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Authors

Jones, Jason D
Fraley, R Chris
Ehrlich, Katherine B
[et al.](#)

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Stability of Attachment Style in Adolescence: An Empirical Test of Alternative Developmental Processes

Jason D. Jones^{#a}, R. Chris Fraley^{#b}, Katherine B. Ehrlich^c, Jessica A. Stern^d, C. W. Lejuez^e, Phillip R. Shaver^f, and Jude Cassidy^d

^aUniversity of Pennsylvania, Davis

^bUniversity of Illinois at Urbana–Champaign, Davis

^cUniversity of Georgia, Davis

^dUniversity of Maryland, College Park, Davis

^eUniversity of Kansas, Davis

^fUniversity of California, Davis

These authors contributed equally to this work.

Abstract

Few studies have examined stability and change in attachment during adolescence. This 5-year longitudinal study (a) examined whether prototype or revisionist developmental dynamics better characterized patterns of stability and change in adolescent attachment (at T1, $N = 176$; mean age = 14.0 years, $SD = .9$), (b) tested potential moderators of prototype-like attachment stability, and (c) compared attachment stability in adolescence to stability in adulthood. The results supported the prototype model, which assumes that there is a stable, enduring factor underlying stability and change in attachment. Exploratory moderation analyses revealed that family conflict, parental separation or divorce, minority status, and male sex might undermine the prototype-like stability of adolescent attachment. Stability of attachment was lower in adolescence relative to adulthood.

Keywords

attachment stability; developmental processes; adolescence

According to attachment theory, individuals are biologically predisposed to form close emotional bonds with and maintain proximity to *attachment figures* (Bowlby, 1969/1982). During infancy, one's attachment figures are typically parents and other principal caregivers, and during adulthood these are typically long-term romantic partners (Ainsworth, 1989; Hazan & Shaver, 1987). Although the development of attachment bonds is believed to be a universal human phenomenon, there are substantial individual differences in the quality of those bonds in both infancy and adulthood. Decades of research suggest that these individual

differences are predictive of important developmental outcomes (see Cassidy & Shaver, 2016, for reviews).

One of the fundamental questions in the study of attachment concerns the stability of individual differences over time. Bowlby's theory suggests that individual differences in attachment should be relatively stable and become increasingly resistant to change as development progresses (Bowlby, 1969/1982, 1973). The empirical data on stability, however, have often led to conflicting conclusions, with some studies favoring stability and others favoring change (for meta-analyses on attachment stability, see Fraley, 2002, Fraley & Brumbaugh, 2004, and Piquart, Feußner, & Ahnert, 2013).

One reason it has been difficult to resolve debates about the stability of individual differences in attachment is that the traditional way of addressing stability involves the use of two-wave, test-retest designs. The limitations of this approach have been described in detail elsewhere (Fraley, Vicary, Brumbaugh, & Roisman, 2011; see also Supporting Information). In short, the absolute magnitude of a test-retest correlation across any two time points provides a limited view of the developmental processes that could account for stability and change, because it does not reveal whether the correlations decrease over time or stabilize at particular values. This limitation can be overcome only by assessing attachment at multiple time points (> 2) and testing alternative developmental models of stability and change.

Alternative Developmental Models of Stability and Change in Attachment

At least two alternative theoretical perspectives on stability and change have been proposed (Fraley, 2002; Fraley et al., 2011). Both perspectives assume that working models of attachment are shaped by experiences with attachment figures and that they can be gradually updated in light of new interpersonal experiences. The two perspectives differ, however, in the fate they ascribe to early representational states. According to the *revisionist-contextual perspective*, changes in attachment representations have the potential to dilute or even override early representations. The long-term consequence of this dynamic is that it should become increasingly difficult to predict individuals' attachment based on knowledge of their attachment in the past (Lewis, 1997). According to the *prototype perspective*, however, there is a latent factor—referred to as a prototype (Fraley, 2002; Owens et al., 1995)—that is stable over time and continues to influence working models of attachment. This prototype is conceptualized as a composite of non-linguistic representations, procedural rules of information processing, behavioral strategies, and physiological regulatory processes that emerged within early interactions with attachment figures (Cassidy, Ehrlich, & Sherman, 2013; Fraley, 2002). The underlying prototype guides relationship experiences across the lifespan, potentially limiting the extent to which people undergo changes in attachment.

