Published in final edited form as:

J Adolesc Health. 2016 March ; 58(3): 260–266. doi:10.1016/j.jadohealth.2015.10.252.

Transitions in Friendship Attachment in Adolescence is Associated with Developmental Trajectories of Depression through Adulthood

Stephanie H. Cook, DrPH, MPH,

The University of Michigan, Department of Health Behavior Health Education, Department of Psychology, 1415 Washington Heights, SPH I, Room 3814, Ann Arbor, MI 48109-2029, Phone: (734) 647-2683, Fax: (734) 763-7379

Justin Heinze, PhD,

Department of Health Behavior and Health Education, School of Public Health, 1415 Washington Heights, SPH I, Room 3703, Ann Arbor, MI 48109-2029, Phone: (734) 615-4992

Alison L. Miller, PhD, and

Department of Health Behavior and Health Education, School of Public Health, 1415 Washington Heights, SPH I, Room 3718, Ann Arbor, MI 48109-2029, Phone: (734) 615-7459

Marc A. Zimmerman, PhD

Department of Health Behavior and Health Education, School of Public Health, 1415 Washington Heights, SPH I, Room 3702, Ann Arbor, MI 48109-2029, Phone: (734) 647-0224

Stephanie H. Cook: shcook@umich.edu; Justin Heinze: jheinze@umich.edu; Alison L. Miller: alimill@umich.edu; Marc A. Zimmerman: marcz@umich.edu

Abstract

Purpose—Forming secure friendship attachments during adolescence are important for mental health; few, however, have specifically examined the ways in which the transitions in attachment during adolescence may influence future mental health outcomes among African-Americans.

Method—The current study examines how transitions in attachment in adolescence predicted changes in depression symptoms from late adolescents through adulthood in an African-American sample of adolescents. We used growth curve modeling to examine the association between transitions in friendship attachment and changes in depression symptoms in adulthood.

Results—At age 16, 346 (64.0%) reported secure attachment with 195 (36.0%) reporting either avoidant or resistant attachment. At age 17, 340 (62.9%) reported secure attachment and 201 (37.2%) reported avoidant or resistant attachment. The largest percentage of participants (46.2%) reported stable-secure attachment across the two time points. Results of the growth model indicated that adolescents who reported a stable-secure attachment style had lower levels of

Correspondence to: Stephanie H. Cook, shcook@umich.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

depression symptoms during adulthood than those individuals who transitioned from secure-to-insecure, from insecure-to-secure, or were in the stable-insecure group. Interestingly enough, individuals in both of the attachment transition groups had a faster declining rate of depression symptoms over time compared to the two stability groups.

Conclusion—Data support existing research showing an association between transitions in attachment during adolescence and depression through adulthood. Further these study findings suggest there may be protective features associated with transitioning between attachment styles during adolescence on later depression, compared to African-American's who remain stable in their attachment style.

Keywords

Friendship attachment; Depression; Longitudinal; Adolescence

Adolescence is a key developmental time period in which close relationships with peers become increasingly important for psychosocial development. While the role of a primary caregiver remains important, adolescents become increasingly reliant on their peers for social support.¹ Adolescents who are able to form secure attachment bonds with peers have greater psychosocial health and fewer problem behaviors.² Although researchers have found that friendship attachment during adolescence is associated with healthy functioning, few have examined the ways in which the transitions in attachment during adolescence may influence future mental health outcomes especially among African-American youth.³ Thus, we sought to understand how transitions in attachment across a 12-month period during adolescence predicted trajectories of depression symptoms through adulthood in a sample of urban African-American adolescents.

Attachment Theory and African-American Adolescents

Attachment theory stems from the work of Bowlby⁴ who studied the way in which socio-emotional bond formation in infancy shaped development and functioning across the life course. Bowlby posited that infants develop either secure or insecure attachment bonds with their primary caregiver. Research on attachment in childhood and adolescence has mainly been conducted with White middle class participants, thus less is known about attachment style among African American youth.⁵ Investigators who studied cultural differences in attachment among youth report mixed findings. Van Ijzendoorn and Sagi-Schwartz⁶ found few differences in attachment security across multiple cultural groups in a meta-analysis. In contrast, Rothbaum and colleagues,⁷ found that measures of attachment security may be biased towards Western ideals, and less useful in understanding attachment functioning among ethnic/racial minorities. This same ideology could apply to ethnic/racial minorities within the United States. Given the limitations of current research on attachment, it is vital to study individual differences in attachment among African-American adolescents, and the long-term implications of such differences.

