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The Developmental Origins and Future Implications of Dispositional Optimism in the Transition to Adulthood

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The benefits of dispositional optimism are well-documented with numerous studies demonstrating positive associations with psychological and physical well-being across the lifespan (see reviews, Carver, Scheier, & Segerstrom, 2010; Mens, Scheier, & Carver, 2016). Among youth, greater optimism is associated with higher academic motivation and achievement (Ey et al., 2004; Schulman, 1995; Yates, 2002), fewer social and behavior problems, and greater emotional well-being (Ey et al., 2004; Oberle, Schonert-Reichi, & Zumbo, 2011). In adulthood, dispositional optimism promotes higher levels of subjective well-being and better physical health (Mens, Scheier, & Carver, 2016). Given that the transition from adolescence to young adulthood is fraught with the negotiation of multiple and often simultaneous psychosocial demands (Arnett, 2000), greater optimism may be especially beneficial in enhancing psychological well-being, as more optimistic individuals tend to engage in more adaptive regulation when pursuing multiple goals (Carver & Scheier, 2014).

Despite the clear advantages of being optimistic, the developmental origins of dispositional optimism remain relatively unknown. Theoretical arguments have implicated earlier experiences with attachment figures as a possible antecedent of the development of optimism in adulthood (e.g., Carver & Scheier, 2014; Renaud, Wrosch, & Scheier, 2018). However, the process by which attachment security might promote dispositional optimism is

not clear. In the present paper, we examine 1) whether greater perceived internal locus of control accounts for how attachment security promotes the development of optimism across adolescence and into the transition to adulthood and 2) whether optimism, in turn, mediates associations between internal locus of control and psychological well-being in early adulthood.

Development of Dispositional Optimism

Dispositional optimism is a personality trait that reflects the generalized expectancy that positive, as opposed to negative, outcomes will occur in the future across a variety of domains (Carver & Scheier, 1985). Researchers typically assess dispositional optimism as a continuous, bipolar construct, ranging from high levels of pessimism to high levels of optimism (Carver & Scheier, 1985). Stability in dispositional optimism has been observed over periods of a few months to several years with test-retest reliabilities ranging from .58 – .79 (e.g., Atienza, Stephens, & Townsend, 2004; Lucas, Diener, & Suh, 2006; Matthews, Raikkonen, Sutton-Tyrrell, & Kuller, 2004; Scheier, Carver, & Bridges, 1994).

As with other personality traits, both genes and environmental factors have been shown to contribute to the development of dispositional optimism. Research from twin studies has demonstrated that approximately 25-30% of the variability in dispositional optimism can be explained by heritability (Plomin, Scheier, Bergeman, Pedersen, Nesselroade, & McClearn, 1992; Mosing, Pederson, Martin, & Wright, 2010; Mosing, Zietsch, Shekar, Wright, & Martin, 2009). Early environmental factors, including the quality of the parent-child relationship, also contribute to the emergence or development of individual differences in dispositional optimism (Heinonen, Raikkonen, & Keltikangas-Jarvinen, 2005; Heinonen, Raikkonen, Keltikangas-Jarvinen, & Strandberg, 2004; Hjelle, Busch, & Warren, 1996).

Attachment Security and Optimism

The quality of the parent-child attachment bond in particular has been considered an especially influential antecedent of personality development (Sroufe, Egeland, Carlson, & Collins, 2005; Lamborn, Mounts, Steinberg, & Dornbush, 1991; Thompson, 2007). Despite researchers having posited that early environmental experiences, and parent-child relationships in particular, constitute a promising context to examine the developmental antecedents of dispositional optimism, there is a paucity of empirical longitudinal research demonstrating such associations (Carver & Scheier, 2014).

Attachment theory advances the view that secure attachment to caregivers develops from early interactions with caregivers who are available, sensitive, and responsive to a child's needs (Bowlby, 1969; 1973). Through repeated experiences with attachment figures, a secure base is formed and is internalized as a working model, or mental representation, that constitutes a lens through which individuals view and interact with the self, others, and the world (Bowlby, 1969; 1973). If attachment is secure, the child's internal working model is one through which the self and the world are viewed as reliable (Ainsworth et al., 1978). As a consequence, the child is more likely to explore, learn, and master their environment. However, if attachment figures are not reliable or are insensitive or rejecting, the child's

working model is likely to be one in which the self and the world are viewed as unreliable (Erikson, 1993). As individuals continue to behave in ways that are consistent with these working models, secure and insecure attachments shape the organization and structure of personality (Thompson, 2007). Thus, attachment security may serve as an important precursor of other aspects of socio-personality development throughout the life course, including dispositional optimism.

