI} = −0.345, SE = 0.125, p = .006) and avoidance (b_{GI} = −0.795, SE = 0.129, p < .001) in adulthood and less attachment anxiety and avoidance in their adult friendships (*anxiety:* b_{BI} = −0.511, SE = 0.129, p < .001; *avoidance:* b_{BI} = −0.875, SE = 0.132, p < .001) and romantic relationships (*anxiety:* b_{PI} = −0.448, SE = 0.128, p < .001; *avoidance:* b_{PI} = −0.779, SE = 0.132, p < .001), compared to those who had lower quality friendships during childhood. Early levels of friendship quality were also negatively associated with adults' mother-specific and father-specific attachment avoidance (b_{MI} = −0.517, SE = 0.125, p < .001; b_{DI} = −0.309, SE = 0.126, p = .015), but not their mother- or father-specific attachment anxiety.

Slope Effects (Growth → Adult Attachment Orientations). Friendship quality increased, on average, from middle childhood to late adolescence. People who experienced greater growth in the quality of their friendships tended to report lower levels of general attachment avoidance in adulthood (b_{GS} = −4.230, SE = 1.572, p = .007) and less attachment anxiety and avoidance in their adult relationships with their best friends (*anxiety:* b_{BS} = −3.546, SE = 1.479, p = .018; *avoidance:* b_{BS} = −5.021, SE = 1.642, p = .002) and romantic partners (*anxiety:* b_{BS} = −3.534, SE = 1.505, p = .019; *avoidance:* b_{PS} = −5.094, SE = 1.644, p = .002).

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. The results revealed a clear trend suggesting that early levels and growth in friendship quality were stronger predictors of adults' best friend-specific and partner-specific attachment orientations than their parent-specific attachment orientations. This trend aligns with the theoretical distinction between *horizontal* attachment relationships (e.g., friendships and romantic relationships) and *vertical* attachment relationships (e.g., parent–child relationships; see Table 3). Specifically, we found that early levels of friendship quality shared stronger associations with adults' best friend-specific and partner-specific attachment anxiety, compared to their mother-specific anxiety (Est.$_{MI\_BI}$ = 0.591, SE = 0.145, p < .001; Est.$_{MI\_PI}$ = 0.528, SE = 0.150, p < .001), and a stronger association with adults' best friend-specific attachment anxiety, than with their father-specific anxiety (Est.$_{DI\_BI}$ = 0.332, SE = 0.157, p = .034). Similarly, early levels of friendship quality were more strongly associated with adults' best friend-specific attachment avoidance, than their mother-specific avoidance (Est.$_{MI\_BI}$ = 0.358, SE = 0.156, p = .022), and shared stronger associations with adults' best friend-specific and partner-specific attachment avoidance, compared to their father-specific avoidance (Est.$_{DI\_BI}$ = 0.566, SE = 0.166, p = .001; Est.$_{DI\_PI}$ = 0.471, SE = 0.162, p = .004). Furthermore, we found that growth in friendship quality from middle childhood to late adolescence was a stronger predictor of adults' best friend-specific and partner-specific attachment anxiety, than their mother-specific attachment anxiety (Est.$_{MS\_BS}$ = 3.528, SE = 1.694, p = .037; Est.$_{MS\_PS}$ = 3.516, SE = 1.768, p = .047). Growth in friendship quality was also a stronger predictor of adults' best friend-specific and partner-specific attachment avoidance, compared to their mother-specific avoidance (Est.$_{MS\_BS}$ = 3.744, SE = 1.865, p = .045; Est.$_{MS\_PS}$ = 3.817, SE = 1.893, p = .044).

Briefly, the results also suggested that early levels of friendship quality were more strongly associated with adults' general attachment anxiety, than their mother-specific anxiety (Est.$_{GI\_MI}$ = −0.425, SE = 0.137, p = .002), and more strongly associated with adults' general attachment avoidance, than either their mother-specific or father-specific avoidance (Est.$_{GI\_MI}$ = −0.279, SE = 0.132, p = .035; Est.$_{GI\_DI}$ = −0.487, SE = 0.146, p = .001).

Controlling for Childhood Demographic Covariates. In the secondary models that included childhood demographic covariates (see Supplemental Tables S52 and S53), we found the same pattern of associations between early levels and growth in friendship quality and adults' attachment orientations. However, most of the differences we initially found between the estimated effects of early levels and growth in friendship quality on adults' attachment orientations were no longer statistically significant (i.e., seven of 10 differences were no longer significant at α = .05). Early levels of friendship quality still shared stronger associations with adults' best friend-specific attachment anxiety (b_{BI} = −0.683, SE = 0.194, p < .001), partner-specific anxiety (b_{PI} = −0.613, SE = 0.193, p = .001), and general attachment anxiety (b_{GI} = −0.554, SE = 0.186, p = .003), compared to their mother-specific anxiety (b_{MI} = −0.060, SE = 0.181, p = .742; Est.$_{MI\_BI}$ = 0.624, SE = 0.214, p = .004; Est.$_{MI\_PI}$ = 0.553, SE = 0.221, p = .012; Est.$_{GI\_MI}$ = −0.494, SE = 0.200, p = .013).

