Here for you: Attachment and the growth of empathic support for friends in adolescence

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Abstract

Attachment was examined as a predictor of teens' empathic support for friends in a multimethod longitudinal study of 184 U.S. adolescents (58% Caucasian, 29% African American, 13% other) followed from ages 14–18. Adolescents' secure state of mind regarding attachment at 14 predicted teens' greater capacity to provide empathic support during observed interactions with friends across ages 16–18 ($B_{average} = .39$). Teens' empathic support was generally stable during this period, and less secure teens were slower to develop these skills. Further, teens' attachment security predicted the degree to which friends called for their support ($B_{average} = .29$), which was associated with teens' responsiveness to such calls. Findings suggest that secure attachment predicts teens' ability to provide empathic support in close friendships.

Keywords

attachment; empathy; adolescence; friendship; peer relationships

The capacity to empathize—to understand others' emotions and take their perspective, and to resonate with others' experience and care for their wellbeing (Decety, 2015; Eisenberg, 2000, 2017)—is widely considered to be a core component of social-emotional competence (CASEL, 2021). Across development, empathy has been robustly linked to beneficial social outcomes, including greater supportive social behavior and less antisocial behavior in adolescence (Eisenberg, 2017), as well as higher quality romantic relationships and sensitive parenting in adulthood (e.g., Leerkes, 2010; Sened et al., 2017). Conversely, a lack of empathy is implicated in a host of developmental and societal challenges, from externalizing problems, bullying, and school violence in adolescence, to racial prejudice and abusive behavior in adulthood (e.g., van Noorden et al., 2015). Thus, understanding and nurturing the developmental roots of empathy is important for informing efforts to promote a broad range of positive social outcomes (Greenberg & Turksma, 2015).

One key factor associated with individual differences in empathy and supportive social behavior is attachment security. According to attachment theory (Ainsworth et al., 1978; Bowlby, 1969), experiences in close relationships shape individual differences in *internal*

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working models of the self and others. Theory and research suggest that children whose needs are met with consistent, attuned, sensitive care develop *secure* internal working models, which include a *secure base script* in which distress is expected to be met with care and support (Waters & Waters, 2006). In contrast, the theory posits that children who experience inconsistent or insensitive caregiving develop *insecure* internal working models, which include a script in which supportive care may not be available or effective in times of need (Ainsworth et al., 1978). These experience-based representations are thought to guide cognition, emotion, and behavior across the life span (Main et al., 1985). By adolescence, internal working models of attachment are thought to generalize beyond a specific relationship and can be captured either via self-report measures of attachment style or via narrative assessments of attachment state of mind (Allen & Tan, 2016). The present paper focuses on *attachment state of mind*, with secure state of mind reflected in adolescents' coherent, balanced, and relationship-valuing discussion of attachment experiences (Allen et al., 2004).

Researchers have proposed that secure state of mind regarding attachment may contribute to empathy and supportive behavior via mechanisms such as emotion recognition and regulation, non-defensive processing of social information, appreciation of the value of close relationships, and cognitive scripts involving responsive and supportive caregiving in times of need (Gross et al., 2017; Shaver et al., 2016; Stern & Cassidy, 2018). It is also possible that more secure individuals are more likely to be sought out by others for support, providing increased opportunities to practice providing empathic care. Extensive evidence in adulthood supports the theorized link of attachment security with empathy and supportive behavior in both correlational and experimental studies (see Shaver et al., 2016).

The implication of prior work is that individual differences in attachment shape the development of the *caregiving system*, of which empathy is a central component (e.g., MacLean, 1985). The caregiving system is thought to serve the goal of providing safety, comfort, and care in response to others' distress (Bowlby, 1969), and extensive research has shown that attachment security is associated with positive caregiving representations and behaviors among parents and between romantic partners (Collins & Feeney, 2000; George & Solomon, 2008). Further, the primary assessment of attachment state of mind—the Adult Attachment Interview (AAI; George et al., 1996; Main et al., 2002)—was originally validated as a way to predict adults' caregiving capacity to foster secure attachment in their children (Hesse, 2016; Main et al., 1985, 2002). Meta-analytic evidence in adulthood shows a moderate association between state of mind on the AAI and responsive caregiving (van IJzendoorn, 1995). Similarly, in adolescence, secure state of mind on the AAI has been conceptualized as an indicator of teens' developing caregiving capacity (Allen & Miga, 2010). Thus, secure state of mind on the AAI may provide an especially robust predictor of teens' emerging caregiving system, as reflected in empathic support provision to close friends.

Yet little research has examined links of attachment to the *development* of empathic care in adolescence, including its power to predict individual differences and developmental trajectories of empathy over time. This paper aims to address these gaps by providing a

developmental account of attachment state of mind and empathy across adolescence and emerging adulthood.

Attachment and Empathy in Adolescence

Adolescence may be an especially important time for the development of empathy, given the rapid and complex changes in adolescents' social experiences and interpersonal competencies (Eisenberg, 2017; Van der Graaff et al., 2014); indeed, many researchers identify adolescence as a "second sensitive period" (after infancy) in the development of the social brain (Blakemore & Mills, 2014). Further, empathy in adolescence has been shown to predict greater social competence more than two decades later (Allemand et al., 2015). Thus, it may be especially important to identify factors that promote empathy during this pivotal period of development.

A number of studies have demonstrated concurrent associations between self-reports of attachment style and self-reports of empathy, supportive behavior toward others, and lower levels of aggressive and bullying behavior (Laible et al., 2000; Laghi et al., 2009; Li et al., 2015; Markiewicz et al., 2001; Murphy et al., 2015; Thompson & Gullone, 2008). This work provides promising evidence for associations between teens' reported attachment style and empathic concern and perspective-taking. Yet conclusions drawn from this work are limited by their sole reliance on self-report measures of both attachment and empathy, raising issues of shared method variance and social desirability. Only one study to date has utilized observational measures of empathy in adolescents: Diamond and colleagues (2012) found that 14-year-olds' self-reported attachment interacted with their resting vagal tone to predict teens' observed empathic sensitivity toward their mothers during a conflict discussion (all measures were assessed concurrently). Whether such observed effects extend beyond the mother-child relationship, as well as beyond age 14, remain important unanswered questions. Further, associations with attachment *state of mind* have yet to be explored; given that secure state of mind is among the most robust predictors of sensitive caregiving behavior among adults (e.g., Waters et al., 2013), and that sensitive caregiving involves aspects of cognitive empathy such as the ability to take others' perspectives and attune to others' needs (Ainsworth et al., 1968), it may be especially important to examine state of mind as a predictor of empathic behavior earlier in development.