Parent-child attachment may contribute to becoming a more optimistic person in early adulthood. Adults who are more optimistic retrospectively report that their parent-child relationships were positive (Korkeila et al., 2004) and that they experienced greater warmth than those who are less optimistic (Hjelle et al., 1996). By contrast, lower levels of optimism (i.e., pessimism) are associated with feelings of rejection (Hjelle et al., 1996). In a prospective study, mothers who rated their children as having a difficult temperament, as assessed by high activity, high negative emotionality, and low cooperativeness, had more hostile child-rearing attitudes, which were associated with greater pessimism among their children 21 years later (Heinonen et al., 2005). In one retrospective examination of associations between attachment and optimism development, recollections of having had an insecure attachment in childhood, as characterized by inconsistent love, low care, and high overprotection, were associated with being more pessimistic in adulthood (Heinonen et al., 2004).

This literature suggests that attachment experiences in childhood may be implicated in the development of dispositional optimism. However, much of this research has relied on cross-sectional data and retrospective designs. Prospective longitudinal research is necessary to further illuminate the specific role of attachment security. Moreover, research examining the underlying mechanisms that explain how attachment security contributes to optimism development is needed.

The Mediating Role of Locus of Control

The association between attachment security and dispositional optimism may be driven by individual's perceptions of internal control. Rotter (1966) conceptualized locus of control as a unidimensional construct falling on a continuum ranging from higher internal to higher external locus of control¹. According to Rotter, individuals who have greater internal control tend to perceive events as contingent on their own behavior or on their own relatively stable internal characteristics. By contrast, individuals with an external locus of control tend to view outcomes as following from causes outside of their own behavior, occurring rather by the actions of powerful others, chance, or luck. Although perceptions of control vary across contexts and situations, individuals learn to generalize across similar situations and cues (Rotter, 1966).

The development of a generalized locus of control takes root early in life (Carton & Nowicki, 1994; Carton & Nowicki, 1996; Rotter, 1966). According to Rotter (1966),

¹Rotter's locus of control construct is conceptually different from other conceptualizations of perceived control which distinguish between dimensions of mastery and constraints (e.g., Lachman & Weaver, 1998).

differences in locus of control arise as children develop the capacity to observe and recognize causal associations between events. Parenting behaviors and parent-child relationships are posited to be especially influential in the development of locus of control. In particular, positive attachment experiences with parents can be reinforcing of children's efforts to express and have their needs met, affording children the opportunity to learn and develop a sense of control over their environment. By contrast, children who experience more negative parent-child interactions (e.g., controlling or authoritarian parenting) are more likely to develop a more external locus of control (Carton & Nowicki, 1994; Nowicki & Duke, 2017; Sroufe et al., 2005).

Parent-child relationships contribute to the development of locus of control, but control perceptions may in turn contribute to the extent to which individuals become more or less optimistic. According to Rotter, individuals are more likely to have positive outcome expectancies for future success (i.e., optimism) when they perceive that events occur in consequence of their actions (Rotter, 1966). Thus, individuals who perceive themselves as having greater internal control would be more likely to have greater optimism. Research has shown that greater perceptions of control promote greater control striving and the use of adaptive strategies that contribute to increased opportunities for success (Lachman, 2006; Lachman & Firth, 2004; Lang & Heckhausen, 2001).

Implications for Future Well-Being

With more opportunities for success, individuals are likely to experience greater psychological well-being. The majority of studies have shown that perceived control promotes positive outcomes (Lachman et al., 2011; Skaff, 2007). In particular, research has shown that perceptions of greater internal control are positively associated with both dispositional optimism and greater psychological well-being (e.g., Lachman & Firth, 2004; Lang & Heckhausen, 2001; Mens et al., 2016; Rocke & Lachman, 2008). Moreover, individuals who have greater perceived control, as well as those who are more optimistic, are more likely to strive successfully toward their goals and manage obstacles encountered along the way (e.g., Lachman & Firth, 2004; Lang & Heckhausen, 2001; Scheier, Weintraub, & Carver, 1986).