Social Competence With Peers (Mother Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). People who demonstrated higher levels of social competence with peers during childhood, according to their mothers, tended to report lower levels of general attachment anxiety and avoidance in adulthood and less attachment anxiety and

Table 11

Models Predicting Adult Attachment Orientations From Early Levels and Growth in Friendship Quality

Model term	Attachment anxiety			Attachment avoidance		
	Est	SE	p	Est	SE	p
Regressions						
General attachment ~ I (GI)	−0.345	0.125	.006	−0.795	0.129	<.001
General attachment ~ S (GS)	−1.648	1.439	.252	−4.230	1.572	.007
Mother-specific attachment ~ I (MI)	0.080	0.127	.530	−0.517	0.125	<.001
Mother-specific attachment ~ S (MS)	−0.018	1.483	.990	−1.277	1.472	.385
Father-specific attachment ~ I (DI)	−0.179	0.126	.155	−0.309	0.126	.015
Father-specific attachment ~ S (DS)	−1.643	1.451	.258	−1.217	1.476	.409
Partner-specific attachment ~ I (PI)	−0.448	0.128	<.001	−0.779	0.132	<.001
Partner-specific attachment ~ S (PS)	−3.534	1.505	.019	−5.094	1.644	.002
Best friend-specific attachment ~ I (BI)	−0.511	0.129	<.001	−0.875	0.132	<.001
Best friend-specific attachment ~ S (BS)	−3.546	1.497	.018	−5.021	1.642	.002
General attachment ~ age	−0.029	0.031	.353	−0.021	0.031	.490
Mother-specific attachment ~ age	0.040	0.031	.206	−0.022	0.031	.480
Father-specific attachment ~ age	0.049	0.031	.121	0.025	0.031	.421
Partner-specific attachment ~ age	−0.045	0.031	.153	−0.001	0.031	.983
Best friend-specific attachment ~ age	−0.055	0.032	.079	−0.016	0.031	.599
Covariances (exogenous)						
I with age	0.032	0.020	.106	0.032	0.020	.103
I with S	−0.006	0.001	<.001	−0.006	0.001	<.001
S with age	−0.005	0.003	.119	−0.005	0.003	.125
Means (time centered at age 12.5 years)						
Age at adulthood assessment	0.000	0.047	1.000	0.000	0.047	1.000
I	4.110	0.016	<.001	4.110	0.016	<.001
S	0.025	0.003	<.001	0.025	0.003	<.001
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	0.143	0.009	<.001	0.143	0.009	<.001
S	0.002	0.000	<.001	0.002	0.000	<.001
Residual variances (distal outcomes)						
Mother-specific attachment	0.995	0.054	<.001	0.963	0.052	<.001
Father-specific attachment	0.988	0.054	<.001	0.987	0.054	<.001
Partner-specific attachment	0.959	0.054	<.001	0.905	0.054	<.001
Best friend-specific attachment	0.959	0.054	<.001	0.891	0.054	<.001
General attachment	0.984	0.054	<.001	0.910	0.053	<.001

Note. Est = estimate; SE = standard error; I = intercept; S = slope.

avoidance in every specific, adult relationship assessed, including with their mothers, fathers, romantic partners, and best friends (see Table 12).

Slope Effects (Growth → Adult Attachment Orientations). Participants' social competence with peers generally increased from early childhood to late adolescence (i.e., from age 4.5 to 18 years). People who demonstrated greater growth in social competence with peers from early childhood to late adolescence tended to report lower levels of general attachment anxiety ($b_{GS} = -1.330$, $SE = 0.367$, $p < .001$) and avoidance ($b_{GS} = -1.415$, $SE = 0.361$, $p < .001$) and less attachment anxiety and avoidance toward their mothers (*anxiety:* $b_{MS} = -1.030$, $SE = 0.384$, $p = .007$; *avoidance:* $b_{MS} = -0.733$, $SE = 0.365$, $p = .045$) and romantic partners as adults (*anxiety:* $b_{PS} = -0.752$, $SE = 0.365$, $p = .039$; *avoidance:* $b_{PS} = -1.072$, $SE = 0.364$, $p = .003$), compared to people who demonstrated less growth in social competence during childhood. Growth in mother-reported social competence with peers was also negatively associated with adults' best friend-specific attachment anxiety ($b_{BS} = -0.875$, $SE = 0.367$, $p = .017$).

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. The results suggested that growth in social competence with peers during childhood was a stronger

predictor of adults' general attachment avoidance, than their father-specific avoidance (Est.$_{GS\_DS} = -0.843$, $SE = 0.419$, $p = .044$) or best friend-specific avoidance (Est.$_{GS\_BS} = -0.900$, $SE = 0.367$, $p = .014$). As noted earlier, we did not specify theoretical expectations regarding the relative strengths of associations between early experiences with close others and adults' relationship-specific *versus general* attachment styles (see Table 3). However, these differences align with prior research which has found that, compared to relationship-specific attachment styles, general attachment styles tend to share stronger associations with psychological constructs that are also assessed on a global level (Cozzarelli et al., 2000; Fraley et al., 2011). Unlike the other interpersonal variables examined thus far, the measure of social competence with peers used in the present study was designed to assess more general social skills, not the quality of any specific peer relationships.

Controlling for Childhood Demographic Covariates. When childhood demographic covariates were added to the models (see Supplemental Tables S56 and S57), the associations between early levels of mother-reported social competence with peers and adults' mother-specific attachment anxiety ($b_{MI} = -0.036$, $SE = 0.022$, $p = .103$), partner-specific anxiety ($b_{PI} = -0.032$, $SE = 0.022$, $p = .154$), and best friend-specific anxiety ($b_{BI} = -0.035$, $SE = 0.023$,

Table 12

Models Predicting Adult Attachment Orientations From Early Levels and Growth in Social Competence With Peers (Mother Reports)