The Growth of Empathy in Adolescence: The Role of Friends

Despite common misconceptions about teenage self-absorption, data suggest that self-reported empathy and related prosocial capacities increase across adolescence and into young adulthood (e.g., Allemand et al., 2015; Eisenberg et al., 2015; Van der Graaff et al., 2014), in part due to neurocognitive maturation that supports emotional perspective taking (Choudhury et al., 2006). As the focal point of youths' close relationships shifts from parents to peers during the teenage years (Allen & Tan, 2016; Rosenthal & Kobak, 2010), friendships provide a crucial context for the growth of adolescents' empathy. Evidence shows that adolescents practice important aspects of caregiving, including providing support, within close friendships (Hazan & Zeifman, 1994; Rosenthal & Kobak, 2010). Thus, close friendships may provide a "training ground" for empathy, which in turn reinforces positive

peer interactions (e.g., Huang & Su, 2014) in a virtuous cycle of empathic development. Indeed, there is evidence that teens' friendship quality, receipt of emotional support from a close friend, and peer ratings of teens' support provision develop across adolescence in mutually reinforcing ways over time (Costello et al., under review).

Within this normative increase in empathy, individual factors contribute to meaningful differences in developmental trajectories (e.g., gender, Van der Graaff et al., 2014), and attachment may be one such moderating factor. Evidence suggests that secure state of mind regarding attachment in early adolescence is associated with higher levels of peer acceptance, emotion regulation, and autonomy (see Allen & Tan, 2016; McElhaney et al., 2009)—important foundational competencies for empathy—as well as trajectories of increasing social skills over time (Allen et al., 2002). Thus, we might expect that secure adolescents are more readily equipped with both the peer relationships and social-emotional skills necessary for the growth of empathy and thus may develop these skills earlier than do insecurely attached teens.

Further, given these findings demonstrating secure teens' greater peer acceptance and social skills, it is reasonable to expect that friends may engage in more *support-seeking* behavior in relationships with securely attached teens. To the extent that friends' support-seeking behavior effectively elicits teens' empathic support (i.e., teen provides care that is responsive to their friend's needs), the friendship may be strengthened, and the dyadic process of support-seeking and -provision reinforced in a virtuous cycle (for a similar "broaden-and-build" perspective on positive emotions in adult relationships, see Mikulincer & Shaver, 2020). Thus, friends' support-seeking may develop alongside teens' empathic support provision as parallel developmental processes, each associated with teens' attachment state of mind.

The Present Study

The goal of the present study is to examine the attachment-related roots of empathic support provision across adolescence; in doing so, we seek to better characterize associations between attachment and developmental trajectories of an important component of the emerging caregiving system. In contrast to previous studies using self-report measures of attachment style, we assess teens' secure states of mind with regard to attachment in the Adult Attachment Interview (George et al., 1996; Main et al., 2002). Although empathy is traditionally conceptualized as an internal state that cannot always be inferred from behavior (Eisenberg, 2017), we focus on teens' empathic behaviors that can be directly observed in social interactions, in keeping with a long tradition in developmental research of measuring empathy via observations of children's comforting behavior in response to others' distress (for a review see Stern & Cassidy, 2018). We focus on an interrelated set of social-emotional competencies—the ability to identify others' problems or needs (a key part of cognitive empathy), the ability to sustain emotional engagement when others express such needs (a key part of emotional empathy), and the provision of emotional and instrumental support in response to others' needs—which we collectively refer to as "empathic support provision." In light of previous research showing gender differences in empathic development (Van der Graaff et al., 2014), as well as meaningful variation in adolescent-peer support processes

related to family income (e.g., Costello et al., under review; Loeb et al., 2020), we control for these variables in our analyses.

Drawing on longitudinal, multimethod data in a diverse community sample of adolescents followed from age 14 to 19, we test the following a priori hypotheses:

1. Extending previous research demonstrating links between teens' reported attachment style and empathy (Stern & Cassidy, 2018), we hypothesize that secure state of mind regarding attachment in early adolescence will predict teens' higher observed levels of empathic support provision to close friends at ages 16, 17, and 18.

2. Further, given that secure teens may have more opportunities to practice empathy in the context of positive relationships over time, we hypothesize that attachment state of mind in early adolescence will predict developmental *changes* in empathic support provided to close friends across adolescence, such that more secure teens will show accelerated developmental trajectories of empathic support provision.

In addition, because the provision of empathic support likely varies in response to the other individual's implicit or explicit expression of need for such support, we also tested an exploratory hypothesis to better understand potential associations with friends' *calls* for support. If secure teens have a track record of being trustworthy and socially competent (e.g., Allen et al., 2002), then close friends of secure teens may be more likely to seek out their support; further, the degree to which friends seek support should be correlated with teens' provision of such support, reflecting the dyadic nature of support processes.

3. Thus, we hypothesize that teens' secure state of mind regarding attachment will predict the parallel development of close friends' *support-seeking* across adolescence. Specifically, we predict that more secure teens will have close friends who show (a) higher levels of support-seeking behavior at ages 16, 17, and 1 and (b) accelerated developmental trajectories of support-seeking across this period, paralleling the development of teens' empathic support provision.

Method

Participants

The present analyses draw from a larger longitudinal investigation of adolescent social development in familial and peer contexts. Adolescents were originally recruited from the seventh and eighth grades of a public middle school drawing from suburban and urban populations in the Southeastern United States. Of students who were eligible to participate, 63% agreed to participate either as target participants or as peers who participated in interaction tasks with the target teen. Students who had already served as close peer informants in the study were not eligible to serve as primary participants.

A final sample of 184 adolescents (86 males, 98 females) was first assessed at age 13 and reassessed annually. The sample was demographically diverse and representative of the community from which it was drawn: 107 adolescents (58%) identified themselves as

Caucasian, 53 (29%) as African American, 15 (8%) as of mixed race or ethnicity, and 9 (5%) as being from other identity groups. Adolescents' parents reported a median family income in the $40,000–$59,999 range at the initial assessment.