Two indices of positive functioning that are associated with greater emotional well-being, and that might be especially related to internal control and optimism, are purpose in life and environmental mastery. According to Ryff and Keyes (1995), purpose in life reflects the extent to which an individual has meaningful goals in life and a sense of directedness. Individuals with a greater sense of life purpose tend to hold beliefs that support their purpose. They are also more likely to strive for, and invest resources in, achieving important life goals, further ensuring emotional well-being (Scheier et al., 2006). Moreover, Ryff and Keyes posited that environmental mastery, which is characterized by competence in managing one's life, also reflects psychological well-being. Individuals with greater environmental mastery are more likely to make effective use of available opportunities (Ryff & Keyes). Importantly, both purpose in life and environmental mastery are conceptualized as dimensions of positive functioning. Higher levels of environmental mastery and purpose in

life may be associated with emotional well-being by fulfilling individuals' fundamental need for competence, regardless of outcomes (White, 1959).

Developmental Timing

The developmental transitions into and out of adolescence provide important contexts for the emergence of optimism and promoting subsequent trajectories of well-being. Adolescence is a key period for cognitive, emotional, and social development (Lerner, Lerner, von Eye, Bowers, & Lewin-Boizan, 2011; Meeus, 2016). In particular, changes in cognitive development permit adolescents to engage in positive future-oriented cognitions and behaviors (Nurmi, 2004), and, in general, adolescents tend to believe that positive future outcomes are under their own control (Brown & Larson, 2002). Furthermore, the transition into adulthood involves navigating multiple and often simultaneous psychosocial demands (Arnett, 2000). The negotiation of demands associated with developmental transitions promotes personality development (e.g., Caspi & Moffit, 1993). As such, the periods of transition into and out of adolescence may serve as times to examine the developmental antecedents of personality traits, such as dispositional optimism. Adolescents may especially benefit from a greater internal locus of control because they have fewer constraints than during many other phases of the lifespan and can make use of available opportunities to increase experiences of success.

Present Study

Convergent evidence regarding the links between attachment security, locus of control, and dispositional optimism provides support for a model of optimism development, whereby attachment security promotes the development of optimism via locus of control. Through experiences of having their attachment needs met by sensitive and reliable caregivers, individuals internalize a secure base, from which they are more likely to explore and master their environments (Bowlby, 1969), providing opportunities to learn that their own efforts yield success, imbuing them with a sense of internal control (Carton & Nowicki, 1994; Sroufe et al., 2005). As a consequence of having a greater perceived control over their environments, successes experienced by these individuals may generalize to expectations for future successes (i.e., optimism). Further, the development of dispositional optimism during the transition from adolescence to young adulthood may be especially beneficial in enhancing psychological well-being. Therefore, the evidence also supports a second model whereby greater internal control promotes better psychological well-being via dispositional optimism.

The present study examined whether attachment security in late childhood contributes to the development of a more optimistic outlook in late adolescence via perceived locus of control at early adolescence which would promote greater well-being in early adulthood. We used data from a longitudinal study that assessed attachment at ages 10 and 14, locus of control at age 14, dispositional optimism at ages 18 and 23, and psychological well-being at age 23. We hypothesized that higher attachment security at age 10 would predict greater perceptions of internal control at age 14, and that greater internal control at age 14 would predict more optimism at ages 18 and 23. We also hypothesized that dispositional optimism at age 18

would further promote greater psychological well-being at age 23, as assessed by purpose in life and environmental mastery. Given that researchers have found individual differences in perceptions of control depend on gender and socioeconomic status, with males and individuals from higher SES reporting greater levels of perceived control (e.g., Infurna, Gerstoff, Ram, Schupp, & Wagner, 2011; Lachman & Weaver, 1998; Mirowsky, 1995), we controlled for gender and SES in our analyses.