Alternative Predictions of the Prototype and Revisionist Models

These alternative ways of conceptualizing developmental processes can be modeled using extensions of contemporary trait-state models (Kenny & Zautra, 2001; see Figure 1). The statistical structure of these models has been described in detail elsewhere (Fraley, 2002;

Fraley et al., 2011; see also Supporting Information). One of the benefits of formalizing the conceptual models within this framework is that doing so highlights the differential predictions of the prototype and revisionist models. Simulations carried out by Fraley et al. (2011) showed that, under a variety of parameter values, the revisionist model predicts that the magnitude of the test-retest correlation decreases as the length of the test-retest interval increases. In fact, in the limit, the revisionist model predicts that the correlation will approach zero. This specific value might not be observed in the life course of a typical person, but the fact that the model makes this prediction reveals something important about the dynamics of the underlying developmental processes. Namely, when revisionist processes are operating, one's ability to forecast the future gets increasingly difficult as time progresses (see Figure S2).

When prototype processes are introduced, the predictions of the model are strikingly different. Although the test-retest correlations initially decay, they eventually stabilize. As such, they do not approach zero in the limit. Thus, the expected stability over 2 waves, for example, has the potential to be comparable to the expected stability over 4 waves. The prototype model makes an additional prediction: The overall level of stability observed early in the process will be lower than that observed later in the process. When the model is used as a lifespan developmental model, it implies that the stability of individual differences will tend to increase as one gets older (Fraley & Brumbaugh, 2004; Fraley & Roberts, 2005). That is, the prototype model predicts that stability will be lower in childhood and adolescence than in adulthood.

Importantly, although the prototype is thought to stem from experiences in infancy, these two models can be tested at other developmental stages, as they represent distinct ways of conceptualizing stability and change (see Fraley et al., 2011, for studies with adults). If the prototype model is supported, this suggests that there is a constant source of variance contributing to attachment at each assessment during that particular developmental period. Thus, these two models are important for understanding the developmental dynamics of stability and change at any point in development.

Moderators of Prototype-like Stability

Researchers have had a long-standing interest in understanding factors that moderate the stability of attachment patterns. This research has sought to determine what kinds of factors affect the *overall* stability of attachment (i.e., whether stability is high or low; see Groh et al., 2014). However, when questions about stability are situated within the prototype framework, novel ways to examine moderators emerge. Specifically, if the evidence supports the prototype model, one may inquire whether there are factors that enhance or diminish the extent to which attachment behaves in a prototype-like fashion. The prototype perspective does not necessarily imply that stability will be high or low overall; it implies that the stability observed will be relatively invariant across increasingly long test-retest intervals. It is possible, therefore, that certain factors have the potential to undermine the extent to which attachment exhibits stable, prototype-like properties independently of the overall magnitude of stability. However, no study has formally evaluated the extent to which prototype-like dynamics are moderated by contextual factors.

Stability and Change in Attachment in Adolescence

Relative to the sizeable literature on the stability of attachment in infancy and adulthood, few studies have examined stability during adolescence. The limited focus on stability during adolescence is surprising considering that adolescence is characterized by rapid transitions and maturation in a variety of domains. The few researchers who have studied adolescent attachment longitudinally have concluded that attachment is relatively stable across adolescence (e.g., Allen, McElhaney, Kuperminc, & Jodl, 2004; Chopik, Moors, & Edelstein, 2014). However, no study has tested alternative development models of stability and change in attachment across multiple time points during adolescence. It is also unclear how stability during adolescence compares to stability in adulthood. It is possible that stability is lower in adolescence relative to adulthood, as the prototype model predicts.