The present study utilizes interview data collected at age 14 ($M = 14.27$, $SD = .77$); annual assessments with peers at ages 16 ($M = 16.35$, $SD = 0.87$), 17 ($M = 17.32$, $SD = 0.88$), and 18 ($M = 18.38$, $SD = 1.04$), which occurred from 2000 to 2005. Each year, target adolescents nominated their closest friend to be included in survey and observational measures with them in the study. Close friends were defined as "people you know well, spend time with, and whom you talk to about things that happen in your life." Friends were same-sex peers, close in age to participants (i.e., their ages differed by less than a month from target adolescents, on average). Close friends reported that they had known the participants for an average of 5.72 years ($SD = 3.82$) at age 16, 5.92 years ($SD = 3.86$) at age 17, and 6.79 years ($SD = 4.46$) at age 18.

Procedure

For all data collection, adolescents and their peers provided informed assent, and their parents provided informed consent before each interview session. Once participants reached age 18, they provided informed consent. In the initial introduction and throughout each session, confidentiality was explained to all family members and adolescents were told that their parents would not be informed of any of the answers they provided. A Confidentiality Certificate, issued by the U.S. Department of Health and Human Services, protected all data from subpoena by federal, state, and local courts. Participants were compensated and, when necessary, transportation and child-care were provided to participating families.

Attrition Analysis.—Of the original sample of 184 adolescents, 174 (95%) had a valid attachment interview. The 10 missing adolescents either did not have codable interviews due to equipment difficulties or were unavailable to come in during the wave of the study during which attachment interview data were collected. Of the 174 adolescents with attachment data, 160 had at least one peer interaction assessment at ages 16–18. Attrition analyses were conducted to examine combinations of missing data in the study, testing differences between those who had a close friend who participated in the study compared to those who did not have a close friend participate. Analyses revealed no significant differences on covariates and outcome variables of interest including attachment security, gender, and baseline family income.

Thus, attrition unlikely to have distorted the reported findings; nevertheless, to best address any possible biases due to attrition in longitudinal analyses or missing data within waves, we used full information maximum likelihood (FIML) methods, which have been shown to yield the least-biased estimates when all available data are used for longitudinal analyses (vs. listwise deletion of missing data; Mueller & Hancock, 2010). This analytic technique does not impute or create any new data, nor does it artificially inflate significance levels. Rather, it simply takes into account distributional characteristics of data in the full sample so as to provide the least biased estimates of parameters obtained when some data are missing (Arbuckle, 1996).

Measures

Adolescent attachment state of mind (age 14).—The Adult Attachment Interview (AAI) and Q-set (George et al., 1996; Kobak et al., 1993) were used to analyze adolescents' descriptions of their relationships with their parents. The interview comprised 18 questions and lasted one hour on average. The original AAI is considered the gold standard for assessing attachment state of mind in adulthood (Hesse, 2016); in the present study, slight adaptations to the adult version were made to make the questions more natural and easily understood by an adolescent population. Interviews were audiotaped and transcribed verbatim for coding.

The AAI Q-set (Kobak et al., 1993) was designed to parallel the AAI classification system (Main & Goldwyn, 1998) but also to yield continuous measures of qualities of attachment organization. This method aligns with current recommendations, based on taxometric research, to examine attachment security on the AAI continuously (e.g., Roisman et al., 2007). Nevertheless, the data produced by the system can be reduced via an algorithm to classifications that have been found to largely agree with three-category ratings from the AAI Classification System, both in the field generally and when applied to a subsample of this particular population using coders from this lab (e.g., Allen et al., 1998). Coders read each transcript and provided a Q-set description by sorting 100 items into nine categories ranging from most to least characteristic of the interview, using a forced distribution. To establish validity, these Q-sets were then compared with dimensional prototypes for secure strategies, preoccupied strategies, and dismissing strategies (see Kobak et al., 1993). The correlation of the 100 items of an individual's Q-sort with each dimension (ranging on an absolute scale from -1.00 to 1.00) was then taken as the participant's scale score for that dimension. All interviews were independently rated by at least two coders with extensive training in both the Q-sort and the AAI classification system; the Spearman-Brown reliability for the overall security scale score was .82. Prior research in adolescent samples has indicated that security shows strong predictive validity and is highly stable over a two-year period (i.e., $r = .61$) (Allen et al., 2004). For this administration, inter-rater reliability, assessed via the intraclass correlation coefficient, for the final security scale score was .82, which is considered in the excellent range for this statistic (Cicchetti & Sparrow, 1981).

Support processes (ages 16–18).—Target teens participated in an observed Supportive Behavior Task (SBT) with their nominated close friend (6-minute task at ages 16, 17, and 18), during which the friend asked the target teen for help with a "problem they were having that they could use some advice or support about." This interaction was then coded using the Supportive Behavior Task Coding System for Adolescent Peer Dyads (Allen et al., 2001) for the constructs listed below. A team of 9 coders double-coded the interactions for reliability across the time of the present study.

<u>**Friends' support seeking.:**</u> In the Supportive Behavior Task, support seeking behaviors reflect the friend's calls for emotional and instrumental support from the target teen. Behaviors reflecting *emotional support seeking* include self-disclosure of emotional information, expressing affect about an emotionally laden topic, and behaviors suggesting emotional relevance (e.g., sad expression or tone, frustration, distress) that express emotions

in a way that pulls for empathy or comfort. Emotional support seeking scores were assessed by rating the intensity and persistence of the calls for emotional support the friend conveyed to the target teen. Behaviors reflecting *instrumental support seeking* include statements of a need for instrumental advice or assistance, including requests for information that is helpful to the friend for meeting a specific goal. Instrumental support seeking scores were assessed by rating the persistence of the call for support throughout the interaction and how important getting help appears to be to the friend. Emotional and instrumental support seeking behaviors were coded on a 0 to 4 continuum with half-point intervals; higher scores indicate more persistent and direct calls for support. Interrater reliabilities (ICCs) ranged from .77–.84 for friends' calls for emotional support and .60–.85 for friends' calls for instrumental support; these are considered in the good to excellent range for this statistic (Cicchetti & Sparrow, 1981).