Friendship Attachment During Adolescence

Attachment stability has been less studied^{8,9} even though some suggest that the nature of transition in key attachment relationships may be associated with healthy development.¹⁰ Waters and colleagues,⁹ Hamilton¹¹ and Fraley¹² found that infant and childhood attachment were relatively stable through young adulthood. Yet, Weinfield and colleagues¹³ found that attachment styles measured in infancy were not consistent with adult attachment styles. In addition, the researchers found that when attachment style changed it was usually associated with a dramatic change in the social environment.

Hazan and Shaver¹⁴ proposed a developmental model of attachment that theoretically explains the transition in attachment style across different developmental stages. The model starts in infancy; the developmental stage where parents provide a safe haven and secure base. Attachment proximity maintenance (i.e., feeling secure when the attachment figure is near and being comforted by attachment figure when distressed) behaviors are prominent in this developmental stage. From early childhood to early adolescence, peers tend to become more prominent attachment figures (i.e., confiding in friends and relying on peer relationships as sources of comfort and support becomes important). Though parents are never completely eliminated as attachment figures, mother's role gradually decreases as children transition into adulthood when peer and intimate partner relationships become important sources of social support. Few have studied how transitions in attachment during adolescence may be associated with mental health.¹⁵

Peer attachment security is associated with the ability to form close relationships with peers, while also maintaining autonomy to explore the world.² Secure attachment to peers is also associated with developing adaptive emotion regulation skills to handle conflict and other stressful situations.² Muris and colleagues¹⁶ found that adolescents who reported having a secure friendship attachment style were more likely to trust their peers and not feel alienated compared to adolescents who reported avoidant or anxious attachment styles.

Attachment and Depression Symptoms

Poor early attachment relationships are associated with vulnerability for depression symptoms in adulthood.¹⁷ In general, adolescents report elevated levels of depression symptoms during late adolescence and during the transition to adulthood that decrease into adulthood, although significant variability in trajectories are reported.¹⁸ African-American youth, however, are more likely to experience highly stressful events that increase their risk of poor mental health across the life course than their white counterparts.¹⁹ Yet, research focused on factors predicting patterns of depression symptoms among African-Americans remains limited.²⁰ This research is particularly important considering that African-Americans are more likely than whites to have insecure early attachment relationships with parents²¹ and are at high risk for depression.²² Despite these limitations in the empirical literature, Maunder and colleagues¹⁷ provide theoretical and empirical support for how attachment relationships early in life may influence depression symptoms in adulthood. The authors explain that early insecure attachment relationships with parents during infancy and early childhood are associated with negative cognitive representations of self during late

adolescence and vulnerability to depression through adulthood. The process by which vulnerability to depression occurs over multiple developmental stages is likely associated with one's ability to navigate stressful situations. For instance, the formation of insecure attachment bonds early in development can increase the risk of developing poor coping strategies, poor affect regulation, and the inability to seek out supportive relationships in times of great stress, which can increase vulnerability to depression.

Adult attachment avoidance or anxiety are associated with depression and depression symptoms.²³ Individuals who are more avoidant in their attachment style have a break down in attachment functioning, distance themselves from others, and ineffectively cope with stressful situations which increase their vulnerability for depression.²³ The evidence for attachment avoidance, however, is mixed. Mikulincer and Shaver²³ reported that more than half of the studies they reviewed indicated that avoidance was associated with depression, while the other half reported no relationship.

We have less evidence about how transitions in attachment during adolescence may be associated with depression symptoms during the transition to adulthood. Generally, the inability to form attachment relationships with friends during adolescence may be an indicator of individual or environmental stress that is related to adolescent functioning and development.²⁴ It may be that stability in friendship attachment style is associated with positive mental health, while instability is associated with mental distress. For instance, Miller and colleagues¹⁰ (using only data collected in 1996 and 1997 of the same data the current analyses utilizes) also found that having a stable attachment style over a 12-month period, as compared to moving from secure-to-insecure or insecure-to-secure, was associated with fewer depression symptoms in a predominantly African-American sample. Nevertheless, we have limited evidence regarding how transitions in friendship attachment during adolescence may influence depression symptoms over time.