In addition, we tested two mediational pathways. First, we examined whether locus of control at age 14 mediated the association between age 10 attachment security and dispositional optimism at age 18, controlling for stability in attachment from age 10 to 14. Second, we tested whether dispositional optimism subsequently mediated the association between locus of control and indicators of psychological well-being at age 23, controlling for stability in optimism from 18 to 23.

Method

Participants

Data were collected from firstborn children and their parents who were originally recruited from two east coast areas in the United States – one metropolitan and one rural – through mass mailings and newspaper advertisements. The present study included the data from 218 children (98 females) collected when the children were 10 years old ($M = 10.34$, $SD = .17$), 14 ($M = 13.86$, $SD = .28$), 18 ($M = 18.22$, $SD = .37$), and 23 ($M = 23.62$, $SD = .62$) as part of a larger ongoing longitudinal study. All of the participants were ethnically European American and most were from families of middle to upper socioeconomic status (SES; $M = 54.59$, $SD = 9.92$, $range = 25-66$; Hollingshead, 1975). Participants were intentionally selected for ethnic homogeneity to avoid confounding differences that exist in parenting across different ethnicities (Bornstein, Jager, & Putnick, 2013).

Procedures

Informed consent/assent was obtained from children and their parents. For the present study, participants provided demographic information and completed a self-report measure of attachment security at age 10. Measures of attachment security and locus of control were completed at age 14. A measure of dispositional optimism was completed at age 18. Measures of dispositional optimism and psychological well-being were completed at age 23. In the initial two waves, participants completed questionnaires in the laboratory. For the subsequent two waves, participants completed questionnaires online. Participants were compensated for their time at each wave. Institutional Review Board approval was obtained from XXXX, protocol 88-CH-0032, titled, “The influence of maternal age, employment status, and parenthood status on children's cognitive development.”

Measures

Demographic variables.—The mothers of the children included in the study provided demographic information, including gender and age. For gender, females were coded a 1 and males were coded 2. To assess family SES, the Hollingshead Four-Factor Index of

Socioeconomic Status (Hollingshead, 1975) was coded at age 10 from questions about maternal and paternal education and occupation.

Attachment security.—Adolescents completed the Kerns Security Scale (KSS; Kerns, Klepac & Cole, 1996) a measure of attachment security that assesses the degree to which children perceive their attachment figure as responsive and available, the tendency to rely on their attachment figure in times of stress, and their ease and interest in communicating with their attachment figure. Participants were asked to indicate the extent to which each of 15 items was true for them (e.g., *Some kids find it easy to trust their mom but other kids are not sure if they can trust their mom*). Items were measured on a 4-point Likert-type scale with higher scores indicating greater attachment security. Cronbach's alphas for age 10 and age 14 attachment security were $\alpha = .87$ and $.88$, respectively.

Internal locus of control.—Participants completed the Child's Nowicki-Strickland Internal-External scale (CNSIE; Nowicki & Strickland, 1973) to assess the extent to which they had a more external versus internal locus of control. The CNSIE consists of 21 items (e.g., *Most of the time, do you feel that you can change what might happen tomorrow by what you do today?*). Participants responded yes or no to items, with higher scores indicating greater degrees of internal locus of control and lower scores indicating greater degrees of external locus of control. Cronbach's alpha for the CNSIE was $\alpha = .81$.

Dispositional optimism.—Participants completed the Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994). The LOT-R is a 6-item measure rated on a 4-point Likert-type scale where lower scores indicate greater pessimism and higher scores indicate greater optimism (e.g., *In uncertain times, I usually expect the best*). Both age 18 ($\alpha = .86$) and age 23 ($\alpha = .84$) dispositional optimism yielded high internal consistency.

Psychological well-being.—Participants completed 18 items from two subscales from the Psychological Well-Being (PWB; Ryff & Keyes, 1995) scale. The two subscales used in the present study included environmental mastery (e.g., *In general, I feel I am in charge of the situation in which I live*) and purpose in life (e.g., *I have a sense of direction and purpose in life*). Each subscale consisted of nine items which were rated on a 6-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (6), with higher scores indicating greater levels of well-being. Cronbach's alphas were $\alpha = .78$ for purpose in life and $\alpha = .83$ for environmental mastery.

