

## Parent and Peer Predictors of Change in Attachment Security From Adolescence to Adulthood

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Interview, self-report, peer report, and observational data were used to examine parent and peer relationship qualities as predictors of relative changes in attachment security in a community sample of adolescents followed from ages 14 to 24. Early maternal supportive behavior predicted relative increases in attachment security from adolescence to adulthood, whereas psychological control and interparental hostile conflict predicted relative decreases. Peer predictors of relative increases in security included collaborative and autonomous behaviors and lack of hostile interactions, with peer predictions growing stronger for relationships assessed at later ages. Overall, models accounted for sufficient variance as to suggest that attachment security across this period is well explained by a combination of stability plus theoretically predicted change linked to social relationship qualities.

As the attachment behavioral system has increasingly been recognized as having lifelong functional relevance, the importance of understanding the development of this system into adulthood has become clear. A secure/autonomous adult attachment organization has been robustly linked not only to the security of one's infant offspring but also to indices of adult mental health, romantic relationship quality, and broader social functioning (Main, Kaplan, & Cassidy, 1985; Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001; Shlafer, Raby, Lawler, Hesemeyer, & Roisman, 2015; van IJzendoorn, 1995; van IJzendoorn & Bakermans-Kranenburg, 1996). In considering the development of the attachment system from adolescence into adulthood, there is good reason to expect both stability as well as predictable change in levels of attachment security.

By adolescence, internal models of relationships and patterns of relationship behavior have often become well established and may exist largely outside of conscious awareness (Bowlby, 1980; Fraley, 2002; Loeb, Hessel, & Allen, 2015). Yet, from a developmental perspective, adolescence is also a period of rapidly changing social relationships and rapidly increasing cognitive capacity, both of which

may facilitate reworking of an existing attachment organization (Allen & Miga, 2010). Prior research suggests weak to moderate continuity in attachment security from infancy to late adolescence (Fraley, 2002; Groh et al., 2014), although greater stability has been found in short-term studies within adolescence (Allen, McElhaney, Kuperminc, & Jodl, 2004). Short-term change in adolescent attachment security has been linked to baseline levels of depression, lower family income, and enmeshed family conflict (Allen et al., 2004). No research to date, however, has explored attachment stability or predictors of change from adolescence into adulthood, even though it is in adulthood that attachment security becomes most strongly predictive of future parenting behavior (Shlafer et al., 2015). The adolescent to adulthood transition thus becomes a critical link in building a life span and intergenerational understanding of the development of the attachment system.

Cross-sectional correlations provide most of our current knowledge regarding the relation between attachment and social experiences in adolescence (see Dykas, Ziv, & Cassidy, 2008; Furman & Shomaker, 2008; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Reimer, Overton, Steidl, Rosenstein, & Horowitz, 1996). These correlations yield valuable information about the *past* interplay of attachment and relationship experiences, by

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suggesting potential influences of relationship experiences on attachment security and vice versa. These correlations offer little insight, however, regarding factors that potentially influence, or at least predict, the *development* of attachment security going forward. To identify such factors we need to identify predictors of future relative *changes* in attachment from adolescence to adulthood—predictors that tell us something about attachment in the future, over and above what can be predicted from baseline attachment security. This study examined both cross-sectional correlations and predictors of relative change with regard to the two major sources of adolescent social experience: family relationships and peer relationships.

In terms of family relationships, direct parental emotional support in childhood has long been linked to attachment security, and it is reasonable to expect such links to extend into adolescence (Allen et al., 2003; De Wolff & van Ijzendoorn, 1997). Other family experiences likely serve as indicators both of parents' capacity for support and of their ability to model for the adolescent the possibility of establishing secure relationships beyond the family. For example, as parents handle conflict with one another, they may model a goal-corrected process in which they continuously adapt their behavior to meet mutual goals—a process fundamental to maintenance of secure attachment relationships (Bowlby, 1969/1982; Kobak & Duemmler, 1994). Excessively harsh interparental conflict, in contrast, presents teens with a model in which the goal-corrected process fails. Such conflict may not only reduce parental availability to provide support for teens, it is also likely to undermine teens' confidence in their ability to establish their own secure, goal-corrected partnerships going forward (Steinberg, Davila, & Fincham, 2006). High levels of harsh interparental conflict have been repeatedly linked to emotional insecurity in childhood and early adolescence (Davies & Cummings, 1998; Davies, Harold, Goeke-Morey, & Cummings, 2002; Woodward, Fergusson, & Belsky, 2000). An additional family relationship factor—parents' handling of adolescent autonomy strivings—also appears likely to be linked to security given the centrality of adolescent autonomy development as a precursor to development of healthy peer and romantic relationships into adulthood (Oudekerk, Allen, Hessel, & Molloy, 2015). Parental undermining of adolescent autonomy, for example, via psychologically controlling behavior, has been linked to short-term relative decreases in security within adolescence (Allen et al., 2004). Whether any of these family

experiences actually predict the *long-term development* of attachment security into adulthood has not, however, been previously assessed.