Current Investigation

The goal of the current study is to examine the association between changes in friendship attachment during adolescence and trajectories of depression symptoms. Much of the research in this area suggests that having a secure attachment relationship early in life is protective against depression symptoms, while having insecure attachment relationships is associated with mental distress across the life course.¹⁷ We hypothesized that a stable-secure group of African-American adolescents would have the lowest trajectory of depression symptoms through adulthood. We also hypothesized that the stable-insecure group of African-American adolescents would report the most depression symptoms through adulthood. Further, to our knowledge, no researchers have examined how transitions in friendship attachment style may influence depression symptoms through adulthood. Thus, we examined how the secure-to-insecure and insecure-to-secure groups of African-American adolescents were associated with depression symptom trajectories through adulthood (i.e. ages 19 to 29).

Method

Participants

The sample was drawn from a longitudinal study of urban high school students. Ninth grade students ($N = 850$; 50% Female; M age=14.9 years) were recruited from the four largest public high schools in Flint, Michigan. Because the original study was about high school dropout and substance use, participants had to have a grade point average of 3.0 or below and not be diagnosed with a developmental or learning disability to be eligible to be in the study. We excluded participants identifying as White, mixed African-American and White, and Other ($N = 169$, or 20%) from the analyses to focus on African-American youth (51% female). In addition, we excluded 140 participants for whom attachment data were not available. The final analysis sample ($N = 541$) was 54% female and averaged 14.5 years ($SD = .62$) in Year 1. Participants were interviewed from 1994–1997 (average ages 14–17), 1999–2003 (average ages 19–22) and from 2008–2012 (average ages 27–29). The age range for youth over the 11 waves of data collection (from 1994 to 2011) was 14 years old to 29 years old. Most participants came from working-class households, with slightly under 26% reporting their biological parents were married. Most participants came from working-class households, with slightly under 26% reporting their biological parents were married.

Missing Data—The sample excluded due to missing attachment data ($n=140$) had a higher proportion of males than those included in the analyses (62.1 versus 45.8, respectively $\chi^2(1) = 11.82, p < .001$) and were older at baseline ($M_{\text{excluded}} = 15.0$; $M_{\text{included}} = 14.8$; $t(679) = 3.47, p < .001$), but did not differ by levels of family conflict ($t(676) = -1.38, p = .17$), peer drug use ($t(660) = 0.04, p = .97$), anxiety ($t(674) = 0.17, p = .87$), or depressive symptoms ($t(678) = -0.09, p = .93$) at the beginning of the study.

In addition, 42 participants who did not complete a depression measure at any data collection point were excluded from the final analytic sample. Individuals across the attachment change categories were equally likely to be present at the final data collection ($\chi^2(3) = 1.90, p = .60$) indicating that attrition was not associated with attachment change.

Procedure

From years 1994–1997, structured, face-to-face 50–60 minute interviews were conducted with students. From years 2003–2008, interviews were conducted in a community setting or by telephone. Participants completed a paper-and-pencil questionnaire about alcohol and substance use, sexual behavior, and other sensitive information after the interview. Respondents were informed that all information was confidential and subpoena protected. Interviewers were trained community members and college students, most of whom were native to the area. Analyses on a broad range of variables from the larger study showed no effects by interviewer race or gender.²⁵ At the request of the participating schools, we utilized passive consent for parents and written assent for participating students. The study had a low refusal rate ($n = 9$) and represented 92% of eligible youth enrolled in the public high schools. Additional study details are reported elsewhere.²⁵

Measures

Friendship Attachment—Internal working models of friendship were assessed using a modified version of Hazan and Shaver's²⁶ Adult Attachment Classifications. This forced-choice item parallels the attachment styles identified by Ainsworth and colleagues²⁷. This measure is related to individual adaptation and relationship functioning for participants of different ages and socio-economic backgrounds.²⁸ The response rate for the attachment measure from Year 3 to Year 4 was 96%. Participants were asked to choose which of the following three statements best described their feelings concerning a close friend:

Secure: I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't often worry about being abandoned by my friends or about someone getting too close to me.

Insecure-Avoidant: I am somewhat uncomfortable being close to others. I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often close friends want me to share more than I feel comfortable sharing.

Insecure-Resistant: I find others are reluctant to get as close to me as I would like. I often worry that my closest friends don't really care about me or won't want to stay my friends. I want to get very close with my friends and this desire sometimes scares them away.