Adolescents' empathic support provision.: Empathic support provision reflects the target teen's given emotional and instrumental support, interpretation of the problem, and engagement with their close friend during the Supportive Behavior Task. *Emotional support provision* describes the degree to which the teen attempts to understand and support the feelings raised by their close friend, through processes such as expressing understanding, naming the friend's emotion, eliciting further emotion, or making a commitment to be emotionally available. Scores range from 0 (no attempt to emotionally support) to 4 (clear recognition of emotional distress, attempts to draw the speaker out, and clear expressions of warmth, concern, and sympathy throughout most of the interaction) (ICC, calculated across the three time points = .68). *Instrumental support provision* reflects the degree to which the teen provides help to address their friend's presented problem. Behaviors indicative of instrumental support given include recognizing that a problem exists, offering plans for how to solve the problem, keeping the conversation directed toward a solution, and making a commitment to help find a solution to the problem. Scores range from 0 (no instrumental planning of how to solve the problem) to 4 (clear attempts and commitment to find a solution to the problem and consistent incorporation of the friend's needs throughout most of the interaction) (ICC = .68). *Engagement* captures the extent to which the teen appears to be connected and emotionally engaged with their close friend and is assessed independently of the support topic discussed. Engagement reflects how closely the teen is attending to what their friend is saying by following up on what the friend says, leaving them time to talk, asking questions about the topic, and demonstrating active listening. Scores range from 0 (shows no or very few signs of interest in what the friend is saying, body posture generally turned away, little or no eye contact) to 4 (clearly focused on and responsive to the other person during the majority of the interaction, demonstrates real connection and interest) (ICC = .59). *Interpretation of the problem* focuses on the extent to which the teen appears to accurately recognize and understand the concern(s) raised by their friend. Scores range from 0 (clearly and strikingly doesn't interpret or understand the fundamental problem correctly) to 4 (clearly understands and fully appreciates what the problem is and demonstrates this either directly or indirectly through suggestions and responses), and most scores for this age group were in the 3–4 range (ICC = .43).

Results

Preliminary analyses

The four dimensions of empathic support—emotional support provision, instrumental support provision, emotional engagement, and interpretation of the peer's problem—were moderately intercorrelated within each time point (average $r = .33$); therefore, we averaged them to create an empathic support composite score at age 14, 15, and 16 for the main analyses. Similarly, close friends' calls for emotional and instrumental support were averaged to create a support-seeking composite at each time point.

Descriptive statistics and intercorrelations among the main study variables are presented in Table 1. Teen empathic support provision showed moderate stability between subsequent waves (test-retest reliability: $r = .48$, $p < .001$ between ages 16–17; $r = .24$, $p = .011$ between ages 17–18). Friends' support-seeking showed similar stability between subsequent waves (test-retest reliability: $r = .44$, $p < .001$ between ages 16–17; $r = .23$, $p = .012$ between ages 17–18); further, friends' support-seeking was strongly positively correlated with teens' empathic support provision within each time point, (rs: .70–.72, p's $< .001$). Friendships themselves were moderately stable, with 44% of teens electing the same close friend from ages 16–17, and 43% from ages 17–18; friendship stability was unrelated to attachment, empathic support provision, or friends' support-seeking, all p's $> .05$. The duration of teens' friendships at each time point was not related to attachment, nor to empathic support provision and friends' support-seeking at that time point, all p's $> .05$.

Principal analyses

A set of growth curve models was conducted in MPlus Version 7 using FIML to examine the development of empathic support processes across ages 16, 17, and 18. To test our main hypotheses, we examined attachment as a predictor of the intercepts (Hypothesis 1) and slope (Hypothesis 2) of teens' empathic support provision across the three time points. To test our exploratory hypothesis (Hypothesis 3), we used longitudinal dyadic data (LDD) analytic approaches; specifically, we ran a simultaneous SEM growth model of friends' support-seeking and teens' support provision with a dependent covariance error structure, allowing dyad pairs' Level 1 (unique) residuals to covary to account for dyadic dependence (Peugh et al., 2013). This approach builds on cross-sectional actor-partner interdependence models, so that the same dyadic dependence can be modeled longitudinally to quantify separate, but related, changes in dyad members' response variable scores over time (for details and sample code, see Peugh et al., 2013).

For each analysis, we began with a totally unconditional model, allowing both the intercepts and slopes to be random. Given there were only three time points, we limited our investigation to linear trajectories. Time was centered on the initial assessment at age 16 so that intercepts correspond to this time point; we then re-centered time to examine intercepts at later ages. Next, we added attachment state of mind at age 14 and covariates. Adolescent gender and baseline family income (calculated as a percentage of the federal poverty line based on household size) were included as time-invariant covariates in all analyses, in light of previous work suggesting that girls and higher-income adolescents may demonstrate

greater empathy and support-related behaviors (Loeb et al., 2020; Van der Graff et al., 2014). To examine the potential role of friendship characteristics, we then added friendship stability and duration to the models to see if these covariates significantly improved model fit; specifically, we examined friendship stability (a dummy variable with 1 = same friend across the three waves, 0 = change in friend across waves) as a possible moderator of stability in teens' and friends' behavior, and friendship duration at each time point as a time-varying covariate for teens' and friends' behavior at that time point (the three friendship duration variables were allowed to covary). To test for potential moderation by gender, interaction terms were created by taking the product of centered main effect variables; non-significant interaction terms were dropped from the final models. Results of the final models are shown in Table 2.

Hypotheses 1 and 2: Attachment state of mind at age 14 will predict the development of empathic support for friends at ages 16, 17, and 18.—Results of the unconditional model showed that on average, adolescents showed an overall pattern of stability over time, average slope = .04, *ns*. Thus, there was no net growth or decline in empathic support for the sample as a whole. However, the unconditional model also indicated that there was significant individual variation in the slope of adolescent empathic support provision. Thus, we next examined whether a between-subjects variable (i.e., attachment state of mind) might predict trajectories of empathic development that differed from this overall pattern.

In conditional models (depicted in Figure 1 and Table 2), the overall pattern of stability was moderated by attachment state of mind, such that teens who were more secure at age 14 showed higher initial levels of empathic support at age 16 that remained relatively stable over time, whereas teens who were less secure at age 14 lower initial levels of empathic support that increased over time. When time was re-centered on the middle and last assessments, teen attachment security predicted significantly higher levels of empathic support provision at age 17 (estimate = .39, $p < .001$) but became marginally significant at age 18 (estimate = .20, $p = .074$), suggesting that less secure youth had largely caught up to more secure teens by age 18. Compared to a baseline model with no predictors ($\chi^2 = 100.72$, $df = 12$, $p < .001$), adding the predictors shown in Table 2 led to a significant improvement in model fit ($\chi^2 = 90.99$, $df = 8$, $p < .001$; RMSEA = .095; AIC = 588.27; BIC = 631.24; χ^2 final model = 9.73; $df = 4$, $p = .045$).