Model term	Attachment anxiety			Attachment avoidance		
	Est	SE	p	Est	SE	p
Regressions						
General attachment ~ I (GI)	−0.059	0.021	.006	−0.087	0.021	<.001
General attachment ~ S (GS)	−1.330	0.367	<.001	−1.415	0.361	<.001
Mother-specific attachment ~ I (MI)	−0.057[a]	0.021	.008	−0.052	0.021	.014
Mother-specific attachment ~ S (MS)	−1.030	0.384	.007	−0.733	0.365	.045
Father-specific attachment ~ I (DI)	−0.074	0.021	<.001	−0.071	0.021	.001
Father-specific attachment ~ S (DS)	−0.531	0.366	.146	−0.572	0.358	.110
Partner-specific attachment ~ I (PI)	−0.046[a]	0.021	.031	−0.082	0.021	<.001
Partner-specific attachment ~ S (PS)	−0.752	0.365	.039	−1.072	0.364	.003
Best friend-specific attachment ~ I (BI)	−0.044[a]	0.022	.043	−0.094	0.021	<.001
Best friend-specific attachment ~ S (BS)	−0.875	0.367	.017	−0.515	0.359	.151
General attachment ~ age	−0.023	0.031	.454	−0.014	0.031	.649
Mother-specific attachment ~ age	0.050	0.031	.109	−0.022	0.031	.472
Father-specific attachment ~ age	0.060	0.031	.051	0.032	0.031	.303
Partner-specific attachment ~ age	−0.037	0.031	.235	0.009	0.031	.759
Best friend-specific attachment ~ age	−0.049	0.031	.114	−0.007	0.031	.812
Covariances (exogenous)						
I with age	0.207	0.094	.028	0.205	0.094	.029
I with S	0.035	0.017	.039	0.034	0.017	.044
S with age	0.001	0.010	.902	0.001	0.010	.893
Means (time centered at age 10.3 years)						
Age at adulthood assessment	0.000	0.047	1.000	0.000	0.047	1.000
I	14.326	0.076	<.001	14.328	0.076	<.001
S	0.110	0.008	<.001	0.110	0.008	<.001
Variances						
Age at adulthood assessment	1.538	0.082	<.001	1.538	0.082	<.001
I	3.682	0.216	<.001	3.673	0.216	<.001
S	0.023	0.003	<.001	0.023	0.003	<.001
Residual variances (distal outcomes)						
Mother-specific attachment	0.955	0.053	<.001	0.972	0.053	<.001
Father-specific attachment	0.966	0.053	<.001	0.970	0.053	<.001
Partner-specific attachment	0.973	0.053	<.001	0.943	0.053	<.001
Best friend-specific attachment	0.974	0.054	<.001	0.959	0.052	<.001
General attachment	0.942	0.053	<.001	0.915	0.052	<.001

Note. Est = estimate; SE = standard error; I = intercept; S = slope.
[a] Estimate was no longer significant at $\alpha = .05$ when childhood demographic covariates were added to the model. Time was centered at age 10.3 years in the models for mother-reported social competence with peers. Participants' ages at the adulthood assessment were mean-centered ($M = 28.6$ years). The distal attachment outcomes were standardized.

$p = .125$) were slightly reduced and no longer significant. The results still showed significant associations between early levels of social competence with peers and adults' general attachment anxiety ($b_{GI} = -0.059$, $SE = 0.022$, $p = .009$) and father-specific anxiety ($b_{DI} = -0.056$, $SE = 0.022$, $p = .011$), the latter being slightly reduced as well. Additionally, early levels of mother-reported social competence with peers still predicted adults' attachment avoidance in every relationship domain, and all seven of the growth-adult attachment associations identified in the primary analyses remained significant.

Social Competence With Peers (Father Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). The results of the growth curve models for father-reported social competence with peers are shown in Supplemental Tables S58–S61. People who demonstrated higher levels of social competence with peers during childhood, according to their fathers, tended to report lower levels of partner-specific attachment anxiety ($b_{PI} =$

-0.111, $SE = 0.034$, $p = .001$) and general attachment avoidance as adults ($b_{GI} = -0.071$, $SE = 0.035$, $p = .043$).

Slope Effects (Growth → Adult Attachment Orientations). Participants' social competence with peers, as reported by their fathers, generally increased from early childhood to midadolescence (i.e., from age 4.5 to 15 years). Growth in father-reported social competence with peers was negatively associated with general attachment anxiety in adulthood ($b_{GS} = -1.542$, $SE = 0.554$, $p = .005$).

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. Early levels of father-reported social competence with peers shared a stronger, negative association with adults' partner-specific attachment anxiety, relative to their general attachment anxiety ($b_{GI} = -0.002$, $SE = 0.038$, $p = .955$; Est.$_{GI\_PI} = 0.109$, $SE = 0.039$, $p = .005$). The negative association between growth in father-reported social competence with peers and adults' general attachment anxiety was significantly different from the estimated associations between growth in social competence and adults' mother-specific anxiety ($b_{MS} = 0.278$, $SE = 0.624$, $p = .656$;

Est.$_{\text{GS\_MS}}$ = −1.820, SE = 0.668, p = .006) and partner-specific anxiety (b_{PS} = 0.119, SE = 0.494, p = .809; Est.$_{\text{GS\_PS}}$ = −1.661, SE = 0.563, p = .003), both of which were positive in direction but had confidence intervals that contained zero.

Controlling for Childhood Demographic Covariates. When childhood demographic characteristics were added to the models (see Supplemental Tables S60 and S61), the association between early levels of father-reported social competence with peers and adults' general attachment avoidance was reduced and no longer significant (b_{GI} = −0.043, SE = 0.036, p = .233). All other results remained the same.

Social Competence With Peers (Teacher Reports)

Intercept Effects (Early Levels → Adult Attachment Orientations). The results of the growth curve models for teacher-reported social competence with peers are shown in Supplemental Tables S62–S65. People who demonstrated higher levels of social competence with peers during childhood, according to their teachers, tended to report lower levels of general attachment anxiety (b_{GI} = −0.058, SE = 0.018, p = .001) and avoidance (b_{GI} = −0.077, SE = 0.018, p < .001) in adulthood and less attachment anxiety and avoidance in every specific relationship assessed, including adults' relationships with their mothers (anxiety: b_{MI} = −0.077, SE = 0.018, p < .001; avoidance: b_{GI} = −0.048, SE = 0.018, p = .009), fathers (anxiety: b_{DI} = −0.115, SE = 0.018, p < .001; avoidance: b_{DI} = −0.092, SE = 0.018, p < .001), romantic partners (anxiety: b_{PI} = −0.070, SE = 0.018, p < .001; avoidance: b_{PI} = −0.056, SE = 0.018, p = .002), and best friends (anxiety: b_{BI} = −0.051, SE = 0.018, p = .006; avoidance: b_{BI} = −0.066, SE = 0.018, p < .001).

Slope Effects (Growth → Adult Attachment Orientations). No slope effects involving teacher-reported social competence with peers emerged.