Attachment Change: We combined avoidant and resistant attachment styles into a single insecure group following past research.¹⁰ Youth who reported secure working models in Years 3 and 4 were included in the 'stable-secure' group and youth reporting insecure attachment both years were included in the 'stable-insecure' group. Those who reported secure working models at Year 3, but insecure models at Year 4 were assigned to the secure-insecure group. Respondents who reported insecure models in Year 3, but secure models in Year 4 were assigned to the insecure-secure. Frequencies for each attachment change group are reported in Table 1. We used these four groups in all analyses.

Depression Symptoms: We utilized the 6-item subscale of the full Brief Symptoms Inventor Scale to measure depression symptoms.²⁹ The six symptoms (e.g., feeling no interest in things, feeling hopeless about the future) were rated on a Likert scale ranged from 1 (*not at all uncomfortable*) to 5 (*extremely uncomfortable*). In a validation study of the BSI, Derogatis, Melisaratos²⁹ found that the depression subscale had strong internal consistency, $\alpha = .85$, and good test-retest reliability, .84, indicating that the depression subscale is reliable. Alphas for these items ranged from .83 to .88. In our data, on average, 30% of adolescents had depression scores in the lower 25th percentile ($M = 1.08$) and 18% were in the 90th percentile of depression scores ($M = 2.67$). These estimates are similar to those found in other studies of African American youth.³⁰

Covariates—Mental health, social support from friends, and familial conflict are associated with depression among youth.³¹ Thus we controlled for these factors in our analyses.

Anxiety: Anxiety symptoms from the Brief Symptom Inventory²⁹ were measured with six items using the same 5-point Likert scale as depressive symptoms. Items were summed and averaged for each year of data collection. Higher scores on indicated greater psychological distress. Alphas for these items ranged from .88 to .90.

Friendship Support: We used five Likert scaled items to measure friend support. We only used friend support measured in 1997. Items included: I rely on my friends for emotional support; my friends are good at helping me solve problems.³² Higher scores indicated more support.

Family Conflict: We measured family conflict with five Likert items from the Moos Family Environment scale.³³ Participants indicated how frequently they fought in their family; how often family members got so angry they threw things; how often family members lost their tempers; how often family members criticized each other; and how often family members hit each other in anger ($\alpha = .88$). We only used the family conflict variable from the data collected in 1997.

We controlled for sex and age in all analyses because researchers have reported that rates of depressive symptoms are influenced by these factors across the life course.¹⁸

Data Analytic Strategy

To test the study hypotheses we first specified a fully unconditional model (Model 1) to determine the amount of variation in depression symptoms within and between individuals ages 19–29, followed by a conditional model incorporating a fixed linear growth parameter (Model 2). Model 3 introduced a random effect for time to estimate individual variability in slope estimates. In Model 4, we tested main effects for anxiety, family conflict, friendship support, sex and age. Model 5 introduced a main effect for attachment change category, followed by a final model (Model 6) that included a time by attachment change interaction to determine whether depression trajectories varied by attachment category. Comparative fit across models using maximum likelihood procedure was determined using changes in the log likelihood via likelihood ratio tests for nested models.³⁴ All of the data analyses were conducted in STATA v13.

Results

Unconditional and Depression Symptoms Growth Models

Results of the fully unconditional mixed-effects model indicated that overall depression levels were low (1.69, SE = .02; CI [1.64, 1.74]), but varied between individuals ($\text{var}_{\mu_{oj}} = .231$, SE = .02; CI [.197, .271]). Model 2 indicated that depression symptoms decreased over time (Table 2). Model fit improved ($\chi^2(2) = 704.54$, $p < .001$). Model 3 indicated significant variability in depression symptoms slopes across time ($\text{var}_{\mu_{oj}} = .231$, SE = .02; CI [.196, .272]). Model 4 that included sex, age, anxiety, family conflict, and friend support indicated a better overall fit relative to Model 3 with only time (regression model comparison between model 3 and 4 $\chi^2(5) = 1554.40$, $p < .001$). Females reported higher levels of depression symptoms in 1999 compared to males. Those reporting higher family conflict and anxiety

also reported more depression symptoms. Participant age was not associated with depression symptoms.