In terms of peer relationship predictors of the developing attachment system from adolescence into adulthood, perhaps *the* critical question is: At what age do peer relationships become sufficiently intense and attachment focused that they begin not simply to reflect, but also to potentially influence, or at least predict, the future development of the attachment system? Several lines of research suggest that early in adolescence, such intense and deep peer relationships are unlikely to exist (Furman, 2001; Rosenthal & Kobak, 2010; Zeifman & Hazan, 2008). In early adolescence, attachment organization may predict the quality of peer relationships, as it has been found to do at earlier ages (Pallini, Baiocco, Schneider, Madigan, & Atkinson, 2014), but it does not appear nearly so likely that the development of the attachment system will be *predicted by* such early relationships.

As development progresses toward adulthood, however, both peer and romantic partner relationships increasingly take on qualities of true attachment relationships (Zeifman & Hazan, 2008). As these relationships become more intense, however, the challenge of managing them in ways that leave the adolescent feeling "autonomous, yet valuing of relationships"—a hallmark of adult security—becomes substantial (Allen & Manning, 2007; Allen, Porter, McFarland, McElhaney, & Marsh, 2007). Meeting this challenge requires forming relationships characterized by support and collaboration while avoiding hostile, relationship-undermining interactions when disagreements inevitably occur. Establishing adaptive peer and romantic partner autonomy and support processes is thus likely to be critical to the formation of secure relationships going forward and thus also to adult attachment security. Although adolescent peer relationships have been related to prior and concurrent attachment organization (Allen et al., 2004; Van Ryzin & Leve, 2012), they have never been assessed for their potential to explain the *development* of attachment security. In the current study, peer autonomy and support processes were thus assessed at three stages: in early adolescence (via assessments of popularity and friendship quality), in midadolescence (via assessments of autonomy and support processes with close friends), and in late adolescence (via assessments of autonomy and support processes with romantic partners).

A final important issue in assessing stability and change in adult attachment is the question of

whether variations in attachment security are best conceptualized and assessed as continuous versus discrete (i.e., categorical) entities (Fraley & Roisman, 2014). Given the psychometric advantages of a continuum approach (Fraley & Roisman, 2014; Haydon & Roisman, 2011, 2012), the current investigation primarily utilized continuum-based Q-sort methods to assess attachment. In adulthood, however, we also obtained categorical assessments of attachment security, which permits comparison of categorical and continuous approaches in accounting for continuities from previously assessed attachment and social experiences.

To assess predictors of developing attachment security, this study examined parental and peer relationship correlates and predictors of relative change in attachment security from age 14 to age 24 in a diverse community sample to address the following questions:

1. How stable is attachment security from adolescence into adulthood?
2. How are support and autonomy processes in parent-adolescent interactions related to the development of attachment security from adolescence into adulthood?
3. How are support and autonomy in interactions with peers (both close friends and romantic partners) linked to current and future attachment, and do predictions change as development progresses?
4. To what extent are parent and peer relationship factors overlapping versus unique in their capacity to predict relative changes in attachment security across this period?
5. Is a categorical approach to assessing adult attachment security more versus less effective than a continuum approach in explaining continuities from prior attachment security and social relationship experiences?

## Method

### *Participants*

This report is drawn from a larger longitudinal investigation of adolescent social development in familial and peer contexts. Analyses included 141 adolescents (61 male and 80 female) who received the Adult Attachment Interview (AAI) at age 14 ( $M = 14.8$ ,  $SD = 0.61$ ) and again at age 24 ( $M = 24.7$ ,  $SD = 0.92$ ). Data were collected between January 2000 and June 2011. This final sample comprised a subset of 174 teens who received the AAI at age 14 (81% reinterview rate). Adolescents'

interactions with parents were also observed at ages 13 and 16 ( $M_s = 13.3$  and  $16.3$ ,  $SD_s = 0.63$  and  $0.85$ , respectively). Interactions with a person named by the adolescent as the peer to whom they were closest were observed at ages 14 and 16/17 ( $M_s = 14.8$ ,  $16.3$ , and  $17.3$ ,  $SD_s = 0.61$ ,  $0.85$ , and  $0.85$ , respectively). Interactions with a romantic partner, for participants in relationships of at least 3 months duration, were assessed at age 21 ( $M = 20.9$ ,  $SD = 1.08$ ).

The final sample was racially/ethnically and socioeconomically diverse: 79 (56%) adolescents identified themselves as Caucasian, 44 (31%) as African American, 2 (1%) as Asian, 3 (2%) as Hispanic, 1 (1%) as American Indian, and 12 (9%) as from other or mixed racial/ethnic groups. Adolescents' parents reported a median family income at baseline in the \$40,000–\$59,999 range ( $M = \$43,900$ ,  $SD = \$22,500$ ).

More detail about participant selection, data collection procedures, and attrition analyses are presented in Appendix S1.

### *Measures*

Note that additional detail about measure content and psychometric characteristics of measures is presented in Appendix S1.