Comparisons of Intercept and Slope Effects Across Adult Attachment Relationships. We found an unexpected pattern of results suggesting that early levels of teacher-reported social competence with peers were most strongly related to adults' father-specific attachment orientations. Specifically, early levels of teacher-reported social competence with peers shared a stronger association with adults' father-specific attachment anxiety, as compared to their general attachment anxiety (Est.$_{\text{GI\_DI}}$ = 0.057, SE = 0.021, p = .007), partner-specific anxiety (Est.$_{\text{DI\_PI}}$ = −0.045, SE = 0.022, p = .040), and best friend-specific anxiety (Est.$_{\text{DI\_BI}}$ = −0.065, SE = 0.023, p = .005). Early levels of teacher-reported social competence with peers also shared a stronger association with adults' father-specific attachment avoidance, compared to their mother-specific avoidance (Est.$_{\text{MI\_DI}}$ = 0.044, SE = 0.022, p = .044). These findings are inconsistent with the distinction between horizontal and vertical attachment relationships and contradict the domain congruency hypothesis (see Table 3), which proposes that early experiences with peers might demonstrate stronger associations with adults' partner- and best friend-specific attachment orientations, relative to their parent-specific attachment orientations.

Controlling for Childhood Demographic Covariates. When childhood demographic covariates were added to the models, six of the 10 associations that we initially observed between early levels of teacher-reported social competence with peers and adults' attachment orientations persisted. The associations between early levels of teacher-reported social competence and best friend-specific attachment anxiety (b_{BI} = −0.037, SE = 0.021, p = .076) and avoidance (b_{BI} = −0.037, SE = 0.020, p = .073), partner-specific avoidance (b_{PI} = −0.015, SE = 0.020, p = .457), and mother-specific avoidance (b_{MI} = −0.039, SE = 0.021, p = .063) were reduced and no longer significant. Furthermore, there was no longer a difference between the estimated effects of early social competence on adults' father-specific avoidance versus their mother-specific avoidance (Est.$_{\text{MI\_DI}}$ = 0.033, SE = 0.025, p = .191).

Romantic Relationships During Early, Mid-, and Late Adolescence

Participants were only administered the NRI (Furman & Buhrmester, 1985), which assessed conflict and support in their romantic relationships, if they indicated that they were currently involved in a relationship at the Grade 6, age 15, and age 18 assessment waves. As such, the data were more limited for these measures, and we could not estimate *growth* in romantic relationship quality over time. Specifically, whereas 362 participants provided data at one or more of the assessment waves during adolescence, only 20 participants completed the NRI at all three waves. Therefore, we fit path models to estimate the associations between the romantic relationship variables, assessed at Grade 6, age 15 years, and age 18 years, and participants' attachment orientations in adulthood (see Figure 3). Romantic relationship conflict and support were examined in separate models. Using MODEL CONSTRAINTS in M*plus* (Version 8.8; Muthén & Muthén, 2017), we directly compared the magnitude of associations between the romantic relationship variables and each of the distal attachment outcomes. Both the distal attachment outcomes and the romantic relationship variables were standardized.

We estimated a set of secondary path models as well, controlling for childhood demographic characteristics: family income-to-needs ratio, maternal education, race/ethnicity, and sex assigned at birth. We describe the results of both sets of analyses below, noting any differences that emerged when the childhood demographic covariates were added to the models. Table 13 summarizes the results of all models, including those examining the parent–child, peer, and romantic relationship variables.

Romantic Relationship Conflict (Participant Self-Reports)

Romantic Relationship Conflict During Early Adolescence (Grade 6 or Age 12.5 Years). Romantic relationship conflict at Grade 6, or during early adolescence, did not predict individual differences in adult attachment orientations (see Supplemental Tables S66 and S67 for full model estimates).
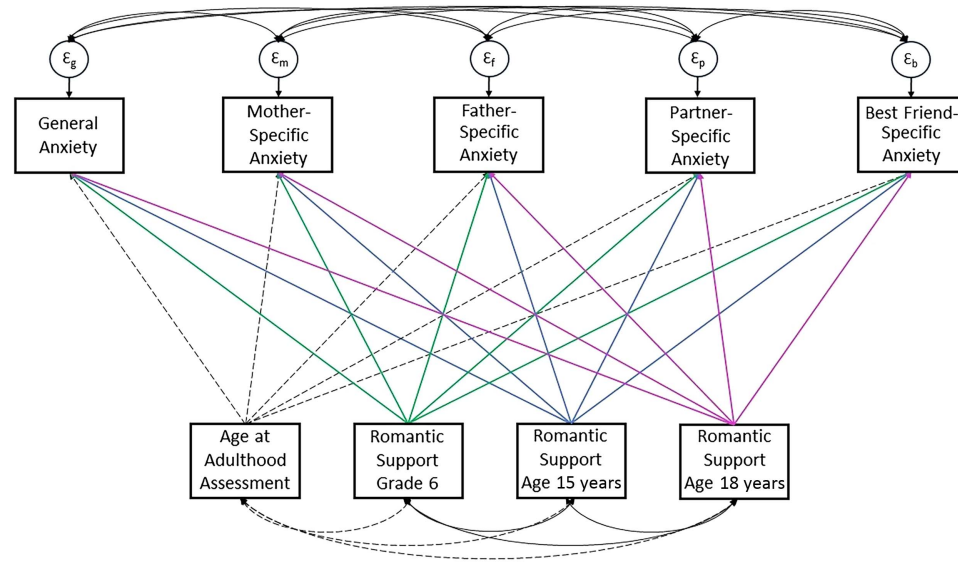
Romantic Relationship Conflict During Midadolescence (Age 15 Years). People who had greater conflict with their romantic partners at age 15 years tended to report higher levels of partner-specific attachment anxiety (b_{P15} = 0.200, SE = 0.098, p = .041), mother-specific anxiety (b_{M15} = 0.221, SE = 0.087, p = .011), father-specific avoidance (b_{D15} = 0.225, SE = 0.106, p = .034), and best friend-specific avoidance (b_{B15} = 0.211, SE = 0.096, p = .029) in adulthood, compared to those who had less conflict with their partners at age 15 years.