Attachment Change Growth Models

Model 5 included attachment change from age 16 to 17 as a predictor of depression symptoms at age 18 ($\chi^2(2) = 325.46, p < .001$). Relative to the stable-secure group, all other attachment profiles reported higher initial levels of depression symptoms (see Figure 1). Table 2 also shows that the stable-insecure vs. the stable-secure, as well as, the insecure-to-secure vs. the secure-to-insecure groups were not statistically different from one another. The final model (Model 6) indicated that, relative to the stable-secure participants, both insecure-to-secure and secure-to-insecure individuals had a change in reported depression symptoms over time (see Table 2). The negative coefficient suggests that, over time, reported depression symptoms for the insecure-to-secure and secure-to-insecure groups decreased at a faster rate than those of the other two groups. The small absolute value of the coefficients relative to the differences in initial reports, however, raised questions as to whether the insecure-to-secure and secure-to-insecure groups would still be more likely to report higher depression symptoms than those in the stable-secure group at age 29.

Discussion

Consistent with previous research linking attachment to depression symptoms, we found that the stable-insecure group experienced the highest level of depression symptoms and the stable-secure group experienced the lowest levels of depression symptoms during adolescence and across the transition to adulthood.²³ This is consistent with other findings that attachment security reduces the likelihood of vulnerability to depression.^{35,36} Our findings build on past research by examining how transitions in friendship attachment during adolescence contribute to depression symptom trajectories. Further, our results are consistent with others who reported that insecure attachment to friends during adolescence may contribute to poor affect regulation, the development of maladaptive coping strategies, and poor relationship development—all which increase vulnerability to depression.^{10,23}

Our results also support the idea that being secure at some point may be protective against experiencing depression symptoms through adulthood. African-American's in the secure-to-insecure group or the insecure-to-secure group had steadily declining symptoms over time and no statistically significant differences in depression symptoms at age 29. Our findings suggest that transitioning into a secure or insecure attachment style appears to be both possible and helpful as youth transition into young adulthood. This is a noteworthy finding because it suggests that one's attachment style may be responsive to intervention. It also suggests that the transitional period from adolescence to young adulthood may be a vital developmental period to address attachment styles for preventing depressive symptoms.

Yet, it is less clear why a changing attachment style may be associated with a reduction in depression vulnerability through adulthood in comparison to having a stable attachment style. It could be that African-American adolescents who have a history of attachment insecurity and transition into a secure attachment style or those who have a history of attachment security and transition into an insecure attachment style have a wider range of

resources to cope with stress than individuals who are consistently secure or insecure. African-American's in these attachment transition groups may be able to leverage resources into skills for overcoming their vulnerability for depression. For instance, adolescents who transition into a secure attachment style may experience more social support from family during their transition.

It is also important to note, however, that attachment is stable unless an individual is presented with a significant stressful or traumatic event.^{9,37,38} Thus, it could be the case that the group that transitioned to an insecure attachment style experienced a significant stressful event that triggered their change. In addition to causing a change in attachment style, experiencing a major stressful event can increase long-term vulnerability for depression³⁹. Within this context our results suggest that transitioning to an insecure attachment orientation may provide some level of protection. In other words, African-American adolescents who start secure and transition to an insecure group may not be more vulnerable to depression symptoms into adulthood. It may be that African American's have persistent social resources starting with a secure attachment style that helps protect them against long-term vulnerability for depression despite the fact that they may have experienced a stressful event that resulted in feeling insecure at an earlier time point. For instance, in our sample of African American's it may be the case that sometime between the 11th and 12th grade some adolescents experienced a stressful or traumatic event that caused them to have a more insecure attachment style during the next assessment period. However, these adolescents could have maintained some of the resources from being securely attached. Some of these resources could have been the development of positive coping strategies. If adolescents had positive coping strategies to handle stressful life events based on their attachment security before their transition in attachment style, they may have maintained some of these skills and strategies after their transition to an insecure attachment style. Therefore, although African American's in the secure to insecure group may have experienced short-term negative mental health in regards to transitioning to an insecure attachment style, the effects of having a secure attachment style early in life may have been associated with less depression in adulthood.

Our results suggest that efforts to examine the pathways by which transitions in friendship attachment during adolescence are linked to depression vulnerability through adulthood would be a useful direction for future research. In addition, we did not examine how transitions in specific domains of attachment insecurity (e.g. anxious-to-avoidant) may influence trajectories of depression symptoms due to the lack of a sufficient sample size, however, future research that examines more closely these insecure transitions will further elucidate how changes in attachment style may influence depressive symptoms.