Analytic Plan

Descriptive statistics and bivariate correlations for the variables of interest and control variables were obtained using SPSS 23.0. Across the four waves of data collection, the rate of missing data on study variables ranged from zero to 38%, with the majority of missing data concentrated in the third and fourth waves of the study. Of the 218 participants who participated in the first wave, 50% participated in four waves, 32.6% participated in three waves, and 17.4% participated in two waves. To examine whether individuals who did not complete the study might differ from those who did, we compared participants who completed all four waves with those who did not on demographic characteristics and wave 1

attachment security. Comparisons of these two groups revealed that neither gender, $\chi^2(1) = 1.92, p = .16$, nor attachment security, $t(250) = -.40, p = .69$, at wave 1 influenced study retention. However, individuals from higher- as compared to lower-SES backgrounds were more likely to complete the study $t(213) = -3.98, p < .001$. To assess missing data, Little's MCAR test was conducted, revealing that the data were missing completely at random, $\chi^2(95) = 95.58, p = .46$. Full information maximum likelihood (FIML) estimation was used to handle missing data in Mplus, which is a largely unbiased method of recovering missing data (Enders, 2010; Little, Jorgensen, Lang, & Moore, 2013). Because SES was included as a predictor in the model, any differential missingness would not bias the model estimates.

To test the study hypotheses, we computed a path analysis using Mplus version 7 (Muthén & Muthén, 1998-2012). The path analysis was designed to assess the associations between early attachment, locus of control, dispositional optimism, and psychological well-being. We included gender and SES as predictors of attachment security at age 10, internal locus of control at age 14, and dispositional optimism at age 18. Based on the hypothesis that early attachment security would predict greater internal locus of control, paths from age 10 and age 14 attachment security to locus of control at age 14 were added to the model. To examine the subsequent hypothesis that greater internal locus of control would contribute to psychological well-being via dispositional optimism at age 18, we included paths from age 10 attachment security and age 14 locus of control to dispositional optimism at age 18 and 23, as well as to the two indicators of psychological well-being at age 23 (i.e., environmental mastery and purpose in life). We also included stability paths for attachment security and optimism between the two points at which they were assessed. Covariances for all variables measured at the same time point were included in the model.

Model fit.—To assess model fit, four fit indices were considered to evaluate adequacy of the path analysis. The chi-square statistic, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR). A value of less than .06 is considered acceptable fit for the RMSEA (Hu & Bentler, 1999). Values above .95 and less than .08 are considered acceptable for the CFI and SRMR, respectively (Hu & Bentler, 1999).

Indirect effects.—To test indirect effects, bootstrapping was used to obtain robust standard errors for parameter estimation (Hayes, 2013). The bootstrapping method produced 95% bias-corrected confidence intervals for the indirect effect from 1000 resamples of the data. Indirect mediation effects were statistically significant at $\alpha = .05$ when the confidence intervals for the parameter estimate did not cross zero (Preacher & Hayes, 2008).

We tested two separate indirect effects to examine the study hypotheses. First, we examined whether locus of control at age 14 mediated the association between attachment security at age 10 and dispositional optimism at age 18. The second mediation path examined whether dispositional optimism at age 18 mediated the association between locus of control at age 14 and psychological well-being at age 23.

Results

Descriptive statistics for key variables are reported in Table 1. Bivariate correlations among key variables are presented in Table 2. Participants from higher SES backgrounds tended to have greater internal locus of control, as indicated by higher scores on the CNSIE, $r(149) = .17, p = .05$, and reported having higher levels of purpose in life, $r(143) = .18, p = .03$. As compared to females, males were more likely to endorse an external, as opposed to an internal, locus of control, $r(154) = -.23, p < .001$. Both attachment security, $r(152) = .38, p < .001$, and dispositional optimism, $r(109) = .59, p < .001$, showed moderate stability over time. Locus of control at age 14 was positively associated with attachment security at ages 10, $r(154) = .20, p = .01$, and 14, $r(149) = .52, p = .001$, indicating that individuals with secure attachments had greater internal locus of control perceptions in adolescence. Dispositional optimism at age 18 was positively associated with attachment security at ages 10, $r(134) = .19, p = .03$, and 14, $r(114) = .26, p < .001$. In addition, having higher internal locus of control at age 14 was correlated with dispositional optimism at ages 18, $r(114) = .30, p < .001$, and 23, $r(120) = .23, p = .01$. As expected, dispositional optimism at ages 18 and 23 was positively correlated with both indicators of psychological well-being (all $r_s > .37$, all $p_s < .001$), and the two indicators of psychological well-being (i.e., environmental mastery and purpose in life) were also correlated with each other at age 23, $r(152) = .63, p < .001$.