In the follow-up model examining the potential role of friendship characteristics, friendship stability did not significantly moderate trajectories of empathic support provision, estimate = .05, $SE = .07$, $p = .54$, nor did friendship duration predict mean levels of empathic support at any time point, estimates ≈ −.01, all $ps > .05$. Because the addition of friendship covariates did not significantly improve model fit, the more parsimonious model was selected as our final model, as shown in Table 2.

Hypothesis 3: Teens' attachment state of mind at age 14 will predict the parallel development of close friends' support-seeking across adolescence.—To better understand the role of peers in our first model (H1-2), we next examined results of the dyadic growth model with friends' and teens' behavior modeled simultaneously,

with a dependent error structure and latent trajectory covariances to model inter-personal dependence (see Figure 2 and Table 2). Results for teens remained largely similar when friends were included the model. In the unconditional model, friends showed an overall pattern of stability over time, average slope = .01, *ns*. Thus, there was no net growth or decline in friends' support-seeking for the sample overall. However, the unconditional model also indicated that there was significant variation in the slope of friends' support-seeking. Thus, we next examined whether teens' attachment state of mind (as well as friendship characteristics) might predict trajectories of support-seeking among their close friends.

In conditional models, the overall pattern of stability was moderated by teens' attachment state of mind, such that the friends of more secure teens showed higher initial levels of support-seeking at age 16 that remained relatively stable over time, whereas friends of less secure teens engaged in lower initial levels of support-seeking that increased over time. When time was re-centered on later assessments, teen attachment security predicted higher friend support-seeking at age 17 (estimate = .30, *p* = .002) but not at age 18 (estimate = .04, *p* = .73), paralleling developmental processes for teens' empathic support provision. Interpersonal latent variable correlations indicated that higher initial levels of friends' support-seeking were significantly related to higher initial levels of teens' support provision ($r_{\text{friend intercept, teen intercept}}$ = .16, *p* = .004). Residual correlations between friends' and teens' scores were significant at age 17 (*r* = .15, *p* < .001) and 18 (*r* = 22, *p* < .001). Compared to a baseline model with no predictors (χ^2 = 413.39, *df* = 33, *p* < .001), adding the predictors shown in Table 2 led to a significant improvement in model fit (χ^2 = 397.82, *df* = 23, *p* < .001; RMSEA = .059; AIC = 1130.05; BIC = 1237.46; χ^2 final model = 15.57; *df* = 10, *p* = .113).

In the follow-up model examining the potential role of friendship characteristics, friendship stability did not significantly moderate trajectories of friends' support-seeking, estimate = −.04, *SE* = .08, *p* = .65, nor did friendship duration predict mean levels of support-seeking at any time point, estimates ≈ .01, all *p*s > .05. Because the addition of friendship covariates did not significantly improve model fit, the more parsimonious model was selected as our final model, as shown in Table 2.

Discussion

This study provides evidence for a substantial association of attachment state of mind with the development of the capacity to provide empathic support to close friends across a 4-year period of adolescence. Results also suggest that friends' support-seeking develops alongside teens' empathic support provision as a dyadic process predicted by teens' attachment state of mind. This study is among the first to our knowledge to examine associations of attachment state of mind with the development of adolescent empathic support using longitudinal methods and observations of empathic support for friends across mid-adolescence.

Adolescents' secure state of mind regarding attachment at age 14 positively predicted empathic support—a combination of emotional support provision, instrumental support provision, emotional engagement, and interpretation of the problem—during observed interactions with close friends across ages 16–18. Results are broadly consistent with

previous findings linking teens' self-reported security and empathy in more generalized contexts (e.g., Laible et al., 2000; Li et al., 2015; Thompson & Gullone, 2008); they also extend previous work by incorporating a well-validated interview assessment of attachment security alongside observations of naturalistic conversations with close friends, providing a point of continuity with observational studies of attachment and empathy in other developmental periods (for reviews see Shaver et al., 2016; Stern & Cassidy, 2018). Secure internal working models of attachment involve well-regulated, autonomous, and non-defensive exploration of relationship experiences (Main et al., 1985), as well as a "secure base script" in which expressions of need and distress are met with responsive care (Waters & Waters, 2006). Thus, it is likely that these cognitive models motivate and guide the development of teens' caregiving system, including their provision of empathic care with close friends. Developmentally, observed empathic support provision was moderately stable from ages 16 to 18 in the overall sample, in contrast to previous work demonstrating increases in self-reported empathy earlier in adolescence (e.g., from ages 12–16; Allemand et al., 2015). This may indicate that empathy undergoes greater developmental change earlier in adolescence and stabilizes by age 16. This may also reflect a dissociation between self-report and more objective (i.e., observational or biological) assessments of empathy. Specifically, it is possible that teens come to value empathic support, understand its social desirability, better recognize their own empathic capacities, or experience the internal state components of empathy more with age (contributing to the previously observed increases in self-reported empathy), but that these changes do not necessarily translate into observable concomitant changes in behavior in interactions with close friends. Future work integrating self-report measures of empathy (both trait and state) with parent- and peer-report, observational, and biological measures would be fruitful for clarifying the developmental story of reported vs. observed empathic capacities in adolescence.

Within this overall pattern of stability, attachment state of mind predicted individual variation in developmental trajectories of empathic support provision. That is, secure teens started with higher levels of empathic support provision at age 16 that remained stable through age 18; in contrast, less secure teens started with lower levels of empathic support at age 16 that increased through age 18, when they no longer differed significantly from more secure teens. We interpret these findings to suggest that secure adolescents may develop empathic competencies with best friends earlier, with their less secure counterparts "playing catch-up" during middle and later adolescence. One possibility is that insecure teens initially lack a secure base script (Dykas et al., 2006) to guide empathic responding to others' distress, but learn some aspects of this script through interactions with responsive peers or through observations of others. A second possibility is that insecure teens' ongoing development of competencies that support empathy—such as self-regulation, emotion understanding—undergird their "catch-up" process. A third possibility is that the observed pattern simply reflects regression to the mean among less secure teens.