### *AAI and Q-Set (Ages 14 and 24)*

This structured interview probes individuals' descriptions of their childhood relationships with parents in both abstract terms and with requests for specific supporting memories (George, Kaplan, & Main, 1996; Kobak et al., 1993). Slight adaptations to the adult version were made to make the questions more natural and easily understood for an adolescent population at age 14 (Ward & Carlson, 1995). Hence, comparisons in absolute ratings from the age 14 and age 24 interviews should be made only with great caution. The AAI Q-set (Kobak et al., 1993) was designed to closely parallel the AAI Classification System (Main, Goldwyn, & Hesse, 2002) but to yield continuous measures of qualities of attachment organization. For the age 24 attachment assessments, coders also provided reliable formal classifications using the Main et al. (2002) system. The point-biserial correlation between the secure classification and the continuous measure of security from the Q-sort was  $.84$  ( $p < .001$ ), indicating a high degree of correspondence between results from the two systems.

*Maternal Supportive Behavior (Ages 13 and 16)*

Adolescents participated in an 8-min supportive behavior interaction task with their mothers, during which they were instructed to ask for help with “a problem they were having that they could use some advice or support about,” with interactions coded using the Supportive Behavior Coding System (Allen et al., 2001).

*Parental Psychological Control (Ages 14 and 16/17)*

Adolescents completed the Psychological Control versus Psychological Autonomy subscale of the Childhood Report of Parenting Behavior Inventory assessing the degree to which mothers and fathers use guilt, love withdrawal, or other autonomy-undermining methods to control adolescents’ behavior (Schaefer, 1965; Schludermann & Schludermann, 1988). Scores from ages 16 and 17 assessments were averaged together to create ratings for the age 16/17 period.

*Interparental Hostile Conflict (Age 13)*

Hostile conflict between parents was reported by both parents and averaged together using the six-item symbolic/psychological aggression scale from the Conflict Tactics Scale (CTS; Straus, 1979).

*Popularity (Age 14)*

Adolescent popularity was assessed using a limited nomination sociometric procedure. Each adolescent, their closest friend, and two other target peers named by the adolescent were asked to nominate up to 10 peers in their grade with whom they would “most like to spend time on a Saturday night” and an additional 10 peers in their grade with whom they would “least like to spend time on a Saturday night.” Popularity was assessed as the number of nominations received by the participating adolescent (standardized within grade level).

*Close Peer Supportive Behavior (Ages 14, 16/17)*

Adolescents participated in an 8-min interaction task with their closest friend, during which they asked that peer for help with “a problem they were having that they could use some advice or support about,” with interactions coded using the Supportive Behavior Coding System (Allen et al., 2001). Scores from ages 16 and 17 assessments were averaged together.

*Close Peer Collaborative Behavior and Hostile Behavior (Ages 14, 16/17)*

Each adolescent-close peer dyad participated in an 8-min videotaped task in which they were presented with a hypothetical dilemma that involved making a series of discrete decisions about a social situation. The Autonomy-Relatedness Coding System for Peer Interactions was used to reliably code collaborative and hostile behavior in these interactions (Allen, Porter, & McFarland, 2001). Scores from ages 16 and 17 assessments were averaged together.

*Observed Romantic Partner Supportive Behavior (Age 21)*

Late adolescents participated in an 8-min interaction task with their romantic partner, during which they asked their partner for help with “a problem they were having that they could use some advice or support about,” with interactions coded using the Supportive Behavior Coding System (Allen et al., 2001).

*Romantic Partner Autonomy Support (Age 21)*

Autonomy support when disagreeing was assessed via romantic partner reports on the CTS (Straus, 1979).

## Results

### *Preliminary Analyses*

Means and standard deviations for all substantive variables are presented in Table 1. For descriptive purposes, Table 2 presents simple univariate correlations (or point-biserial correlations for dichotomous variables) among the key variables of interest. Adolescent gender and family income were related to several variables in the study and hence were included as covariates in all analyses below. Potential moderating effects of gender or income were examined to assess whether results differed for male versus female adolescents or based on initial family income for the analyses below. No moderating effects were found.

### *Primary Analyses*

Question 1: How stable is attachment security from adolescence into adulthood?

Table 1  
Means and Standard Deviations

	<i>M</i>	<i>SD</i>
AAI attachment security (age 14)	0.25	0.42
AAI attachment security (age 24)	0.03	0.46
Interparental hostile conflict (age 13)	5.46	2.93
Parental psychological control (age 14)	14.60	3.37
Parental psychological control (age 16/17)	14.83	3.43
Observed maternal support (age 13)	2.95	0.79
Observed maternal support (age 16)	3.06	0.63
Sociometric popularity (age 14)	0.93	1.33
Observed collaborative peer behavior (age 14)	2.59	0.66
Observed collaborative peer behavior (age 16/17)	2.65	0.48
Observed peer hostility (age 14)	1.00	1.41
Observed peer hostility (age 16/17)	1.15	1.53
Observed peer support (age 14)	2.52	0.66
Observed peer support (age 16/17)	2.88	0.61
Observed romantic partner supportive (age 21)	2.76	0.80
Romantic partner autonomy support (age 21)	3.46	4.4

The simple correlation between attachment security at age 14 and age 24 was  $r = .46$ ,  $p < .001$ . Security scores declined significantly over this 10-year period,  $T_{\text{mean change}}(1,133) = -5.24$ ,  $p < .001$ , as seen in Table 1, although slight differences in attachment interview questions from adolescence to adulthood make scores across ages less than fully comparable.