Romantic Relationship Conflict During Late Adolescence (Age 18 Years). We did not find any significant associations

Figure 3

Models Examining Adolescent Romantic Relationship Measures as Predictors of Adult Attachment Orientations

Note. See the online article for the color version of this figure.

between romantic relationship conflict at age 18 years and adult attachment orientations.

Comparisons of Associations Between Romantic Relationship Conflict and Adult Attachment Orientations. The results suggested that romantic relationship conflict at age 15 years was a stronger predictor of adults' partner-specific attachment anxiety and mother-specific anxiety, compared to their general attachment anxiety ($b_{G15} = -0.014$, $SE = 0.108$, $p = .900$; Est.$_{P15\_G15} = -0.214$, $SE = 0.100$, $p = .032$; Est.$_{M15\_G15} = -0.234$, $SE = 0.112$, $p = .037$).

Controlling for Childhood Demographic Covariates. Most of the associations we initially found between romantic relationship conflict at age 15 years and adult attachment orientations did not hold when childhood demographic characteristics were added to the models (see Supplemental Tables S68 and S69). Only the association between romantic relationship conflict at age 15 and adults' mother-specific attachment anxiety remained significant ($b_{M15} = 0.178$, $SE = 0.090$, $p = .047$). Additionally, we no longer found any differences among the strengths of the associations

Table 13

Summary of Intercept and Slope Effects

Model term	General		Mother		Father		Romantic partner		Best friend	
	Anxiety	Avoid.	Anxiety	Avoid.	Anxiety	Avoid.	Anxiety	Avoid.	Anxiety	Avoid.
Maternal sensitivity (observer ratings)	I[a]	I[a]	**I**	**I**	**I**	I[a]	**I**	**I**	I[a]	I[a]
Mother–child conflict (mother reports)	**I**	**I**	**IS**	**I**	**I**	**I**	**I**	**I**	**I**	**I**
Mother–child closeness (mother reports)		I[a]	I[a]	**S**	I[a]	I[a]	**I**	I[a]		I[a]
Maternal hostility (self-reports)	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**
Maternal warmth (self-reports)	**I**	**I**	**I**	**S**	**I**	**I**	**I**	**I**	**I**	**I**
Paternal sensitivity (observer ratings)	I[a]		I[a]						I[a]	
Father–child conflict (father reports)			**S**		**I**	**I**			**I**	
Father–child closeness (father reports)	**S**							**S**		
Paternal hostility (self-reports)	**I**	I[a]	**I**	I[a]		I[a]		I[a]	**I**	
Paternal warmth (self-reports)										
Friendship quality (self-reports)	**I**	**IS**		**I**		**I**	**IS**	**IS**	**IS**	**IS**
Peer competence (mother reports)	**IS**	**IS**	**IS**	I[a]**S**	**I**	**I**	**IS**	I[a]**S**	I[a]	I[a]**S**
Peer competence (father reports)	**S**						**I**			
Peer competence (teacher reports)	**I**	**I**	**I**		**I**	**I**				
Romantic relationship conflict			**15Y**			15Y[a]	15Y[a]			15Y[a]
Romantic relationship support					**15Y, 18Y**		**12.5Y, 18Y**			

Note. Effects shown in bold remained significant when controlling for childhood demographic characteristics. I = intercept effects; S = slope effects; 12.5Y, 15Y, and 18Y = romantic relationship variables assessed at ages 12.5 years, 15 years, and 18 years, respectively.
[a] Effects were no longer significant at $\alpha = .05$ when childhood demographic characteristics were added to the models.

between romantic relationship conflict at age 15 and adult attachment orientations.

Romantic Relationship Support (Participant Self-Reports)

Romantic Relationship Support During Early Adolescence (Grade 6 or Age 12.5 Years). Interestingly, we found that people who reported receiving greater support from their romantic partners during early adolescence (i.e., at Grade 6 or age 12.5 years) tended to report *higher* levels of partner-specific attachment avoidance, on average, in adulthood ($b_{P6} = 0.282$, $SE = 0.114$, $p = .013$; see Supplemental Tables S70 and S71 for full model estimates). This finding closely aligns with theory and research on the normative trajectory model of adolescent romantic development (J. A. Connolly & McIsaac, 2009; Davila, 2008), which we explore further in the discussion.

Romantic Relationship Support During Midadolescence (Age 15 Years). Romantic relationship support at age 15 years was negatively associated with father-specific attachment anxiety in adulthood ($b_{D15} = -0.275$, $SE = 0.108$, $p = .011$).

Romantic Relationship Support During Late Adolescence (Age 18 Years). People who were involved in more supportive romantic relationships at age 18 years tended to report lower levels of partner-specific attachment avoidance in adulthood ($b_{P18} = -0.175$, $SE = 0.082$, $p = .033$), compared to those who were involved in less supportive relationships at age 18. We found a somewhat unexpected, positive association between romantic relationship support at age 18 years and father-specific attachment anxiety in adulthood ($b_{D18} = 0.190$, $SE = 0.079$, $p = .016$).

Comparisons of Associations Between Romantic Relationship Support and Adult Attachment Orientations. The positive association we found between romantic relationship support at Grade 6 and adults' partner-specific attachment avoidance was significantly different from the negative associations between romantic support at Grade 6 and adults' general attachment avoidance (Est.$_{G6\_P6} = -0.286$, $SE = 0.124$, $p = .021$), mother-specific avoidance (Est.$_{M6\_P6} = -0.290$, $SE = 0.139$, $p = .036$), and father-specific avoidance (Est.$_{D6\_P6} = -0.371$, $SE = 0.162$, $p = .022$). These results are somewhat aligned for the domain congruency hypothesis (see Table 3), in that they suggest that early romantic relationship experiences share a unique connection with adults' partner-specific attachment orientations. Furthermore, romantic relationship support at age 18 years was a stronger predictor of adults' partner-specific attachment avoidance than their father-specific avoidance (Est.$_{D18\_P18} = 0.248$, $SE = 0.106$, $p = .019$), offering some, albeit weak, support for domain congruency hypothesis.