An alternate interpretation is that secure teens show more precocious development relative to insecure teens in the domain of empathic support provision, mirroring findings from longitudinal work in early childhood showing that attachment security in the Strange Situation at age 1 predicted more advanced development of understanding of mixed emotions at age 6 (Steele et al., 1999). Data in adolescence suggests that attachment-related

processes such as fathers' autonomy support, in combination with relational challenges, predicts teens' accelerated ego development and self-esteem over a 2-year period (Allen et al., 1994); it is possible that such accelerated ego development contributes to empathic development. Accelerated development of empathic support capacities among secure teens may allow them to enter into more intimate, trusting, and mutually responsive peer relationships earlier in adolescence. At the same time, secure teens may *select* social environments that *pull* for empathy, such as choosing close friends who are willing to share emotions and call on teens for support when needed.

In support of this view, teens' empathic support developed in parallel with friends' calls for such support, which showed moderate stability over time (despite changes in the selected friend). Friends' support-seeking was strongly related to teens' support provision at all three time points, suggesting that friends' signals of need may elicit well-matched responses from teens in a dyadic process of seeking and receiving support in the context of a close friendship. Further, teens' secure state of mind regarding attachment predicted a similar developmental pattern among their close friends' support-seeking, such that friends were more likely to seek support from more secure teens (who were more likely to provide such support). This may reflect (a) friends' greater comfort using secure teens as a secure base to direct their calls for support, or (b) secure teens' tendency to draw in or choose friends who are more securely attached themselves (niche-picking) (e.g., Kossinets & Watts, 2009; see Loeb et al., 2020, for evidence that securely attached adolescents also show higher levels of support *seeking* from close friends). It may also indicate secure teens' greater level of responsiveness to their close friends' needs. Importantly, the direction of effects cannot be inferred from the present study; however, it is likely that the social effects of teens and their friends are bidirectional.

Limitations & Future Directions

Findings from the present investigation should be considered in light of the study's limitations. First, although observations of support provision in naturalistic conversations with close friends provide an important window into teens' supportive capacities, empathy cannot always be inferred from such behavior (see Batson, 2009). Teens may have different motivations for providing support to close friends, including not only experiencing empathic emotions but also a sense of obligation, the desire to be viewed positively by their best friends as well as the researchers, or to avoid retaliation or rejection if support is not provided (for similar discussion of the diverse motivations underlying prosocial behavior in children, see Eisenberg et al., 2016). The task may also be prone to practice effects for participants not initially adept at providing support in a novel, potentially stressful laboratory setting; this may be another explanation for the observed "catch-up" among insecure participants. That is, insecure teens may have been better able to handle friends' problems in subsequent, more familiar lab visits, or as function of reduced attachment-related deactivating or hyperactivating strategies caused by a reduction in stress from practicing the same task over multiple waves. Future work would benefit from multimethod assessment of empathy, including observed behavior in different contexts (in the lab and in home or school settings, with multiple friends or less familiar peers) alongside self-, parent-,

and peer-report, or relevant physiological measures such as vagal tone (e.g., Hastings & Miller, 2014) or pupil dilation (Hepach et al., 2012).

Relatedly, although there are compelling reasons to believe that coherence on the Adult Attachment Interview and empathic support provision are each key indicators of adolescents' developing caregiving system (see Allen & Miga, 2010; MacLean, 1985; Stern & Cassidy, 2018), we could only assess empathic caregiving behavior in the specific context of close friendships in the present study. It will be important to examine whether adolescent attachment predicts caregiving behavior in other relational contexts (e.g., with other peers at school, with one's own future children) in part via teens' empathic caregiving toward close friends. Given that peer relationships play a vital role in linking adolescent attachment to a variety of adult competencies, including more positive relationships with romantic partners (e.g., Loeb et al., 2020), future work should examine whether practicing empathic support for close friends may predict caregiving behavior in adult relationships. In addition, it could be fruitful to compare the unique and interactive associations of different dimensions of attachment—including state of mind, attachment style, and secure base scripts—to specific aspects of empathy. Substantial previous research has linked self-reported attachment style to self-reported empathy in adolescence and young adulthood (see Shaver et al., 2016), but the present study suggests that secure state of mind may be particularly important for predicting observed empathic behaviors with close friends.

In addition, the analyses of friends' support-seeking were exploratory and should be replicated in other contexts and beyond best-friend dyads. Although we examined friendship duration as a covariate and tested for moderation by friendship stability, the dyadic analytic approaches may still contain bias due to changes in peers across waves and should be interpreted cautiously. Importantly, friendship stability in the present study was similar to what has been observed in previous work in adolescence (see Poulin & Chan, 2010) and was unrelated to teen attachment, empathic support, and peer support-seeking. Future work could take into account other potential sources of friendship stability and change, such as closeness and trust, to provide a more complete picture of the correlates and moderators of friends' support-seeking.

Further, although the sample was reasonably representative of the community from which participants were drawn, the majority of participants were white, and all were from the United States. Notably, the relation between attachment and empathy shows similar effect sizes in the self-report studies conducted in the U.S. (Laible et al., 2000), Canada (Markiewicz et al., 2001), and China (Li et al., 2015). Moreover, the correlates and pathways linking parental influence to adolescent empathy and prosocial behavior do not substantially differ between Latinx and White teens (Carlo et al., 2011). Still, other key factors may mediate or moderate attachment to predict empathic support among different racial or ethnic groups. Among Black adolescents, for example, racial pride socialization messages have been associated with the development of prosocial behaviors (Lozada et al, 2017); one question for future research is whether securely attached Black adolescents are more likely to hold positive views of their racial identity (because they align with a positive internal working model of the self), and whether such positive self-views, in turn, contribute to empathic support provision. Examining both similarities and potential differences in the role

of attachment in the empathic development of youth of color represents a rich area for future work.