Question 2: How are support and autonomy processes in parent–adolescent interactions related to the development of attachment security from adolescence into adulthood?

Analyses were designed to assess the relation of parent and peer relationship qualities to baseline attachment security and to predictions of attachment security at 24 after accounting for security at 14. This latter approach of predicting future security while accounting for predictions from baseline levels (e.g., stability) yields one marker of change: relative increases or decreases in security relative to predictions from baseline levels (Cohen & Cohen, 1983).

We began by assessing whether the block of parent–adolescent relationship measures significantly added to the explained variance in adult security after accounting for adolescent security and demographic factors. This block was highly significant,  $\chi^2(6) = 17.74$ ,  $p = .007$ , and the overall model accounted for 36.2% of the variance in attachment security at 24 ( $p < .001$ ), with family predictors accounting for an additional 11% of the

variance, over and above demographic factors and baseline attachment security (see Table S1). We then assessed potential mediated pathways among observed family predictors of security using a path analytic approach in which all temporally possible paths among predictors were considered initially, with nonsignificant paths then deleted. Significant paths in the final model, which fit the data well (goodness-of-fit index [GFI] = .99, adjusted GFI [AGFI] = .97, root mean square error of approximation [RMSEA] = 0),  $\chi^2(5) = 1.93$ ,  $p = .86$ , are depicted in Figure 1. Early adolescent maternal support and interparental hostile conflict were both directly predictive of lower levels of security at age 24, after accounting for security at age 14. Parental psychological control at age 16/17 displayed continuity with psychological control in early adolescence and was also predictive of future security. Family demographic factors (e.g., income and presence of both biological parents in the home) were related to attachment security at age 14 but were not predictive of relative changes in security into adulthood.

Question 3: How are support and autonomy in interactions with peers (both close friends and romantic partners) linked to current and future attachment, and do predictions change as development progresses?

Using the same hierarchical regression approach described earlier, the block of peer and romantic partner relationship qualities significantly added to the explained variance in adult attachment security after accounting for adolescent security and demographic factors,  $\chi^2(9) = 32.41$ ,  $p < .001$ . The overall model accounted for 44.3% of the variance in security at 24, with peer predictors accounting for an additional 19% of the variance over and above the contributions of demographic factors and baseline attachment security (see Table S2). Figure 2 depicts the significant paths accounting for peer predictors from a path model created as described earlier. In this model, which fit the data well (GFI = .98, AGFI = .91, RMSEA = 0),  $\chi^2(25) = 16.11$ ,  $p = .91$ , collaborative close peer behavior at age 16/17, romantic partner autonomy support at age 21, and lack of hostile close peer behavior in interaction tasks at age 16/17 each uniquely contributed to explaining future attachment security after considering baseline security and demographic factors.

Table 2  
Intercorrelations of Substantive Variables

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. Attachment security (age 14)	46***	28***	12	35***	-06	-35***	-29***	32***	23*	34***	14	06	-20*	-13	28***	02*	27**	09
2. Attachment security (age 24)	—	13	24**	16*	-20*	-29***	-33***	27***	21*	12	06	25**	-17*	-24**	23**	16	26*	32***
3. Family income (age 13)	—	—	-11	46***	16	-17*	-07	38***	37***	34***	01	18*	-01	10	13	05	13	25**
4. Gender (M = 1, F = 2)	—	—	—	-02	-03	04	-03	06	02	-14	18*	-02	-01	-03	26**	09	-25*	03
5. Living with biological parents	—	—	—	—	22*	-07	-06	31***	26**	23***	-07	10	-10	13	15	13	17	19
6. Interparental hostile conflict (age 13)	—	—	—	—	—	04	21*	01	-19*	17	05	16	09	08	-03	08	37***	14
7. Psychological control (age 14)	—	—	—	—	—	—	62***	-12	-36***	-19*	-01	-08	-00	16*	-26**	-11	-25*	-01
8. Psychological control (age 16/17)	—	—	—	—	—	—	—	-07	-28***	-20***	-12	-18*	19*	30***	-19*	-03*	-18	-00
9. Maternal support (age 13)	—	—	—	—	—	—	—	—	37***	12	07	10	-14	07	25**	16	-10	01
10. Maternal support (age 16)	—	—	—	—	—	—	—	—	—	23***	02	12	-08	-02	24**	10	04	13
11. Popularity (age 14)	—	—	—	—	—	—	—	—	—	—	14	15	-22**	-15	11	22**	37***	16
12. Collaborative peer behavior (age 14)	—	—	—	—	—	—	—	—	—	—	—	30***	-23**	-14	17*	13	-15	19
13. Collaborative peer behavior (age 16/17)	—	—	—	—	—	—	—	—	—	—	—	—	-04	-04	11	30***	22*	40***
14. Peer hostility (age 14)	—	—	—	—	—	—	—	—	—	—	—	—	—	33***	-04	-11	-10	-05
15. Peer hostility (age 16/17)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	-05	-12	-09	-16
16. Peer support (age 14)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21*	04	-06
17. Peer support (age 16/17)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	17
18. Romantic partner support (age 21)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23*
19. Romantic partner autonomy support (age 21)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note. Correlations are multiplied by 100. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