The Present Study

This study was designed to answer four questions: First, how stable are individual differences in attachment in adolescence? Second, are stability and change in attachment during adolescence best characterized by prototype or revisionist dynamics? Based on previous work, we predicted that the prototype model would fit the data better than the revisionist model. Third, is attachment stability lower in adolescence than in adulthood? We expected stability to be lower in adolescence than adulthood, as implied by the prototype model. Fourth, what factors moderate the prototype-like stability of individual differences in attachment in adolescence? Given the novelty of the moderation analyses, and the importance of this issue to the attachment literature, we decided to cast a wide net and explore multiple potential moderators. Specifically, we tested: income, parental separation or divorce, interparental conflict, parent–adolescent conflict, adolescent sex and race, and pubertal development.

Method

Participants and Procedure

Adolescents and their parent(s) were recruited from the Washington, D.C. metropolitan area. Families who were proficient in English and had a child between the ages of 9 and 13 were eligible to participate in the initial laboratory assessment. The original sample included 277 adolescents (mean age = 11.0, $SD = .8$; 44% female) and their parent(s). The sample was racially diverse: 49% White, 36% African American, 3% Hispanic/Latino, 1% Asian American, and 11% other ethnicity. Average income at the first assessment was \$93,699 ($SD = \$74,019$). Sixty-one percent of mothers and 58% of fathers had at least a 4-year college degree.

Following the initial visit, families returned to the laboratory for annual assessments that lasted approximately 1.5 hours and included various questionnaires and laboratory tasks. The present study focused on adolescents and parents who participated in years 4 through 8 of the study because these are the five time points (henceforth referred to as T1-T5) at which adolescent and parent attachment data are available. These data were collected from

2008-2012. Adolescent age ranged from a mean of 14.0 ($SD = .9$) at T1 to a mean of 18.0 ($SD = 1.0$) at T5. The majority (74%) of parents were married.

Measures

Attachment style—We assessed attachment with a self-report measure of *attachment style*, which reflects the ways people typically think, feel, and behave in close relationships. Parents completed the Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998; $\alpha = .89$). Adolescents completed the short form of the ECR that includes 12 of the original 36 items (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007; $\alpha = .63$ to $.76$). The ECR captures variability along two attachment style dimensions: avoidance and anxiety. Individuals high in avoidance are uncomfortable with intimacy and prefer not to depend on others in times of need. Individuals high in anxiety worry about relationship partners not being available in times of need and report fears of rejection and abandonment. Participants rated the extent to which they agreed with each statement using a 7-point scale (1 = *disagree strongly*, 7 = *agree strongly*). Although the original ECR asks about experiences with romantic partners, in recent years, researchers have broadened the focus of the ECR to “close relationships” more globally (Mikulincer & Shaver, 2016). In the present study, participants completed the measure with reference to close relationships more broadly.

Parent–adolescent conflict—At T1, adolescents were presented with 19 topics that parents and adolescents frequently disagree about (e.g., chores) and rated the level of disagreement on each topic (1 = *do not disagree*, 5 = *disagree much*). Ratings were averaged to create a conflict score in relation to each parent ($\alpha = .86$). The two scores were averaged to create an overall parent–adolescent conflict score. Consistent with prior studies of parent–adolescent conflict in large, diverse, community samples (e.g., Fuligni, 1998), adolescents in this study reported overall low levels of conflict with parents (mean = 1.94, $SD = .62$).

Interparental conflict—At T1, mothers were presented with 18 topics that couples frequently disagree about (e.g., money) and rated the level of disagreement on each topic (1 = *do not disagree*, 5 = *disagree much*). Ratings were averaged to create an interparental conflict score ($\alpha = .88$, mean = 1.75, $SD = .56$). This overall low level of conflict is similar to conflict levels reported in a nationally representative sample of couples (Kamp Dush & Taylor, 2013).