In addition, underlying genetic confounds may contribute unknown variance to parental empathy (a known predictor of attachment security; e.g., Stern et al., 2015) and adolescent empathy. Empathy has been shown to be moderately heritable (Knafo et al., 2009), whereas the majority of studies show extremely low genetic contributions to attachment security in early childhood (e.g., Roisman & Fraley, 2008); however, at least one large-scale study suggests moderate heritability of attachment in adolescence, measured via coherence on the Child Attachment Interview (Fearon et al., 2014). Future studies should examine genetic effects as potential confounds and moderators of the attachment-empathy link. In differential susceptibility models, for instance, researchers might examine whether the observed association between attachment and empathy is stronger among children with greater genetic susceptibility to the caregiving environment (e.g., DRD4). In addition, examining epigenetic effects (e.g., methylation of the oxytocin receptor gene [OXTRm], implicated in social bonding and caregiving; Meaney et al., 2001) may prove useful in further explaining the attachment-empathy link.

Finally, the present correlational design precludes drawing any causal conclusions. It is possible that teens' empathic capacities contribute to their secure state of mind, allowing them to take the perspective of others when discussing close relationships, or that the link is bidirectional. Experimental work and intervention studies are crucial for examining causal pathways and for clarifying the nature of this link. Intervention studies could test whether existing interventions to promote adolescent empathy toward peers (e.g., bullying interventions) could be enhanced via approaches to help teens move toward more secure states of mind. Such efforts could take the form of attachment-informed therapeutic interventions for teens (e.g., Attachment-Based Family Therapy; for a review see Diamond et al., 2016), group programs focused on reflective discussion, or repeated attachment security priming to boost teens' "felt sense" of security (see Gillath & Karantzas, 2019). One school-based program, Roots of Empathy, uses attachment-based modeling of positive parent-infant interactions in classroom settings to engage children and teens in reflective discussion of infants' emotions; the program demonstrates positive impacts on child empathy, peer-reported prosocial behavior, and reduced levels of aggression (Schonert-Reichl et al., 2012). Future work could examine whether intervention effects are explained in part by changes in children's secure base scripts (i.e., whether positive social experiences outside the family could contribute to secure base scripts that provide a schema for empathic responding with peers). In sum, experimental work to foster adolescents' secure state of mind could illuminate the pathways by which attachment predicts teens' emerging capacity to provide empathic support to friends.

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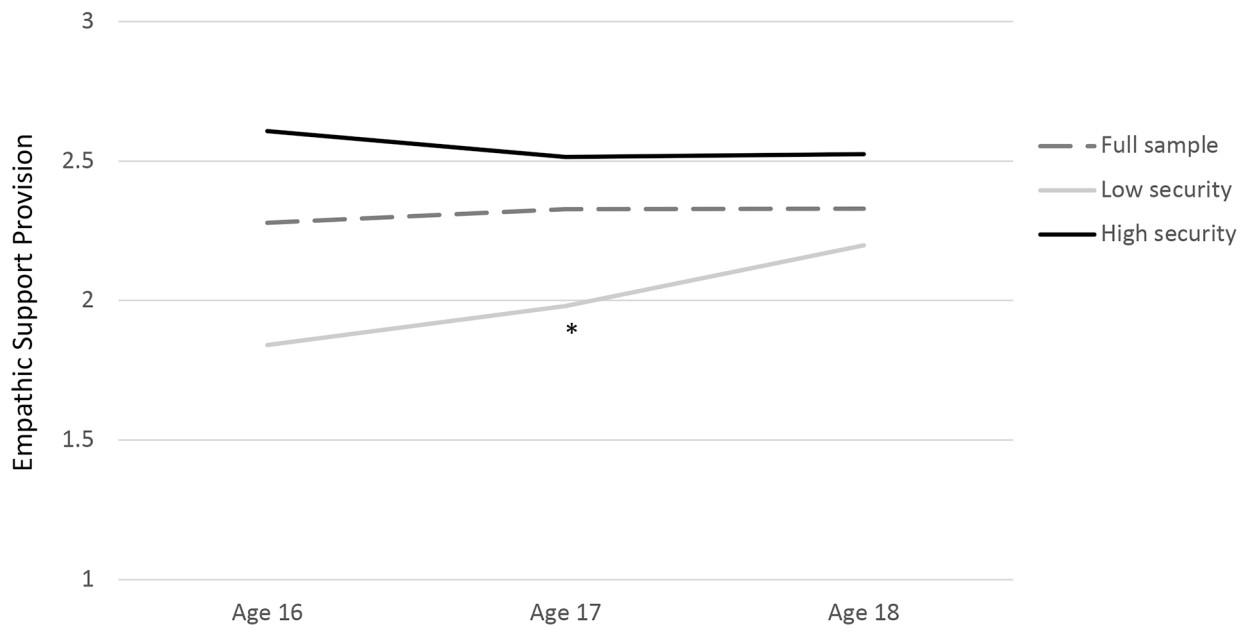
Figure 1.