The results suggested that romantic relationship support at age 15 years shared a stronger association with adults' father-specific attachment anxiety, than with their mother-specific anxiety ($b_{M15} = -0.053$, $SE = 0.092$, $p = .568$; Est.$_{M15\_D15} = 0.222$, $SE = 0.107$, $p = .038$). This difference neither supports nor contradicts the theoretical possibilities outlined in Table 3. Last, the positive association we found between romantic support at age 18 years and adults' father-specific attachment anxiety was significantly different from the negative associations between romantic support at age 18 and adults' general attachment anxiety (Est.$_{G18\_D18} = -0.266$, $SE = 0.092$, $p = .004$), mother-specific anxiety (Est.$_{M18\_D18} = -0.194$, $SE = 0.086$, $p = .024$), partner-specific anxiety (Est.$_{D18\_P18} = 0.324$, $SE = 0.088$, $p < .001$), and best friend-specific anxiety (Est.$_{D18\_B18} =$

0.268, $SE = 0.096$, $p = .005$), due to differences in sign (i.e., comparing positive to negative associations).

Controlling for Childhood Demographic Covariates. We found a similar pattern of results when we controlled for childhood demographic covariates (see Supplemental Tables S72 and S73).

Supplemental Robustness Checks

As described in the Method section, the measures used to assess maternal sensitivity, paternal sensitivity, and parent-reported social competence with peers differed slightly across the childhood assessment waves of the SECCYD. In the main analyses, we used interpolation to convert participants' composite scores on these measures to a common metric across waves. To investigate how this may have influenced the results, we also conducted robustness checks in which we reestimated the primary and secondary models, examining each set of common measures that were used to assess these interpersonal variables (see Supplemental Tables S74–S117). In brief, the results of the robustness checks were generally consistent with the main findings and would not change any of the substantive conclusions drawn here.

Discussion

A central assumption of attachment theory (Bowlby, 1973, 1980, 1969/1982) is that the ways adults think, feel, and behave in close relationships are shaped by their interpersonal histories, beginning with their earliest experiences with close others during childhood. The present research delivers one of the most comprehensive examinations of this assumption to date, drawing insights from rich longitudinal data spanning 3 decades. Using a growth curve modeling framework, we examined the extent to which early levels and growth in the quality of people's close relationships during childhood predicted their *general* attachment orientations at age 30 years and their adult attachment orientations in four specific, close relationships (i.e., with their mothers, fathers, best friends, and romantic partners).

The results highlight the enduring legacy of people's early experiences with their primary caregivers in guiding their attachment-related functioning. We found that the quality of people's early experiences with their mothers, as indicated by *every* measure of mother–child relationship quality that we examined—including maternal sensitivity, mother–child conflict and closeness, and maternal warmth and hostility—predicted how secure people felt in close relationships *in general* in adulthood and their adult attachment orientations in *every specific, close relationship* assessed (median $R^2 = 3\%$ for attachment anxiety and avoidance across domains). Moreover, the vast majority of these associations were robust to controlling for childhood demographic covariates, including family income-to-needs ratio, maternal education, race/ethnicity, and sex assigned at birth. We found that *growth*, or changes, in the quality of people's relationships with their mothers during childhood and adolescence predicted how insecure people felt in their relationships with their mothers *specifically* in adulthood.

Early experiences with friends during childhood also contributed to how people tended to think, feel, and behave in close relationships *in general* in adulthood ($R^2_{\text{attachment anxiety}} = 2\%$, $R^2_{\text{avoidance}} = 9\%$) and played a particularly important role in guiding how they

approached their adult friendships and romantic relationships (i.e., *horizontal* attachment relationships; Hazan & Zeifman, 1999). Both early levels and growth in friendship quality shared robust associations with adults' partner-specific and best friend-specific attachment orientations ($R^2_{\text{attachment anxiety}} = 4\%$, $R^2_{\text{avoidance}} = 10\%$–$11\%$) and relatively weaker associations with adults' parent-specific attachment orientations ($R^2_{\text{attachment anxiety}} = 1\%$, $R^2_{\text{avoidance}} = 1\%$–$4\%$). People's early levels of social competence with peers—as reported by their mothers and teachers—as well as their growth in social competence from early childhood to late adolescence (mother-reported), predicted their attachment security in every relationship domain in adulthood. These findings suggest that early social skills development may be broadly relevant for understanding individuals' later functioning across different relationships. Early levels and growth in father-reported social competence with peers, however, were only associated with adults' partner-specific and general attachment orientations, respectively, showing more similar results to the trends we observed for childhood friendship quality.

In contrast to early experiences with mothers and friends, we found relatively few robust associations between people's early experiences with their fathers and their adult attachment orientations and no consistent trends among the associations that did emerge. Additionally, we found a more complex pattern of associations between early romantic relationship experiences—assessed during early, mid-, and late adolescence—and adults' partner- and parent-specific attachment orientations, which differed in direction depending on the developmental timing of romantic experiences. Each of these findings has critical implications for attachment research and theory, which we explore in greater detail below.

Implications for Attachment Research and Theory

The Primacy and Recency of Attachment-Related Experiences

Attachment theory (Bowlby, 1973, 1980, 1969/1982) suggests that, based on their early experiences with caregivers, children develop a core "template" of attachment-related expectations and beliefs, which guides how they approach their early relationships within and outside the family (Bowlby, 1973; Fraley, 2002). As such, attachment scholars have proposed that children's early experiences with caregivers—their *first*, primary attachment figures—might play a uniquely important role in people's attachment-related functioning, "anchoring" the developmental trajectories of their attachment-related feelings and behaviors across different relationship domains (e.g., with parents, peers; Elicker et al., 1992; see Chopik et al., 2024). Furthermore, research suggests that most children continue to rely on their mothers as the primary source of their attachment-related needs throughout childhood, and as their secure base during adolescence (Brumariu & Kerns, 2014; Markiewicz et al., 2006). Thus, beyond providing a core "template" of attachment-related beliefs and expectations, early experiences with mothers—even those that occur later in childhood and during adolescence—may hold relatively greater weight in shaping individuals' long-term, attachment-related functioning.