Parental separation or divorce—At T2-T5, adolescents reported whether they had ever experienced a parental separation or divorce. Thirty-three percent of adolescents reported experiencing a separation or divorce.

Income—We categorized each household's income as either above or below the median income (\$70,548; US Census Bureau, 2009) for the state of Maryland in 2008, when T1 data collection took place. Thirty-five percent of families in this sample reported annual incomes below the Maryland median in 2008.

Pubertal development—At T1, adolescents completed the Pubertal Development Scale (PDS; Petersen, Crockett, Richards, & Boxer, 1988). Adolescents rated the degree to which

several characteristics associated with puberty (e.g., growth spurt) had developed (1 = *no development*, 4 = *development completed*). Items were averaged to create a pubertal development score, with higher scores reflecting more advanced pubertal development ($\alpha = .72$ for males, $\alpha = .61$ for females; mean = 2.78, $SD = .57$).

Results

Descriptive Statistics and Attrition

Tables 1 and 2 include descriptive statistics and correlations among the attachment dimensions. At T1, only a subset of participants completed the ECR. At T2-T5, the ECR was administered to all participants. The subset of participants that completed the ECR at T1 did not differ from the rest of the sample on any variable included in this study. We focused on T2-T5 for our attrition analyses. Twenty-one adolescents did not provide attachment data beyond T2. The adolescents who dropped out of the study did not differ from those who remained in the study on any variable included in this study. Maximum likelihood estimation was used to handle missing data.

Stability Functions

Although stability was relatively high between temporally adjacent time points, stability was lower between more distal time points (see Figure 2). Importantly, however, stability did not appear to decrease continuously as the test-retest interval increased. Overall, the degree of stability observed among adolescents was lower than that observed among adults. The T1 stability function in the left panel of Figure 2 shows that the test-retest correlations for adolescents (range: .31 to .60; mean $r = .42$) were smaller than those for adults (range: .57 to .83; mean $r = .72$; $z = -3.88$, $p < .05$). See Supporting Information for additional details.

Comparing Prototype and Revisionist Models

For both avoidance and anxiety, the prototype model fit the data significantly better than the revisionist model (see Table 3). See Supporting Information for model statistics for adults.

Moderators of Prototype-Like Stability

To examine potential moderators of prototype-like stability, we estimated the parameters of latent variable interaction models (see Supporting Information for details). Three potential moderators of avoidance emerged. Non-White adolescents and adolescents who experienced more conflict at home (i.e., greater parent-adolescent and interparental conflict) were less stable in their avoidance than White adolescents and adolescents who experienced less conflict. Two potential moderators of anxiety also emerged. Male adolescents and adolescents who experienced a parental separation or divorce exhibited less prototype-like stability in anxiety than female adolescents and adolescents from intact families. All five interaction effects remained significant after applying Benjamini-Hochberg (BH) corrections to adjust for multiple comparisons (see Supporting Information for details).

Discussion

The results indicate that despite rapidly changing social experiences, adolescence appears to be a time of attachment stability. Further, consistent with previous findings in adult samples (Fraley et al., 2011), the prototype model better captures patterns of stability and change in attachment style during adolescence than the revisionist model. Comparisons of the stability functions for parents and adolescents indicate that attachment stability is lower in adolescence than in adulthood, consistent with the developmental predictions of the prototype model.

These results indicate that there may be an enduring prototype underlying the attachment dimensions at each assessment, limiting the extent to which adolescents undergo changes in attachment. Further, the findings suggest a developmental progression through which attachment style becomes increasingly stable from adolescence to adulthood. Adolescence is a period of social plasticity characterized by large and rapidly changing social networks, changing social roles, and shifting relationships with childhood attachment figures (Allen & Tan, 2016; Wrzus, Hänel, Wagner, & Neyer, 2013). Thus, adolescents may be more susceptible to changes in attachment compared to adults who typically have more stable social environments and have had more time to consolidate their working models.