Several limitations of the study somewhat reduce our confidence in the findings. First, our measurement of attachment was a single categorical item. Researchers have generally noted that attachment examined using a continuous measure may more accurately assesses one's attachment style.²³ Yet, the single item we used has been validated in several studies and is associated with more continuous measures of attachment.^{10,23,40} Our results are also consistent with both theory and past research so the single item measure may not have been a significant limitation. Second, our results may not be generalizable to all adolescents. The

sample consisted of low-achieving and African-American participants living in a low-income community. Yet, our results add an important component to understanding the link between friendship attachment stability and long-term depression symptoms in an especially vulnerable population. Third, attachment is a complex system and not all aspects of this system are addressed in our study. During adolescence it is vital to understand relationship specific attachment with friends because they play a key role in development and functioning. Thus, though we have not covered the range of attachment relationships within the context of this study, our results contribute to understanding friendship attachment transitions and their association with depression symptom trajectories. Our study suggests that friendship attachment may help us understand why some disadvantaged youth are less vulnerable to depression symptoms during adulthood than others.

These limitations notwithstanding, our results support and extend research examining the link between attachment transition and mental health. Friendship attachment during adolescence contributes to trajectories of depression symptoms through adulthood among African-American's. Our results also suggest that establishing and maintaining secure attachment relationships with friends may help reduce depression vulnerability longitudinally. Lastly, our results suggest that it may be important to promote skills and strategies aimed at forming and maintaining secure attachment relationships during adolescence, and that efforts to help young adults develop secure attachment relationships can be useful in promoting mental health.

Acknowledgments

This research was supported by the National Institute on Drug Abuse, Grant No. DA007484 (PI, Zimmerman). We thank the participants for their involvement in the study.

References

1. Brauer JR, De Coster S. Social relationships and delinquency: Revisiting parent and peer influence during adolescence. *Youth & Society*. 2012
2. Allen JP, Porter M, McFarland C, McElhaney KB, Marsh P. The relation of attachment security to adolescents' paternal and peer relationships, depression, and externalizing behavior. *Child Development*. 2007; 78:1222–1239. [PubMed: 17650135]
3. Way N, Chen L. The characteristics, quality, and correlates of friendships among African American, Latino, and Asian American adolescents. *Journal of Adolescent Research*. 2000; 15:274–301.
4. Bowlby, J. Attachment and loss: Vol. 1. Attachment. New York: Basic Books; 1969.
5. Gorrese A, Ruggieri R. Peer attachment: A meta-analytic review of gender and age differences and associations with parent attachment. *Journal of youth and adolescence*. 2012; 41:650–672. [PubMed: 22476726]
6. Van Ijzendoorn, MH.; Sagi-Schwartz, A. Cross-cultural patterns of attachment: Universal and contextual dimensions. In: Cassidy, JPRS., editor. *Handbook of attachment: Theory, research, and clinical applications*. New York: Guildord; 1999. p. 713-734.
7. Rothbaum F, Weisz J, Pott M, Miyake K, Morelli G. Attachment and culture: Security in the United States and Japan. *American Psychologist*. 2000; 55:1093–1104. [PubMed: 11080829]
8. Fraley RC, Vicary AM, Brumbaugh CC, Roisman GI. Patterns of stability in adult attachment: An empirical test of two models of continuity and change. *Journal of Personality and Social Psychology*. 2011; 101:974–992. [PubMed: 21707199]