Trajectories of adolescent empathic support provision to close friends across ages 16–18. The four dimensions of empathic support provision (emotional support provision, instrumental support provision, engagement, interpretation of the friend's problem) were averaged to create overall scores at each time point. Means are presented for the full sample (dashed line), and for high (+1 *SD* above the mean; black solid line) and low (−1 *SD* below the mean; grey solid line) attachment security at age 14. Only teens who were *less* secure at age 14 showed significant increases in empathic support provision (grey solid line).
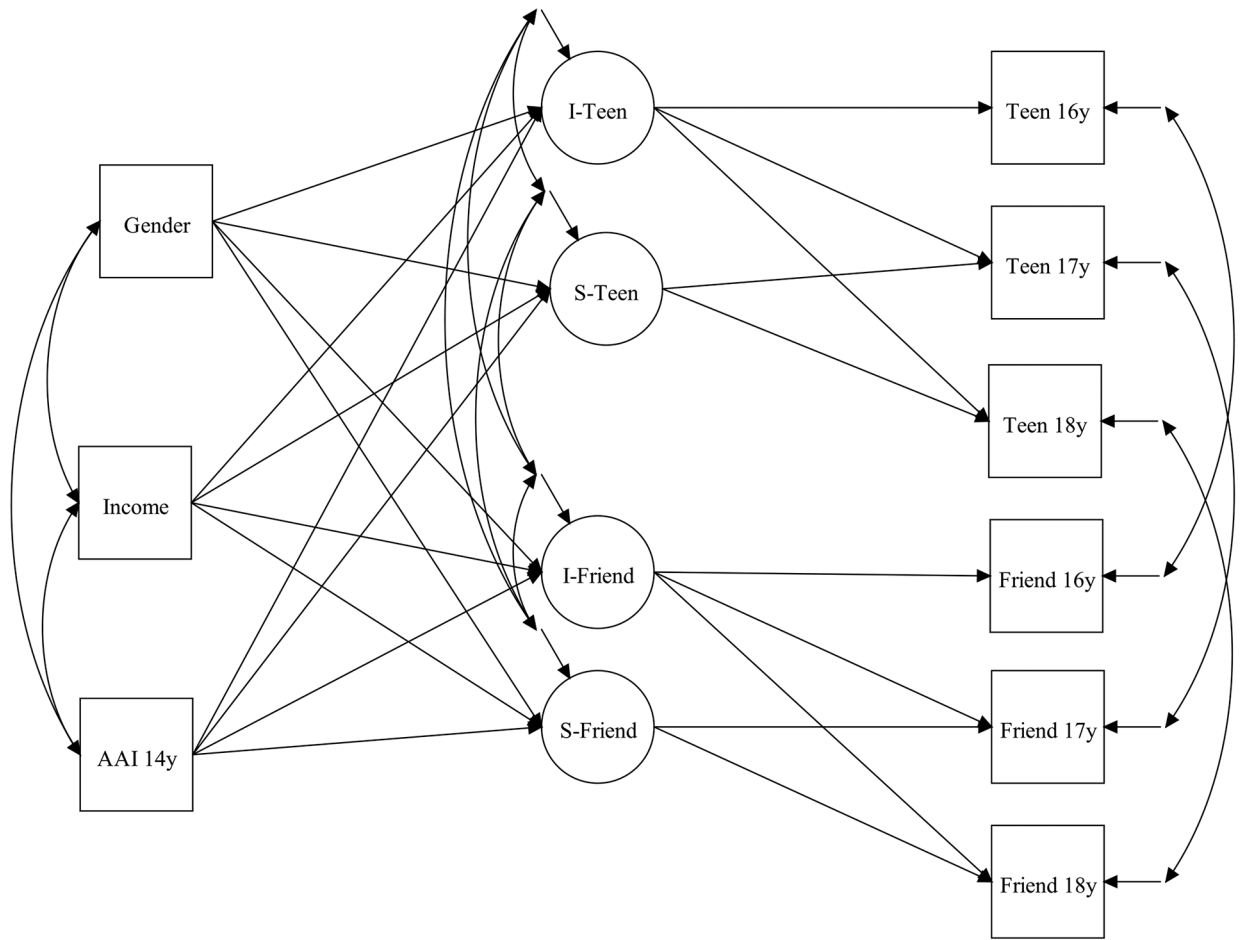
Figure 2.
Dyadic latent growth curve structural equation model (following procedures described in Peugh et al., 2013). AAI = teen attachment security on the Adult Attachment Interview at age 14; I = Intercept; S = Slope; Teen = teen empathic support provision; Friend = friend support-seeking.

Table 1

Descriptive Statistics and Intercorrelations Among Main Study Variables.

	N	M	(SD)	Attachment			Teen empathic support provision			Close friends' support-seeking		
				1	2	3	4	5	6	7	8	9
Attachment (age 14)												
1. Security	174	.25	(.42)	-	-.94***	-.55***	.42***	.40***	.12	.32***	.32***	.06
2. Dismissing	174	.05	(.43)		-	.46***	-.40***	-.39***	-.12	-.32***	-.32***	-.08
3. Preoccupation	174	-.03	(.23)			-	-.26**	-.13	-.04	-.12	-.15	.05
Teen empathic support provision												
4. Empathic support, age 16	139	2.28	(.58)				-			.70***	.35***	.21*
5. Empathic support, age 17	139	2.33	(.52)					-		.49***	.72***	.12
6. Empathic support, age 18	129	2.33	(.59)						-	.17	.17	.71***
Close friends' support-seeking												
7. Support-seeking, age 16	139	1.71	(.70)							-	.44**	.24*
8. Support-seeking, age 17	139	1.71	(.75)								-	.23*
9. Support-seeking, age 18	129	1.69	(.62)									-

Note. Teen empathic support provision is a composite of emotional support provision, instrumental support provision, engagement, and interpretation of the peer's problem at each time point. Friends' support-seeking is a composite of friends' calls for emotional support and calls for instrumental support at each time point.

*
$p < .05$,

**
$p < .01$,

***
$p < .001$,

two-tailed.

Table 2

Final Growth Curve Models for Friends' Support-Seeking and Teens' Empathic Support Provision from Ages 16–18.

	Intercept				Linear Change			
	Coefficient	SE	t	p	Coefficient	SE	t	p
Individual Model: Teens' Empathic Support (H1–2)								
Unconditional growth curve model	**2.27**	.05	47.95	<.001	.04	.03	1.07	.284
Conditional growth curve model								
Family income	**.07**	.03	2.19	.028	–.02	.02	–.74	.459
Gender	**.21**	.09	2.40	.016	–.06	.07	–.98	.326
Attachment security (14y)	**.58**	.11	5.35	<.001	**–.19**	.08	–2.38	.018
Dyadic Model: Friends' Support-Seeking & Teens' Empathic Support Provision (H3)								
Unconditional dyadic growth curve model								
Friends' support-seeking	**1.68**	.06	29.19	<.001	.01	.03	0.14	.890
Teens' empathic support provision	**2.27**	.05	48.04	<.001	.04	.03	1.12	.262
Conditional dyadic growth curve model								
Family income → Friends' support-seeking	**.08**	.04	2.17	.030	.01	.02	.44	.657
Family income → Teens' empathic support	**.07**	.03	2.19	.028	–.02	.02	–.77	.439
Gender → Friends' support-seeking	**.34**	.11	3.13	.002	–.07	.07	–.96	.339
Gender → Teens' empathic support	**.23**	.09	2.53	.011	–.07	.07	–1.03	.302
Attachment security (14y) → Friends' support-seeking	**.54**	.14	3.98	<.001	**–.25**	.09	–2.90	.004
Attachment security (14y) → Teens' empathic support	**.56**	.11	5.17	<.001	**–.18**	.08	–2.25	.025

Note. The unstandardized coefficients represent the regressions of the intercepts and slopes for teen empathic support provision (a composite of emotional support, instrumental support, engagement, and interpretation of the problem) and friend support-seeking (a composite of emotional and instrumental support-seeking) on the predictors (e.g., attachment security). Boldface indicates significant coefficients, $p < .05$.