The apparent developmental progression to increasing stability of attachment is consistent with the process of canalization of internal working models—a central theme in Bowlby's early formulations of attachment theory (Fraley & Brumbaugh, 2004). Once a particular developmental pathway is embarked upon, the likelihood of deviating from it decreases as time progresses (Waddington, 1957). Thus, as individuals develop from adolescents into adults, it is possible that their attachment style becomes canalized and the likelihood of change decreases, resulting in greater stability in adulthood than in adolescence.

Moderators of Prototype-Like Stability

With regard to avoidance, greater family conflict was associated with reduced stability. These findings are consistent with previous meta-analyses demonstrating that at-risk samples (defined by factors such as family instability and marital discord) show less stability than low-risk samples (Fraley, 2002; Piquart et al., 2013). In addition, minority adolescents were less stable than White adolescents in their avoidance. Although speculative, it is possible that differences in childrearing practices and in family and peer relationships between Whites and minorities could underlie the observed moderation by race. Further research is needed, however, before drawing conclusions about this race finding.

With regard to anxiety, parental separation or divorce was associated with less stability. Disruptions to the family structure and various other potential changes that might follow divorce (e.g., changing homes or schools) may affect the prototype-like stability of anxiety. In the wake of divorce, adolescents may be more likely to endorse attachment anxiety items (e.g., “I worry about being abandoned”), reflecting the reality of facing the limited or uncertain presence of one or both parents or other relationship partners. In addition, males showed less stability than females. A meta-analysis of sex differences in attachment style found that the “female bias” in attachment anxiety (i.e., the finding that females tend to

report more attachment anxiety than males) increases during mid- to late-adolescence and peaks in young adulthood (Del Giudice, 2011). It is possible that our findings reflect the initial stage of the process by which this gender gap develops.

Conceptualization and Measurement of Attachment

The conceptualization and measurement of attachment in adolescence and adulthood has been a source of considerable debate in the attachment field. Developmental researchers tend to focus on individuals' *current state of mind with respect to attachment*, derived from the linguistic properties of participants' responses to interview questions mainly about early experiences with attachment figures. Social psychologists tend to focus on individuals' *attachment style*, measured with self-report questionnaires about thoughts, feelings, and behaviors in current close relationships. Measures of both attachment constructs have proven invaluable in moving the field forward and answering important questions about stability and change. Although self-report and interview-based measures of attachment are similarly related to various important attachment-relevant constructs (e.g., emotion regulation, social information processing; Mikulincer & Shaver, 2016), the two measures themselves are weakly correlated (Roisman et al., 2007). Thus, an unanswered question to be addressed in future work is whether the results of the present study would replicate in studies with a focus on attachment state of mind (assessed with an interview-based measure).

Limitations and Future Directions

Although these findings are novel and compelling, certain limitations merit consideration. First, in general, the present sample was low-risk. It will be important to examine attachment stability and moderators of stability in higher risk and more economically diverse samples. Second, we did not include assessments of other personality constructs (e.g., neuroticism) that may play a role in the continuity of attachment. Notably, however, Fraley et al. (2011) found support for the prototype model even when controlling for variability in the Big Five personality traits, including neuroticism. Third, all of our measures were self-reports, which have limitations and are susceptible to various reporting biases. Future work could incorporate interviews and observational methods. Fourth, adolescents completed the ECR-S whereas parents completed the full-length ECR. Although analyses reported in the Supporting Information suggest that this measurement difference did not change study conclusions, future studies should include identical attachment measures in both age groups.