9. Waters E, Merrick S, Treboux D, Crowell J, Albersheim L. Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child Development*. 2000; 71:684–689. [PubMed: 10953934]
10. Miller AL, Notaro PC, Zimmerman MA. Stability and change in internal working models of friendship: Associations with multiple domains of urban adolescent functioning. *Journal of Social and Personal Relationships*. 2002; 19:233–259.
11. Hamilton CE. Continuity and discontinuity of attachment from infancy through adolescence. *Child Development*. 2000; 71:690–694. [PubMed: 10953935]
12. Fraley RC. Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review*. 2002; 6:123–151.
13. Weinfield NS, Sroufe LA, Egeland B. Attachment from infancy to early adulthood in a high-risk sample: Continuity, discontinuity, and their correlates. *Child Development*. 2000; 71:695–702. [PubMed: 10953936]
14. Hazan C, Shaver RP. Attachment as an organizational framework for research on close relationships. *Psychological Inquiry*. 1994; 5:1–22.
15. Morley TE, Moran G. The origins of cognitive vulnerability in early childhood: mechanisms linking early attachment to later depression. *Clinical Psychology Review*. 2011; 31:1071–1082. [PubMed: 21820386]
16. Muris P, Meesters C, van Melick M, Zwambag L. Self-reported attachment style, attachment quality, and symptoms of anxiety and depression in young adolescents. *Personality and Individual Differences*. 2001; 30:809–818.
17. Maunder RG, Hunter JJ, Lancee WJ. The impact of attachment insecurity and sleep disturbance on symptoms and sick days in hospital-based health-care workers. *Journal of Psychosomatic Research*. 2011; 70:11–17. [PubMed: 21193096]
18. Meadows SO, Brown JS, Elder GH Jr. Depressive symptoms, stress, and support: Gendered trajectories from adolescence to young adulthood. *Journal of Youth and Adolescence*. 2006; 35:89–99.
19. Grant KE, Lyons AL, Finkelstein JS, et al. Gender differences in rates of depressive symptoms among low-income, urban, African American youth: A test of two mediational hypotheses. *Journal of Youth and Adolescence*. 2004; 33:523–533.
20. Repetto PB, Caldwell CH, Zimmerman MA. Trajectories of depressive symptoms among high risk African-American adolescents. *Journal of Adolescent Health*. 2004; 35(6):468–477. [PubMed: 15581526]
21. Bakermans-Kranenburg MJ, van IJzendoorn MH, Kroonenberg PM. Differences in attachment security between African-American and white children: Ethnicity or socioeconomic status? *Infant Behavior and Development*. 2004; 27:417–433.
22. Bridge JA, Asti L, Horowitz LM, et al. Suicide Trends Among Elementary School-Aged Children in the United States From 1993 to 2012. *JAMA Pediatrics*. 2015
23. Mikulincer, M.; Shaver, PR. *Adult attachment: Structure, dynamics, and change*. New York: Guilford; 2007.
24. Feeney, JA.; Noller, P. *Adult Attachment*. Vol. 14. Sage Publications; 1996.
25. Zimmerman MA, Schmeelk-Cone KH. A longitudinal analysis of adolescent substance use and school motivation among African American youth. *Journal of Research on Adolescence*. 2003; 13:185–210.
26. Hazan C, Shaver PR. Romantic love conceptualization as an attachment process. *Journal of Personality and Social Psychology*. 1987; (3):511–524. [PubMed: 3572722]
27. Ainsworth, M.; Blehar, MC.; Waters, E.; Wall, S. *Patterns of attachment: A psychological study of the strange situation*. Psychology Press; 2014.
28. Stein H, Jacobs NJ, Ferguson KS, Allen JG, Fonagy P. What do adult attachment scales measure? *Bulletin of the Menninger Clinic*. 1998
29. Derogatis LR, Melisaratos N. The Brief Symptom Inventory: An introductory report. *Psychological Medicine*. 1983; 3:595–605. [PubMed: 6622612]

30. Skeem JL, Schubert C, Odgers C, Mulvey EP, Gardner W, Lidz C. Psychiatric symptoms and community violence among high-risk patients: A test of the relationship at the weekly level. *Journal of Consulting and Clinical Psychology*. 2006; 74:967–979. [PubMed: 17032100]
31. Sellers RM, Caldwell CH, Schmeelk-Cone KH, Zimmerman MA. Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. *Journal of Health and Social Behavior*. 2003:302–317. [PubMed: 14582310]
32. Procidano ME, Heller K. Measures of perceived social support from friends and from family: Three validation studies. *American Journal of Community Psychology*. 1983; 11:1–24. [PubMed: 6837532]
33. Moos RH, Moos BS. Manual for the family environment scale. 501981
34. Yung, Y.; Zhang, W. Making use of incomplete observations in the analysis of structural equation models: The CALIS procedure's full information maximum likelihood method in SAS/STATA® 9.3. Paper presented at: Proceedings of the SAS® Global Forum 2011 Conference; Cary, NC: SAS Institute Inc; 2011.
35. Sameroff, AJ. Handbook of Developmental Psychopathology. United States: Springer; 2000. Dialectical processes in developmental psychopathology; p. 23-40.
36. Sroufe LA. Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & Human Development*. 2005; 7:349–367. [PubMed: 16332580]
37. Grossman, KE.; Grossman, K.; Waters, E. Attachment from infancy to adulthood. New York: Guilford; 2005.
38. Waters E, Weinfield NS, Hamilton CE. The stability of attachment security from infancy to adolescence and early adulthood: General discussion. *Child Development*. 2000; 71:703–706. [PubMed: 10953937]
39. Waldinger RJ, Schulz MS, Barsky AJ, Ahern DK. Mapping the road from childhood trauma to adult somatization: the role of attachment. *Psychosomatic Medicine*. 2006; 68:129–135. [PubMed: 16449423]
40. Ravitz P, Maunder R, Hunter J, Sthankiya B, Lancee W. Adult attachment measures: A 25-year review. *Journal of Psychosomatic Research*. 2010; 69:419–432. [PubMed: 20846544]