Model fit.

The unstandardized results from the path analysis examining the associations between covariates (gender, SES), attachment security, locus of control, dispositional optimism, and psychological well-being are presented in Figure 1. The standardized coefficients are presented below. The fit indices of the overall model indicated adequate fit, $\chi^2(15) = 18.14, p = .26$, CFI = .99, RMSEA = .03, 90%, CI = .00 - .07, and SRMR = .04.

Direct effects.

The results show that neither gender nor SES were associated with attachment security at age 10 or dispositional optimism at age 18. In addition, SES was not associated with locus of control at age 14. However, being female ($\beta = -.19, p = .001$) predicted having a greater internal locus of control at age 14. Stability was observed in the path from attachment security from age 10 to age 14 ($\beta = .39, p < .001$). Having greater attachment security at age 10 predicted greater internal locus of control at age 14 ($\beta = .22, p < .001$). However, neither age 10 nor age 14 attachment security predicted dispositional optimism at age 18. Having a greater internal locus of control at age 14 predicted greater dispositional optimism at age 18 ($\beta = .25, p = .03$), but not at age 23 ($\beta = .03, p = .72$). There were no direct paths from locus of control to environmental mastery ($\beta = .01, p = .91$) or to purpose in life ($\beta = .07, p = .50$). There was considerable stability observed in the direct path from dispositional optimism from age 18 to age 23 ($\beta = .58, p < .001$). Dispositional optimism at age 18 predicted greater environmental mastery ($\beta = .34, p = .001$) and purpose in life ($\beta = .32, p = .001$).

Indirect effects.

To examine the hypothesis that locus of control at age 14 would mediate the association between attachment security at age 10 and dispositional optimism at age 18, the indirect effects were assessed. Using a 95% bias-corrected confidence interval to test the indirect effect of attachment security on age 18 dispositional optimism the results showed that the unstandardized confidence intervals did not cross zero [.07, 1.27]. These results suggest that having a greater internal locus of control at age 14 mediated the positive association between greater age 10 attachment security and greater dispositional optimism at age 18 (Figure 2).

To examine the hypothesis that dispositional optimism would mediate the association between locus of control and psychological well-being (i.e., purpose in life, environmental mastery) the indirect effects were assessed. The results are presented in Figure 3. Using 95% bias-corrected confidence intervals to test the indirect effects, the results showed that the unstandardized confidence intervals did not cross zero for the indirect effects of age 18 dispositional optimism on the associations between locus of control and environmental mastery [−.38, −.02] and locus of control and purpose in life [−.32, −.02]. These results suggest that dispositional optimism mediated the associations between locus of control and both environmental mastery and purpose in life (Figure 3).

Discussion

In the present paper, we examined the associations between early experiences of attachment security, locus of control in early adolescence and dispositional optimism for promoting psychological well-being during the transition into early adulthood. We expected that having a greater internal, relative to external, locus of control in adolescence would mediate the association between attachment security and dispositional optimism. Additionally, we anticipated that dispositional optimism would mediate the associations between locus of control and greater psychological well-being.

The results of our study were consistent with the hypothesized associations regarding the importance of greater internal control in adolescence. In line with the findings from previous cross-sectional studies (Carton & Nowicki, 1994), we found that greater attachment security in late childhood predicted higher levels of internal locus of control in early adolescence. This finding suggests that the capacity to rely on and trust caregivers early in life contributes to a sense of reliance on one's own capacity to exert control over the environment in adolescence. It is noteworthy that our findings build on past research showing positive associations between attachment security and internal locus of control. However, our results are based on a longitudinal prospective design that overcomes the limitations of cross-sectional and retrospective methodologies that detract from earlier studies (Carton & Nowicki, 1994).