The present research provides empirical support for these ideas. Our findings indicate that early levels of mother–child relationship quality contribute to individual differences in adult attachment *across specific relationships and domains*. In the models examining

mother–child relationship quality from early childhood to adolescence (i.e., maternal sensitivity, mother–child conflict, and closeness), early levels and growth in relationship quality consistently accounted for ~2%–3% of the variance in adult attachment anxiety and avoidance across relationship domains (see Tables 6–8), forming a pattern of *small* but *enduring* and *pervasive associations*. Early levels and growth in maternal warmth and hostility, assessed from early to late adolescence, accounted for larger proportions of the variation in adult attachment insecurity across relationship domains ($R^2_{\text{mother-specific attachment}} = 8\%$–$30\%$; average $R^2 = 6\%$ for all other domains), suggesting potentially stronger effects of *more recent* experiences with mothers. By contrast, experiences in later-developed (i.e., more recent) relationships—such as friendships and adolescent romantic relationships—predicted adults' attachment security in some domains, but did not exhibit the same broad influence as early experiences with mothers.

Relationship Congruency and Domain Congruency

Contemporary attachment theory and research suggest that people develop a collection of relationship-specific attachment working models throughout life, which reflect their unique interactive histories with specific close others (N. L. Collins & Read, 1994; Fraley et al., 2011). This framework implies that people's early experiences with their mothers and fathers might play a larger role in shaping how they tend to think, feel, and behave toward their mothers and fathers, respectively, in adulthood, compared to how they approach other specific, close relationships in adulthood. Consistent with this perspective, we found that early levels of maternal sensitivity, mother–child closeness, and maternal hostility were stronger predictors of adults' mother-specific attachment orientations, as compared to their best friend-specific attachment orientations and (for maternal sensitivity and hostility) their general attachment orientations. However, early levels of mother-specific relationship quality did not demonstrate stronger associations with adults' mother-specific attachment orientations than with their father-specific or partner-specific attachment orientations. Together, our findings suggest that mother–child relationship quality during childhood contributes diffusely to the ways people approach *all* of their close relationships during adulthood, showing only modestly stronger predictive power in explaining individual differences in adults' attachment orientations toward their mothers, compared to adults' attachment orientations in nonfamilial and nonprimary[10] attachment relationships.

Nonetheless, the results revealed that *growth* in mother–child relationship quality, or the ways in which people's relationships with their mothers continued to develop throughout childhood and adolescence, was indeed particularly relevant for understanding how secure they felt in their relationships with their mothers in adulthood. Growth in mother–child conflicts from early childhood to late adolescence was a stronger predictor of adults' mother-specific attachment anxiety, than their father-, partner-, best friend-specific, or general attachment anxiety. Additionally, growth in mother–child closeness and maternal hostility only demonstrated significant associations with adults' mother-specific attachment orientations.

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[10] Research suggests that, because most participants in the present study were involved in committed romantic relationships, they likely would not view their best friends as their primary attachment figures, their partners assuming this role instead (Fraley & Davis, 1997; Heffernan et al., 2012).

In addition to evaluating the relative strengths of relationship-congruent versus incongruent associations, we also considered whether early experiences within particular relationship domains—namely, with parents, friends/peers, and romantic partners—might share stronger connections with adults' attachment security in other relationships that fall within the same domain, which tend to have more similar features, compared to relationships in other domains (Brumbaugh & Fraley, 2006; Brumbaugh & Fraley, 2007; Fraley, 2007). In short, we did not find much evidence for domain congruency, and it was mostly limited to the romantic domain.

Our results suggest that people who had more supportive romantic partners at age 18 tended to be less avoidant toward their romantic partners later in adulthood. We found a significant difference between this negative association and the slightly positive, though near-zero, association between romantic relationship support at age 18 years and adults' father-specific avoidance. Interestingly, people who reported having a more supportive romantic partner at age 12.5 years (i.e., Grade 6) tended to be *more* avoidant toward their romantic partners in adulthood. There were significant differences between this *positive* association and the associations between romantic relationship support at age 12.5 years and adults' general, mother-specific, and father-specific attachment avoidance. Whereas these results may seem contradictory, they are closely aligned with theory and research on adolescent romantic development (see W. A. Collins et al., 2009, for a review). According to the *normative romantic trajectory model* (J. A. Connolly & McIsaac, 2009; Davila, 2008), "early starting youth" who develop more emotionally intimate romantic relationships "off-time," or during early adolescence (i.e., ages 10–13), are at greater risk of social–emotional problems, including externalizing behaviors, depressive symptoms, and risky sexual behaviors (Compian et al., 2004; J. Connolly et al., 2013; de Graaf et al., 2009; Natsuaki et al., 2009), which, in turn, create long-term disruptions in their romantic relationship adjustment. Starting in late adolescence (i.e., age 17 until the early 20s), romantic relationships normatively begin to assume the features of a "full-fledged" attachment relationship, more closely resembling adult romantic relationships (Brown, 1999; Fraley & Davis, 1997; Furman & Wehner, 1994). Having a more supportive romantic partner during this phase is believed to have positive implications for individuals' attachment orientations in later romantic relationships in adulthood, which aligns with what we found.

Nonetheless, we also found a mixed pattern of small associations between romantic experiences during mid- and late adolescence and adults' parent-specific attachment orientations, the potential theoretical reasons for which are less clear. The trends we observed could also be due to the more limited nature of the study data on adolescents' romantic relationship experiences and, thus, warrant some caution until replicated in future work.