In sum, the present study is the first to test alternative developmental models of stability and change in attachment during adolescence. The results favor stability over change and prototype dynamics over revisionist dynamics. Our findings also highlight developmental differences in stability when comparing adolescents and adults and potential moderators of prototype-like stability.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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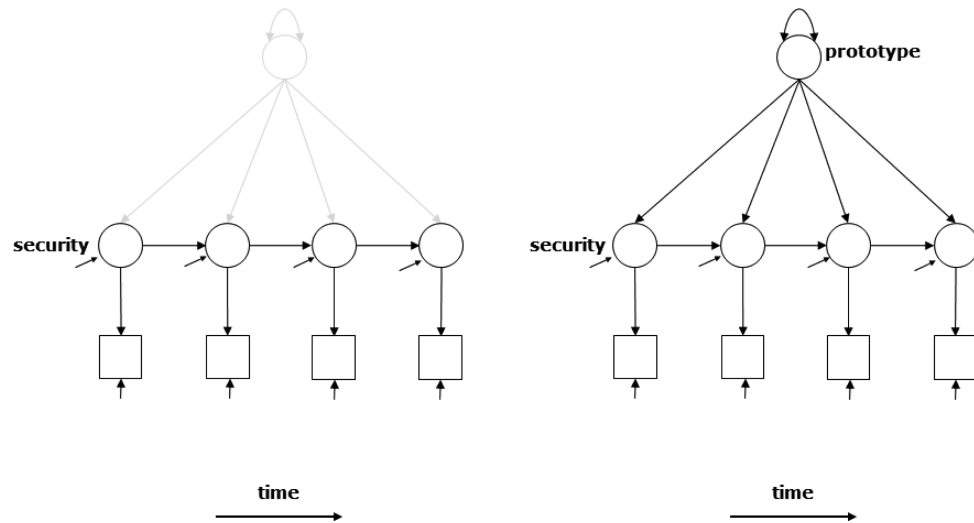


Figure 1.

Alternative models of stability and change. The left side illustrates a revisionist-contextual model. According to this model, attachment at any point in time is a function of preexisting levels of attachment and environmental sources of variance. The right side illustrates a prototype model. This model includes the previous processes, but also includes the existence of a stable source of variance (i.e., a prototype) that influences attachment across time. Adapted from Fraley et al. (2011).