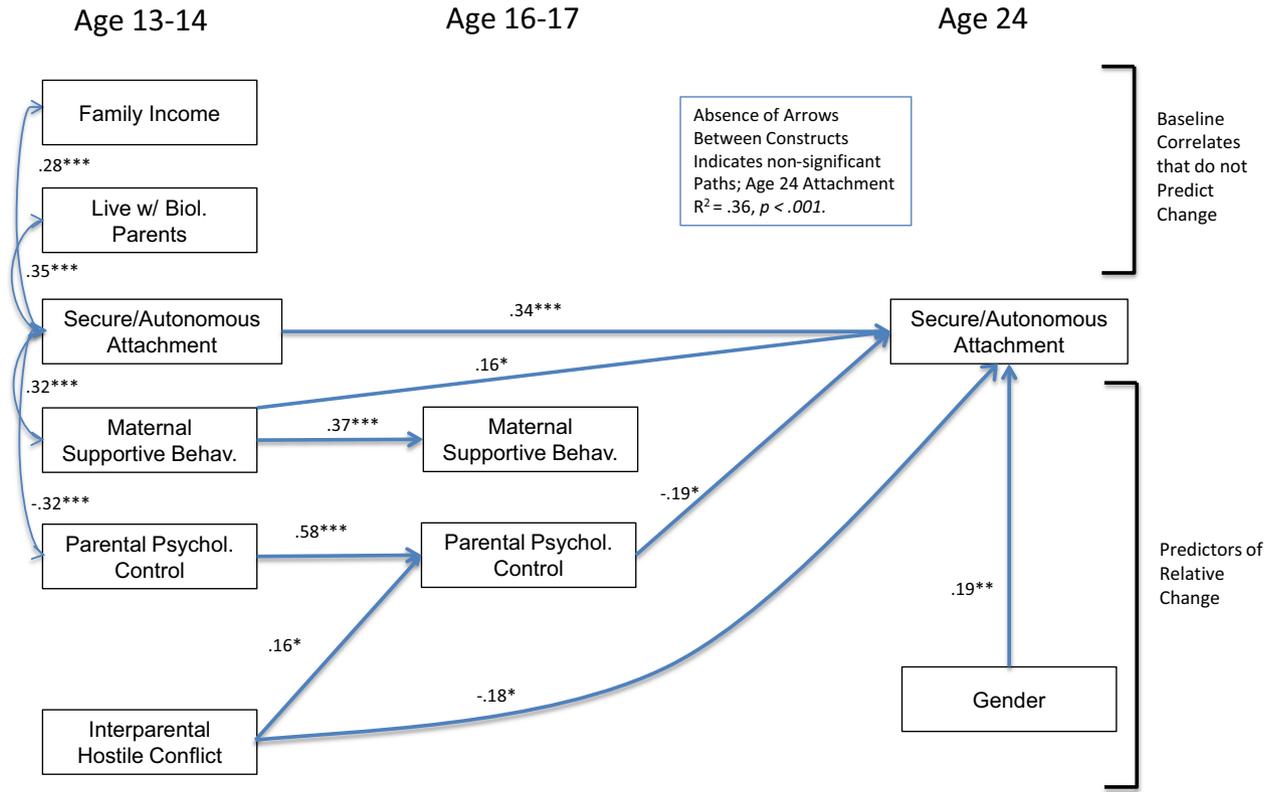


Figure 1. Parent relationship predictors of attachment security.