Horizontal and Vertical Attachment Relationships

Attachment scholars distinguish between *vertical* attachment relationships, such as parent–child relationships, in which there is a primarily one-sided flow of attachment-related support from caregiver to child, and *horizontal* attachment relationships, in which partners provide for each other's attachment-related needs (Hazan & Zeifman, 1999). Early friendships provide children and adolescents with opportunities to practice the dynamics and skills involved in *horizontal* attachment relationships, including empathetic care and

understanding, support provision, compromise, and joint conflict resolution (Elicker et al., 1992). In support of this perspective, our findings suggest that people's early experiences with close friends during childhood and adolescence may play a particularly important role in guiding how adults approach their best friendships and romantic relationships, which are formed and maintained based on similar dynamics and skills, and a lesser role in adults' parent-specific attachment orientations. Together, early levels and growth in friendship quality accounted for 4% of the variance in adults' partner- and best friend-specific attachment anxiety, and 10%–11% in their partner- and best friend-specific avoidance, but much smaller proportions of the variance in adults' parent-specific attachment anxiety (1%) and avoidance (4% of mother-specific and 1% of father-specific).

It should be noted that, when we controlled for childhood demographic covariates, most of the differences we found when we compared the magnitude of associations between early levels and growth in friendship quality and adults' best friend- and partner-specific attachment orientations, versus their parent-specific attachment orientations, were no longer statistically significant. One reason why there may be mostly small differences between the strength of these associations is that, as young adults become increasingly autonomous, their relationships with their parents begin to involve more reciprocal dynamics (Cicirelli, 2010). Indeed, adult children often serve as a source of emotional support for their parents, particularly as they age (Cheng et al., 2015; Silverstein & Giarrusso, 2010). Future studies should examine how the connections between adults' earlier (and ongoing) experiences in horizontal attachment relationships and their parental relationship dynamics might continue to change during middle adulthood and among adults who become the caregivers of their parents (Cicirelli, 2010; Karantzas et al., 2010).

Last, our results suggest that early levels and growth in social competence with peers may be broadly relevant for understanding individuals' attachment-related functioning across relationship domains. The measure of children's social competence with peers used in the present study was designed to capture individual differences in *general* social skills, making it distinct from the other interpersonal measures we examined, which assessed children's experiences in *specific*, close relationships. Research has shown that measures designed to capture general socioemotional functioning, such as global self-esteem, tend to predict adults' attachment orientations in different, close relationships to a similar degree and share somewhat stronger associations with general attachment orientations (Fraley et al., 2011). This aligns with our findings, particularly for mother-reported social competence with peers (see Table 12). Early levels and growth in mother-reported social competence with peers accounted for 3%–6% of the variance in adults' attachment insecurity in every specific, close relationship assessed and slightly larger proportions of the variance in general attachment anxiety (6%) and avoidance (9%). The results also suggested that growth in mother-reported social competence with peers was a stronger predictor of adults' general attachment orientations, than their father- or best friend-specific attachment orientations. Mothers are arguably best positioned to provide insights into children's interactions with peers, given that they typically demonstrate greater knowledge of their children's associates and activities than fathers (Crouter et al., 1999; Jones et al., 2015), and more often serve as children's confidants than fathers or teachers (Brumariu & Kerns, 2014; Verschueren &

Koomen, 2012). The potentially broader impact of early social competence with peers on individuals' attachment functioning across relationship domains points toward exciting possibilities for future intervention studies aimed at scaffolding children's social skills.

Limitations and Future Directions

Although the present research has several strengths—including the analysis of multi-informant, multiwave longitudinal data spanning 30 years—it also has several limitations. First, further research is needed to investigate the associations between early experiences and adult attachment among samples with greater racial and ethnic diversity and other forms of diversity increasingly reflected in more recent U.S. cohorts. Second, because the present study focused on a single child per family, it cannot disentangle the contributions of genetic and environmental factors to adult attachment orientations (but see Dugan et al., 2025). Third, although we found relatively few associations between early experiences with fathers and adult attachment orientations, we remain optimistic that future studies may reveal new insights, especially given increased efforts to better understand father–child relationship dynamics in recent years (see Helmerhorst et al., 2023). Future studies should also investigate cohort differences in the trends we observed, as gender role expectations and fathers' involvement in caregiving continue to evolve (U.S. Bureau of Labor Statistics, 2023).

Furthermore, the present study involved limited data on participants' early experiences with romantic partners, and therefore, we could not examine growth, or changes, in romantic relationship quality during adolescence. Given that romantic partners most often serve as people's primary attachment figures in adulthood (Fraley & Davis, 1997; Heffernan et al., 2012), it is critical to conduct further research involving larger samples of romantically involved adolescents and repeated assessments of the quality of *specific* romantic relationships during early, mid-, and late adolescence.

Future studies would also benefit from collecting repeated measures of individuals' attachment styles, alongside repeated assessments of their interpersonal experiences. This would allow for a more nuanced examination of the codevelopment of attachment and relationship dynamics across time and relationship contexts. In particular, such designs could help clarify the direct and indirect pathways through which early experiences might shape adult attachment orientations. For example, one possibility is that maternal hostility and warmth during adolescence shape individuals' earlier attachment orientations, which then remain relatively stable—that is, the associations we observed here might reflect continuity in attachment from adolescence to adulthood. Alternatively, maternal caregiving during adolescence might catalyze a set of more complex developmental processes that unfold over time and spread across relationships, ultimately shaping each of adults' relationship-specific attachment orientations.

One final caveat is that participants were, on average, 28.6 years old at the SHINE follow-up assessment and therefore were in the earlier stages of adulthood. Due to societal changes over the past few decades, young people today tend to experience the traditional "milestones" associated with becoming an adult at later ages (Arnett et al., 2014). As shown in Table 1, most participants had finished their formal education, were able to support themselves financially, and were involved in a committed romantic relationship, which

are all key markers of young adulthood. However, only 26.1% of participants were parents, an important relationship transition to be studied in future work. Future studies that follow participants for even longer periods can reveal how the trends we observed here may change as adults raise children of their own and undergo other relationship transitions throughout middle and late adulthood (e.g., losing one's parents, becoming grandparents).

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