In addition, we found that greater perceptions of internal locus of control in early adolescence predicted greater optimism in late adolescence, which remained relatively stable into young adulthood. These findings support early theories positing that perceptions of control promote positive outcome expectancies for future success (Rotter, 1966). The underlying mechanism accounting for this association may be that greater perceptions of

control are associated with more effective self-regulation and the subsequent attainment of important goals, which over time could enhance a person's sense of optimism and psychological well-being (Mens et al., 2016; Renaud et al., 2018). This result also suggests that individual differences related to optimism are apparent in adolescence. In addition, our results show that optimistic adolescents not only remain optimistic but also experience greater psychological well-being in early adulthood, a finding consistent with research on optimism and well-being at earlier and later points in the life course (e.g., Carver, Scheier, & Weintraub, 2006).

The proposed model was also supported by our mediation analyses. First, greater perceptions of internal locus of control in adolescence mediated the association between childhood attachment security and adolescent dispositional optimism. Thus, as children transition into adolescence, they are more likely to develop greater internal locus of control beliefs if they experienced greater attachment security, which further enhances adolescents' optimism that positive outcomes will occur in the future as they transition into young adulthood. Second, we found that optimism at the beginning of this transition mediated associations between perceived internal locus of control and both purpose in life and environmental mastery in early adulthood. Although our findings showed that attachment security was relatively stable from age 10 to 14, attachment security at age 14 did not independently predict optimism at age 18. This latter finding suggests that secure attachment early in life may be a key pathway to developing optimism and for having greater psychological well-being in early adulthood.

Personality Development from Childhood to Emerging Adulthood

The results from this study have implications for theories on personality development. Specifically, the importance of developmental transitions for personality development is evident in our finding that the building blocks for individual differences in perceived internal control begins in childhood. During adolescence, individuals with greater internal control may be advantaged insofar as they may be more likely to engage in adaptive self-regulation if they believe they can exert control over their environment and experience future successes, which over time instills a sense of optimism for future successes. As adolescents continue to mature and transition into adulthood, greater optimism may continue to contribute to adaptive self-regulation, further promoting a greater sense of agency and mastery, which are both likely to further support positive well-being in their future (Roberts, Caspi, & Moffitt, 2001). Thus, this study highlights the importance of examining personality development using a lifespan perspective to fully illuminate the key periods wherein personality may be especially influential for promoting positive development and psychological well-being.

There may also be certain periods of the life course where developing individual differences that promote adaptive self-regulation may play an especially influential role in promoting continued positive development. One important period for the development of dispositional optimism may be emerging adulthood, which brackets the developmental period falling roughly from ages 18 to 25. This period is characterized by identity exploration across multiple domains (i.e., work, love, worldviews) and is therefore also typically fraught with the negotiation of simultaneous and competing psychosocial demands (Arnett, 2000). Given

that greater optimism is adaptive during periods where opportunities for achievement and success are abundant, having a greater sense of optimism about future outcomes may be especially important during the transition from adolescence into early adulthood. Indeed, past research has shown that, as compared to their pessimistic counterparts, optimists are more likely to engage in adaptive coping and better self-regulation of goals (e.g., Carver, Scheier, & Segerstrom, 2010). Consequently, optimistic emerging adults may make effective use of existing opportunities and experience additional successes contributing to further well-being. Our findings show that greater optimism in emerging adulthood is associated with characteristics that underlie positive psychological well-being, specifically purpose in life and environmental mastery.

Strengths, Limitations, and Future Directions

The present study is among the first to examine prospectively the early developmental antecedents of dispositional optimism during the transition to young adulthood. Past studies predicting dispositional optimism have relied primarily on retrospective reports of early experiences with caregivers; the prospective design in the present study attenuates the possibility that individual differences in optimism might account for retrospective reports of parent-child attachment quality or control beliefs. Despite this strength, our findings are based on single-informant self-report measures, and our conclusions are therefore limited by shared source variance. Thus, future studies would benefit from gathering independent informant or observational data, especially in relation to attachment security. Further research should also examine the constructs of attachment security, perceptions of control, and dispositional optimism over repeated measurements to account for change in each construct and reciprocal relations among them.