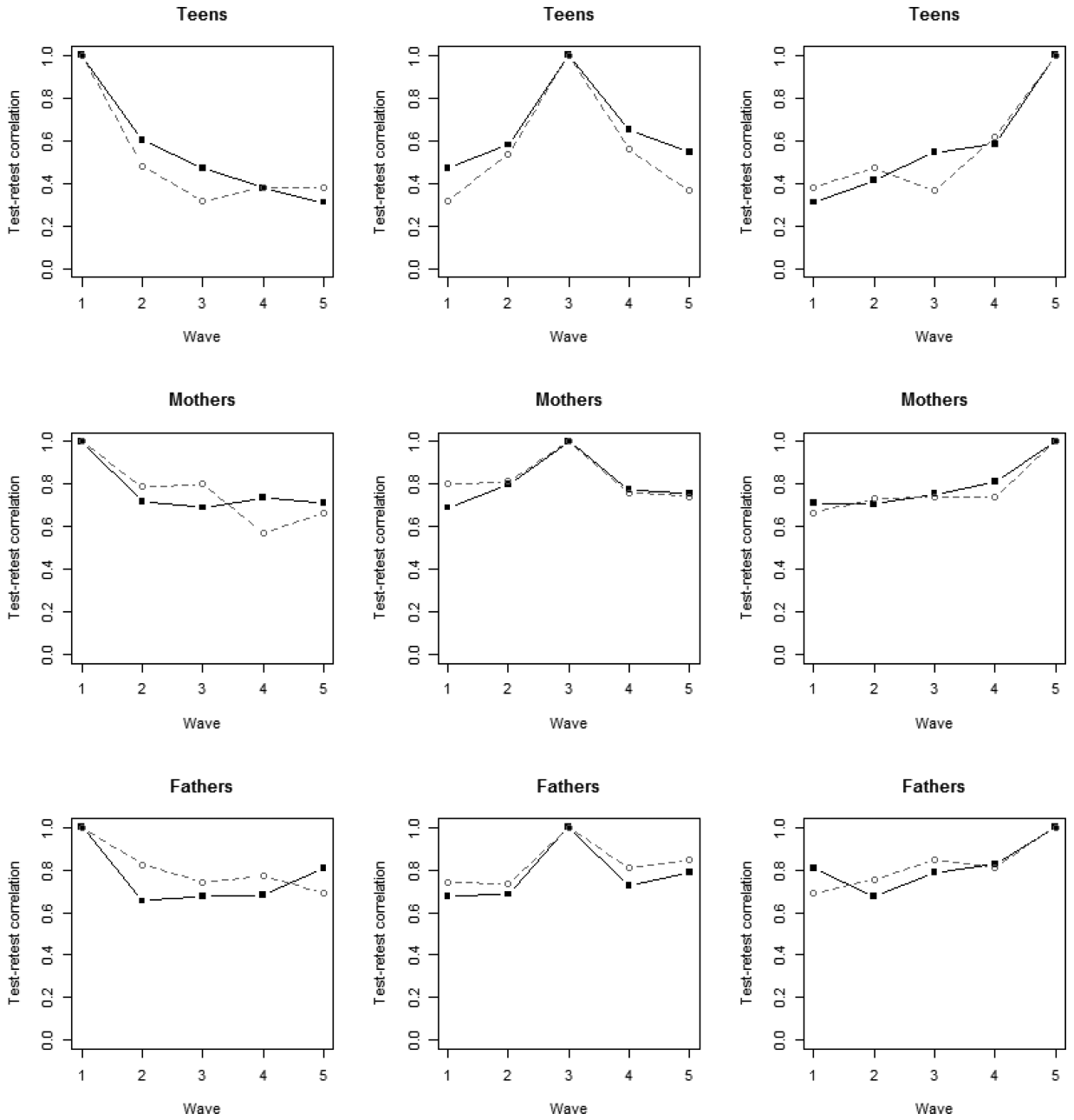


Figure 2. Stability functions for avoidance (solid line) and anxiety (hashed line). The first panel in each row illustrates the T1 stability function—the correlation between attachment at the first wave and all subsequent waves. The second panel in each row illustrates the T3 stability function—the correlation between attachment at wave 3 and all waves prior to it and all waves following it. The third panel in each row illustrates the T5 stability functions—the correlation between attachment at the fifth wave and all waves prior to it.

Table 1

Correlations Among Adolescent Attachment Style Dimensions

	Avo1	Anx1	Avo2	Anx2	Avo3	Anx3	Avo4	Anx4	Avo5	Anx5
Avo1	-									
Anx1	.31	-								
Avo2	.60	.23	-							
Anx2	.18	.48	.13	-						
Avo3	.47	.21	.58	.18	-					
Anx3	.12	.32	.10	.54	.16	-				
Avo4	.38	.28	.45	.31	.65	.27	-			
Anx4	.12	.38	.02	.61	.11	.56	.30	-		
Avo5	.31	.05	.41	.19	.55	.19	.58	.28	-	
Anx5	.03	.38	-.02	.47	.06	.37	.24	.62	.27	-
Mean	2.94	2.93	3.07	2.76	3.09	2.92	3.13	3.00	3.09	3.13
(SD)	(1.00)	(1.16)	(1.12)	(1.07)	(1.10)	(1.08)	(1.17)	(1.24)	(1.22)	(1.28)
N	176	176	205	205	176	176	153	153	149	150

Notes. Bold = statistically significant ($p < .05$). Avo = avoidance. Anx = anxiety.