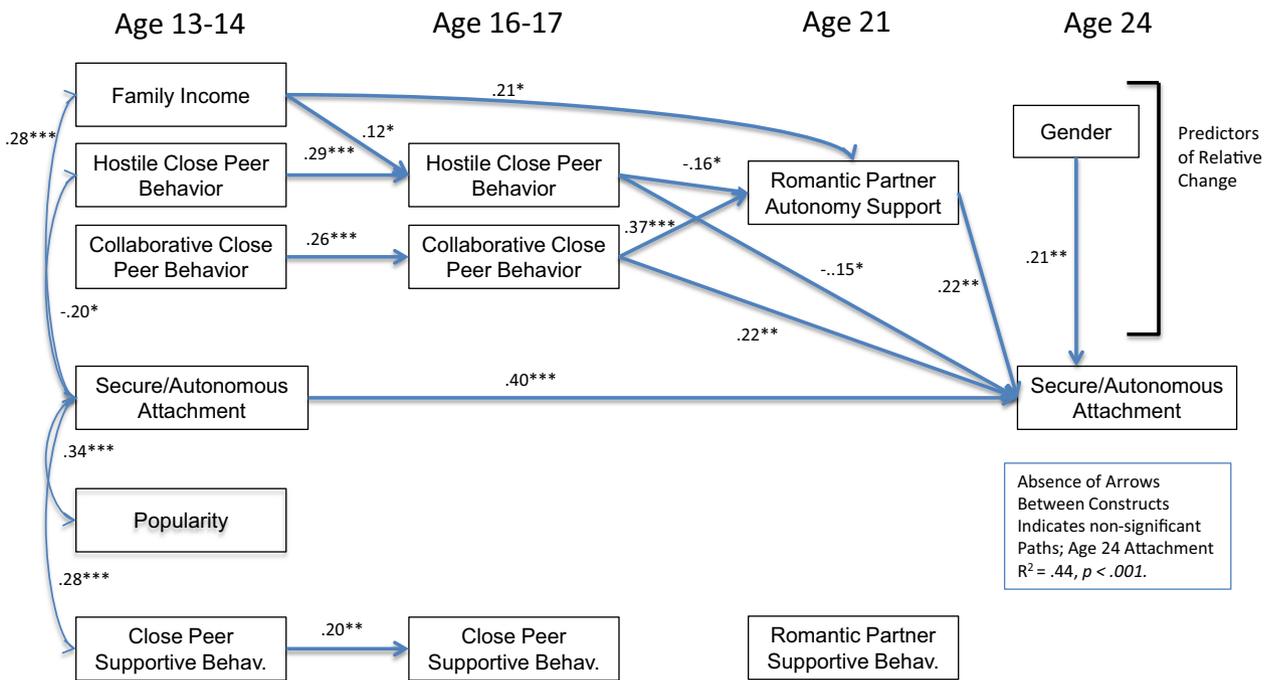


Figure 2. Peer and romantic partner relationship predictors of attachment security.

Question 4: To what extent are parent and peer predictors redundant or unique in their prediction of future attachment security?

To assess the extent to which observed family and peer predictors were unique versus redundant, final models were examined that included previously identified significant predictors of age 24 attachment security. We first assessed whether peer relationship qualities added incremental variance over and above parent relationship qualities, baseline attachment, and demographic factors in explaining adult attachment security. Results indicated that the block of peer variables added significant variance explained in adult attachment security,  $\chi^2(5) = 25.43, p < .001$  (see Table S3).

A path model constructed as described above to examine mediated pathways explaining adult security fit the data well (GFI = .99, AGFI = .95, RMSEA = 0),  $\chi^2(15) = 6.69, p = .97$ . Results, depicted in Figure 3, indicated that all of the previously identified close peer and romantic partner predictors of future attachment security remained as predictors. In contrast, only interparental hostile conflict at age 14 remained as a unique family predictor of age 24 security (parental psychological control was nonsignificant in both regression and path models). The overall model accounted for 46.8% of the variance in attachment security at 24 (multiple  $R = .68, p < .001$ ), with family and peer predictors together accounting for an additional 21.3% of the variance ( $p < .001$ ), over and above the contributions of demographic factors and baseline attachment security.

Question 5: Is a categorical approach to assessing adult attachment security more versus less effective than a continuum approach in explaining continuities from prior attachment and social relationship experiences?

We next examined a series of models to consider whether either measure of adult attachment (i.e., continuous or categorical) displayed greater continuities with our predictor variables than the other measure. To do so, we examined simple correlations with our adolescent-era predictors. These correlations, presented in Table S4, reveal many predictors for which the two measures of security had near identical correlations. We tested the difference between the correlations using the Z score test for correlations from dependent samples with a single variable in common and found several cases in

which significant differences between correlations of the two attachment measures with prior predictors were observed. These predictors included prior attachment security, collaborative close peer behavior at ages 16 and 17, observed support from a close peer at ages 16 and 17 and from a romantic partner at age 21, and romantic partner autonomy support at age 21. In no case did the categorical approach demonstrate a stronger correlation with predictors than the continuous measure of adult attachment security.

## Discussion

This study identified a range of adolescent-era social relationship factors linked to attachment across a 10-year period from early adolescence to early adulthood. Attachment organization across this period displayed a level of stability considerably greater than has been observed from infancy into adolescence (Hamilton, 2000; Sroufe, 2005; Weinfield, Whaley, & Egeland, 2004), suggesting that the adolescent to early adult span is one in which attachment organization may become relatively consolidated and less easily altered. Even given this observed stability, however, relationship experience factors yielded sizable contributions to explaining relative changes in attachment organization. This suggests that the individual's attachment organization also potentially remains open to environmental influences during this period.

In terms of parent-adolescent relationship characteristics, we observed both cross-sectional correlates of attachment within adolescence as well as several relationship factors that predicted relative change in attachment over the following decade. Maternal support in early adolescence was both a cross-sectional correlate of security at age 14, as well as a predictor of further relative gains in security from adolescence to adulthood. This is consistent with a long line of research at earlier stages of development on the fundamental importance of maternal responsiveness and sensitivity to the child's needs (De Wolff & van Ijzendoorn, 1997). These findings suggest that the importance of maternal support continues well into adolescence and indeed remains a predictor of future security even after accounting for the growing role of peer and romantic relationship factors during this period.