In addition, later measurements of locus of control could also inform our understanding of optimism development. It has been suggested that individuals who have greater internal locus of control may be more likely to engage in adaptive self-regulation strategies that result in experiences of success and continued optimism about future outcomes (e.g., Renaud, Wrosch, & Scheier, 2018). Including measurement of control perceptions in late adolescence and early adulthood might enable researchers to disentangle temporal associations between control and optimism. Repeated assessments of these constructs might inform a better understanding of the underlying processes that contribute to the development of, and changes in, optimism during emerging adulthood, which has been identified as a fruitful phase in which to examine fluctuations in optimism (Nes & Segerstrom, 2006).

Finally, our study relied on an ethnically homogeneous but sociodemographically heterogeneous sample of participants. Although using samples that are selected for homogeneity may be superior to other forms of sampling (e.g., convenience samples; Bornstein, Jager, & Putnick, 2013), future studies ought to examine other samples to ascertain whether the associations between attachment, control, and dispositional optimism for promoting psychological well-being generalize to other ethnic groups. Although previous research has demonstrated that males tend to have higher levels of perceived control (e.g., Lachman & Weaver, 1998), we were surprised to find that females were more likely to have higher levels of internal locus of control at age 14 compared to their male counterparts.

It may be that the associations between gender and perceived control differ across different ethnic or cultural groups.

Conclusions

This study demonstrates that secure attachment experiences in late childhood promote the development of dispositional optimism across the transition from adolescence into early adulthood through greater perceptions of internal locus of control. Moreover, the development of optimism during this period contributes to increased psychological well-being that facilitates further positive development. Identifying the pathways through which psychological resources like dispositional optimism develop is important for supporting positive development and psychological well-being across the lifespan.

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Figure 1.

Path analysis examining the associations between covariates, maternal attachment security, locus of control, dispositional optimism, and psychological well-being ($N = 218$).

Unstandardized path coefficients are reported. 95% confidence intervals are reported in brackets. Solid lines represent statistically significant paths ($p < .05$).

Figure 2.

Unstandardized coefficients for the relationship between maternal attachment security at age 10 and dispositional optimism at age 18 as mediated by locus of control at age 14 ($N = 218$). 95% confidence intervals are reported in brackets. Mediation CIs: [.07, 1.27].

* $p < .05$.

Figure 3.

The left side of the panel depicts the unstandardized coefficients for the relationship between age 14 locus of control and environmental mastery at age 23 as mediated by dispositional optimism at age 18 ($N = 218$). The right side of the panel depicts the unstandardized coefficients for the relationship between age 14 locus of control and purpose in life at age 23 as mediated by dispositional optimism at age 18. 95% confidence intervals are reported in brackets. Mediation CIs: Purpose in Life $[-.32, -.02]$; Environmental Mastery $[-.38, -.02]$. * $p < .05$.

Table 1

Descriptive Statistics for Key Study Variables

	Means (<i>SDs</i>)	Range	<i>N</i>
Socioeconomic Status	54.59 (9.92)	25-66	200
Attachment Security Age 10	3.34 (.49)	1-4	218
Attachment Security Age 14	3.18 (.46)	2-4	152
Locus of Control Age 14	6.66 (.42)	0-19	154
Dispositional Optimism Age 18	14.82 (4.47)	0-24	134
Dispositional Optimism Age 23	15.35 (4.27)	4-24	155
Environmental Mastery Age 23	38.04 (7.40)	14-53	153
Purpose in Life Age 23	41.48 (6.46)	24-54	152

Note. Attachment security at ages 10 and 14 is computed as means, and all other variables are prorated sums.

Table 2

Correlations Between Key Model Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Attachment Security	---	.38*	.20*	.19*	.14	.05	.08	-.03	-.01
2. Age 10									
3. Attachment Security		---	.52*	.26*	.08	.07	.17	.10	-.12
4. Age 14									
5. Locus of Control			---	.30*	.23*	.14	.16	.17*	-.23*
6. Age 14									
7. Dispositional Optimism				---	.59*	.37*	.38*	.07	.07
Age 18									
8. Dispositional Optimism					---	.56*	.41*	.09	.07
Age 23									
9. Environmental Mastery						---	.63*	.10	.05
Age 23									
10. Purpose in Life							---	.18*	-.12
Age 23									
11. Socioeconomic Status								---	.07
12. Gender									---

Note. $N = 218$; $n = 98$ for females; $n = 120$ for males.

* $p < .05$.