Implications and Contributions

Depression continues to be a key factor underscoring multiple negative health and health behaviors across the life-course. These results suggest that understanding how transitions in friendship attachment influence long-term depression symptoms may be key to creating effective mental health interventions early in life.

Figure 1.

Linear Depression Symptom Slopes by Attachment Group

NOTE: The following graph shows the predictive margins. Thus, time 1 corresponds to the average age of participant, 19 years old, in 1999 (year 5 of data collection) and time point 10 corresponds to the average age of participant, 29, in 2012 (year 11 of data collection)

Table 1

Change of Attachment from age 16 to 17

Change	Frequency	Percent
Stable-secure	250	46.21
Stable-insecure	105	19.41
Secure-to-insecure	96	17.74
Insecure-to-secure	90	16.64
Total	541	100.00

Table 2
Depression Symptom Trajectory Models from Adolescence to Young Adulthood (n = 502)

Parameter	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Fixed Effects						
Intercept	1.69 (.02) ***	1.73 (.03) ***	1.73 (.03) ***	.41 (.36)	.43 (.36)	.41 (.36)
Time		-.01 (.003) **	-.01 (.004) ***	-.004 (.002)	-.004 (.002)	.0001 (.003)
Sex			.08 (.03) **	.07 (.03) *	.07 (.03) *	.07 (.03) *
Age			-.02 (.02)	-.02 (.02)	-.02 (.02)	-.02 (.02)
Family Conflict			.11 (.03) ***	.10 (.03) ***	.09 (.03) ***	.09 (.03) ***
Friend Support			.01 (.02)	.02 (.02)	.02 (.02)	.02 (.02)
Anxiety			.75 (.02) ***	.74 (.02) ***	.74 (.02) ***	.74 (.02) ***
Attachment Change						
<i>Stable-insecure</i>				.13 (.04) **	.11 (.05) *	
<i>Secure-to-insecure</i>				.08 (.04)	.14 (.05) **	
<i>Insecure-to-secure</i>				.01 (.04)	.06 (.05)	
Time* Attachment Change						
<i>Stable-insecure</i>						.005 (.006)
<i>Secure-to-insecure</i>						-.02 (.01) *
<i>Insecure-to-secure</i>						.01 (.01) *
Random Effects						
Residual	.27 (.01)	.27 (.01)	.25 (.01)	.15 (.01)	.15 (.01)	.15 (.01)
U _{0j}	.23 (.02)	.23 (.02)	.23 (.02)	.07 (.01)	.07 (.01)	.07 (.01)
U _{1j}			.001 (.0003)	.0002 (.0001)	.0002 (.0001)	.0002 (.0001)
Fit						
-2LL	-2233.39	-2227.71	-2209.10	-1431.90	-1426.08	-1419.76
Regression Model Comparison's						
	X ² (df)	p-value				

Parameter	Fixed Effects					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Model 1 vs. 2	11.36 (1)	<.001***				
Model 2 vs. 3	37.23 (1)	<.001***				
Model 3 vs. 4	1554.40 (5)	<.001***				
Model 4 vs. 5	11.64 (3)	.009**				
Model 5 vs. 6	12.63 (3)	.006**				

Post-Hoc Attachment Group Comparisons (Model 6)			
	dy/dx (Std. error)	p-value	95% CI
Stable-I vs. Stable-S	.005 (.01)	.46	(-.01, .02)
S-to-I vs. Stable-S	-.02 (.01)	.01*	(-.03, -.004)
I-to-S vs. Stable-S	-.01 (.01)	.03*	(-.03, -.001)
S-to-I vs. Stable-I	-.02 (.01)	.005**	(-.04, -.01)
I-to-S vs. Stable-I	-.02 (.01)	.01*	(-.03, -.004)
I-to-S vs. S-to-I	-.003 (.01)	.72	(-.01, .02)

p < .001,
**
p < .01,
*
p < .05

NOTE: the estimation sample consisted of 502 African American adolescents due to missing data.