Parental psychologically controlling (vs. autonomy-promoting) behavior was also predictive of

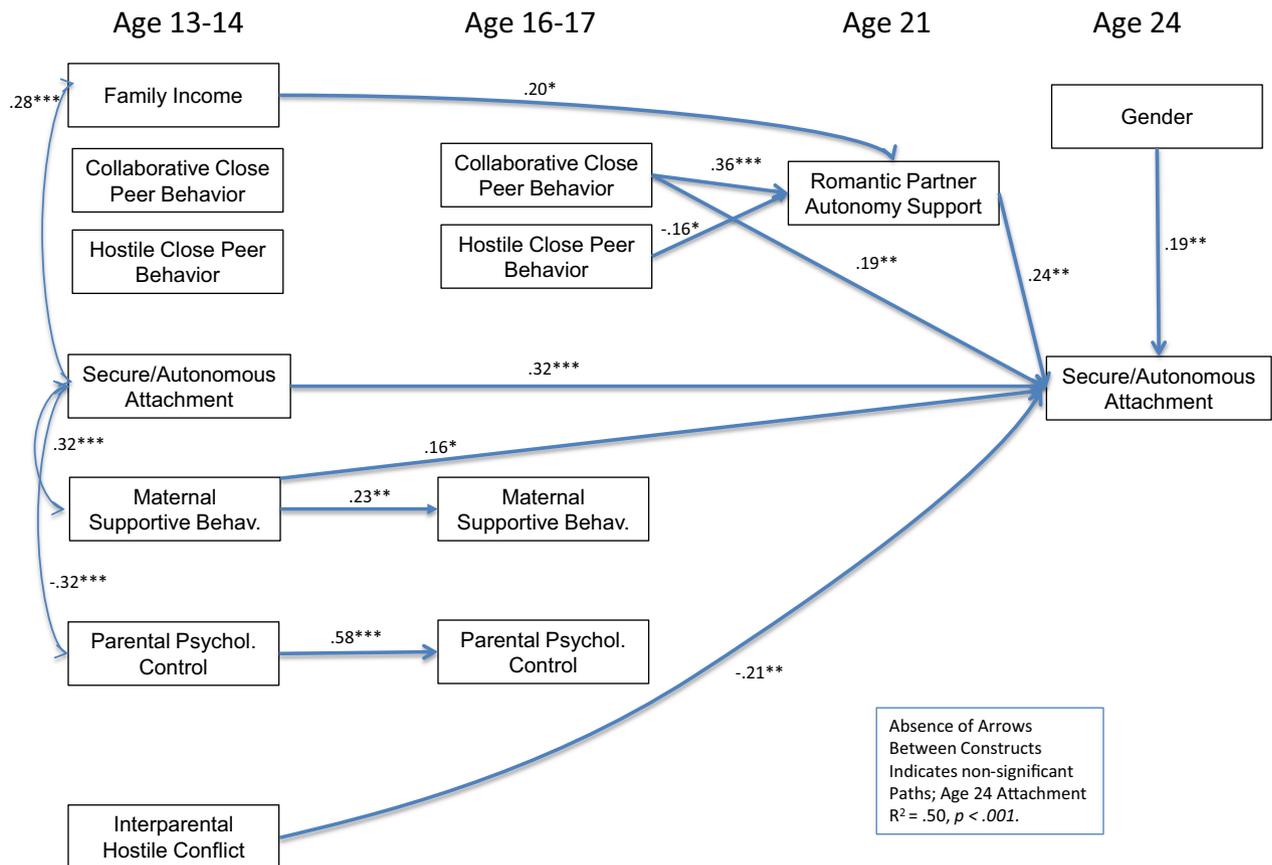


Figure 3. Combined parent and peer model predicting attachment security.

relative decreases in attachment security over time. It is likely not coincidental that the adult attachment organization that is most closely linked to infant security has been labeled as “autonomous, valuing of attachment” (Hesse, 2008). Adolescence is a period during which establishing the cognitive, emotional, and behavioral autonomy necessary to achieve or maintain a secure attachment organization is likely critical (Keating, 1990). Parental behaviors that undermine midadolescent autonomy go directly against this developmental imperative. This finding is also consistent with prior research showing links of autonomy struggles during middle adolescence to short-term changes in attachment security (Allen et al., 2004).

The observed role of interparental hostile conflict in predicting relative change in attachment security has several possible explanations. Such hostile conflict may directly undermine adolescents’ sense of felt security as it appears to do in childhood (Davies & Cummings, 1998; Davies et al., 2002). Interparental hostility may also present the adolescent with a problematic model for the resolution of

goal conflicts between partners—a model that may leave the adolescent questioning whether he or she can establish secure goal-corrected relationships going forward (Bowlby, 1969/1982; Kobak & Duemmler, 1994). Consistent with this explanation, prior research has found that high levels of enmeshed conflict between parent and adolescent predict future insecurity within adolescence (Allen et al., 2004). Observing parents model such conflict with one another may play a similar role. Overall, maternal supportive behavior, maternal psychological control, and interparental hostility accounted for 11% of the variance in attachment in adulthood, even after considering baseline attachment and demographic factors, suggesting that family experiences play an important role in understanding the development of the attachment system across the adolescent to adult transition. In contrast, family demographic factors (e.g., the experience of living with both biological parents and total family income) were significantly related to attachment security at age 14 but did not predict future change beyond that point.