Table 2

Correlations Among Parents' Attachment Style Dimensions

	Avo1	Anx1	Avo2	Anx2	Avo3	Anx3	Avo4	Anx4	Avo5	Anx5	Mean (SD)	N
Avo1	-	.39	.65	.38	.68	.34	.68	.31	.81	.45	2.88 (.88)	99
Anx1	.41	-	.26	.83	.34	.74	.41	.77	.44	.69	2.51 (1.09)	99
Avo2	.72	.41	-	.42	.69	.21	.67	.34	.68	.50	3.06 (1.01)	105
Anx2	.30	.79	.40	-	.28	.74	.34	.79	.35	.75	2.99 (1.07)	105
Avo3	.69	.41	.80	.30	-	.40	.73	.30	.79	.38	2.92 (.96)	79
Anx3	.35	.80	.37	.81	.37	-	.32	.81	.46	.85	2.93 (1.05)	79
Avo4	.74	.33	.74	.25	.77	.37	-	.44	.83	.35	3.01 (.90)	80
Anx4	.24	.57	.33	.67	.31	.76	.46	-	.36	.81	2.91 (1.17)	80
Avo5	.71	.30	.70	.30	.75	.36	.81	.40	-	.47	3.21 (1.03)	80
Anx5	.35	.66	.33	.73	.43	.74	.42	.74	.47	-	3.03 (1.15)	80
Mean	2.73	2.46	2.88	2.63	2.80	2.50	2.71	2.56	2.84	2.58		
(SD)	(.99)	(1.04)	(.99)	(1.15)	(1.02)	(1.11)	(1.03)	(1.15)	(.99)	(1.17)		
N	177	177	196	196	169	169	150	150	142	142		

Notes. Bold = statistically significant ($p < .05$). Avo = avoidance. Anx = anxiety. Mother data below diagonal. Father data above diagonal.

Table 3

Comparisons of Prototype and Revisionist Models

	Model Statistics					Model Comparisons				
	χ^2	df	p	CFI	RMSEA	Prototype [95% CI]	SDZ	χ^2	df	p
<i>Avoidance</i>										
Prototype	6.12	7	.53	1.00	0.00	.527 [.34, .71]	.460			
Revisionist	23.36	9	.005	.94	.10			17.24	2	< .001
<i>Anxiety</i>										
Prototype	11.78	7	.11	.98	.05	.721 [.57, .87]	.617			
Revisionist	40.99	9	< .001	.84	.15			29.21	2	< .001

Notes. CFI = comparative fit index. RMSEA = root-mean-square error of approximation. Prototype = estimate of the latent prototype on measurements of attachment across waves. SDZ = the standardized estimate of the latent prototype.

Table 4

Moderators of Prototype-Like Stability

Moderator	P(SE)	M(SE)	PxM(SE)
Avoidance			
Income	.49 (.10)	.17 (.11)	.14 (.10)
Separation/Divorce	.56 (.10)	.09 (.10)	-.11 (.08)
Parent-Adolescent Conflict	.88 (.19)	.18 (.06)	-.17 (.07)
Interparental Conflict	1.40 (.27)	.18 (.12)	-.58 (.13)
Pubertal Development	.74 (.21)	-.08 (.10)	-.08 (.07)
Sex	.56 (.12)	.05 (.10)	-.06 (.09)
Race	.64 (.11)	.18 (.09)	-.23 (.08)
Anxiety			
Income	.76 (.10)	.03 (.12)	-.16 (.11)
Separation/Divorce	.78 (.10)	.13 (.11)	-.22 (.09)
Parent-Adolescent conflict	.82 (.18)	.15 (.12)	-.04 (.07)
Interparental Conflict	.82 (.27)	.13 (.19)	-.02 (.14)
Pubertal Development	.41 (.24)	.37 (.10)	.11 (.09)
Sex	.85 (.11)	-.40 (.12)	-.29 (.10)
Race	.72 (.09)	.10 (.12)	.01 (.10)

Notes. Parameter estimates based on a model that includes the main effects of the prototype (P) and moderator (M) and their interaction (PxM). Bold = statistically significant ($p < .05$). SE = standard error. Income (0 = above median, 1 = below median). Separation/Divorce (0 = no separation/divorce, 1 = separation/divorce). Sex (0 = female, 1 = male). Race (0 = White, 1 = non-White). See Supporting Information for a discussion of the main effects of the moderators.