In terms of peer relationship predictors of attachment security, several clear patterns emerged. Assessments of the overall quality of affirmation that an individual received from peers (i.e., popularity) was concurrently linked to security at age 14 but displayed no predictive value beyond that. In contrast, several markers of capacity to establish autonomy in peer relationships later in adolescence were not only linked to baseline attachment but predicted relative changes in attachment security over time. Attachment security may facilitate the successful management of peer relationships in early adolescence, just as it does at earlier points in development (Pallini et al., 2014); it may only be as peer relationships deepen, however, that qualities of these relationships become direct predictors of future attachment security. Notably, the strongest predictions of adult security were observed from age 21 conflict management as the domain of observed peer relationships shifted to romantic relationships. Overall, these findings are consistent with a developmental perspective on the growing importance of peer relationships during this span as adolescents begin turning to peers to meet attachment needs (Collins, 1997; Collins, van Dulmen, Arnett, & Tanner, 2006; Rosenthal & Kobak, 2010).

As with parent predictors, the importance of autonomy processes in managing conflict in peer relationships became increasingly apparent. In adulthood, establishing a secure attachment organization may depend to a large extent on establishing close relationships in which autonomy is supported and disagreements between partners can be resolved successfully. Although powerful, biologically based caregiving and pair-bonding systems would tend to promote support between partners (Cassidy, 2000; Zeifman & Hazan, 2008), the ability to manage disagreements so as not to create anger and hostility that undermine these systems may be central to adult security.

An important caveat to the peer relationship findings observed is that predictions from mid- and late adolescence were obtained after the baseline attachment assessment at age 14. These data thus cannot rule out the possibility that these later predictions may in part reflect the influence of evolving attachment organization after age 14 and prior to the age 16/17 and age 21 assessments. These predictions, however, were obtained not from the adolescent's behavior but from observations or partner reports of a peer or romantic partner's behavior, which at least reduces the likelihood that the predictions solely reflect the adolescent's concurrent, unmeasured attachment organization.

When family and peer predictors were considered together, each domain added unique variance to predictions from the other domain. All prior peer predictors remained significant. In terms of family predictors, maternal psychological control dropped out as a unique predictor of future insecurity, whereas interparental hostile conflict and early maternal supportive behavior remained. Even after accounting for the stability of attachment across this period, predictions from relational experience factors accounted for an additional 21% of the variance. These factors, together with predictions from baseline attachment assessments at 14, explained 46.8% of the total variance, a multiple  $R$  of .68, in adult attachment security—a level of explained variance that approaches the theoretical maximum given the limits of coding reliability. Attachment security in adulthood thus appears to be quite lawfully explained via a combination of prior attachment and key social relationship experiences.

Data from this study also made it possible to address the question of how a categorical approach to assessing adult attachment might fare relative to a continuum approach in accounting for continuities from the adolescent era. A continuum approach was found to demonstrate equivalent or slightly stronger degrees of continuity to adolescent-era predictors than a categorical approach in relation to a number of specific relationship qualities assessed in adolescence. In no cases did the categorical approach display stronger relations to prior predictors than the continuum approach. Findings regarding assessments of stability are of course somewhat limited because in adolescence, we only had a continuous measure of security for comparison. Overall, however, this pattern of findings provides significant, though by no means dispositive, evidence supporting the greater utility of a continuous variable approach to assessing adult security.

Several additional limitations to the approach used in this study also warrant consideration. One important qualification is that even lagged longitudinal data are not sufficient to establish the presence of causal relationships between predictors and attachment outcomes. Similarly, mediated paths in path analytic models were not specified a priori and hence should be considered exploratory in nature. In addition, when comparing stability observed in this study to stability observed in attachment security across other periods of the life span, it is important to note important conceptual and measurement shifts that occur and make comparisons of stability rates across different ages

problematic. Adult attachment organization conceptually differs from infant security in that it reflects a generalized cognitive representation of attachment as opposed to a model of a specific relationship (Allen & Manning, 2007; Allen & Tan, 2016). The long-term relative stability of attachment in this study likely in part reflected the use of the same measurement strategy over time, which is often impossible when stability is assessed across other developmental periods (e.g., from infancy to adolescence). Our measurement approach was also limited to approaches (e.g., of family interaction qualities) available at the time of baseline assessments. Also, given that most participants were not living with parents at age 21, it was not feasible, nor necessarily sensible to obtain observed interaction data with parents at this age. This does, however, of necessity preclude conclusions about parent–adult child predictors of adult attachment. Similarly, we were not able to obtain sufficient participation from fathers in observational tasks to permit assessment of their roles and this would clearly be valuable for future studies to include. Finally, this study focused primarily on security versus insecurity, given the large body of research linking security to social functioning. However, approaches that considered subtypes of insecurity (e.g., unresolved, preoccupied, and dismissing classifications) could be profitably explored in future research.

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### Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

**Appendix S1.** Extended Description of Procedures, Measures, and Attrition Analyses

**Table S1.** Family Predictors of Attachment Security (Age 24) After Accounting for Security at Age 14

**Table S2.** Peer Predictors of Attachment Security (Age 24) After Accounting for Security at Age 14

**Table S3.** Combined Peer and Family Predictors of Attachment Security (Age 24) After Accounting for Security at Age 14

**Table S4.** Comparing Continuous and Categorical Measures of Attachment Security in Terms of Their Relation to Adolescent-Era Predictors