Identifying the Developmental Origins and Predictors of Variability in Dispositional Optimism

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ABSTRACT

Identifying the Developmental Origins and Predictors of Variability in Dispositional Optimism Jesse Renaud, Ph.D.

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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). Although numerous studies have demonstrated that dispositional optimism predicts greater well-being across the lifespan (Mens, Scheier, & Carver, 2016; Scheier, & Carver, 2018), a paucity of research has examined whether individuals' levels of optimism fluctuate over time or the psychological factors that contribute to its development. Therefore, the aims of the research presented herein are to identify the developmental antecedents of dispositional optimism, whether levels of dispositional optimism change over time, and predictors of those fluctuations during periods of transition. This dissertation was conducted to address these gaps in the empirical literature on dispositional optimism. To examine these research questions, the results from two longitudinal prospective studies will be presented. *Study 1* examines the role of early environmental experiences in childhood for predicting the development of optimism during the transition to early adulthood. The results from Study 1 show that greater maternal attachment security in childhood promoted greater optimism during the transition from late adolescence into early adulthood via higher levels of perceived internal locus of control. In addition, greater optimism contributed to higher levels of psychological well-being. *Study 2* explores the extent to which dispositional optimism and its two subscales (optimism and pessimism) fluctuate over time in early adulthood, and whether individual differences in coping may predict those fluctuations. The results from *Study 2* document that dispositional optimism and pessimism continue to undergo both short and long-term fluctuations during early adulthood. Moreover, these changes in optimism and pessimism are promoted by individual differences in the engagement in adaptive and maladaptive coping with contextual demands. Together, the findings from this research have important implications for enhancing our understanding of the precursors to the development of, and predictors of fluctuations in, dispositional optimism and psychological well-being. This knowledge provides a novel contribution to the specific literature on dispositional optimism, as well as the broader literature on predictors of personality development. Furthermore, this research demonstrates the

importance of examining the development of personality traits, and optimism in particular, using a lifespan perspective.

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As a student of a program that espouses the scientist-practitioner model, I have had the opportunity to observe that what I do in the laboratory mirrors my work with patients and vice versa. The depth of my thinking about the development of personality and the role of coping for promoting optimism and well-being would not have been possible without my clinical training and the benefit of the experience and wisdom of my inspiring clinical teachers and mentors.

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CONTRIBUTIONS OF AUTHORS

This dissertation is composed of two separate research studies culminating from data collected from two longitudinal studies. For Study 1, in consultation with Dr. Erin Barker I conceptualized study hypotheses, conducted pertinent literature reviews, conducted all statistical analyses, and wrote the manuscript. Feedback on drafts of the manuscript were provided by Drs. Erin Barker, Marc Bornstein, Charlene Hendricks, and Diane Putnick. The data for Study 1 were collected by a research team, led by Dr. Bornstein, at the National Institute of Health. Study 1 has been published in *the International Journal of Behavioural Development.*

For Study 2, I assisted with study design, participant recruitment, and data collection for all study waves. I conducted pertinent literature reviews. I conceptualized study research questions and hypotheses. I independently conducted all statistical analyses. I wrote the manuscript, which was edited by Dr. Barker. Study 2 was funded by a SSHRC Insight Development Grant awarded to Dr. Erin Barker.

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CHAPTER 1:
GENERAL INTRODUCTION

Dispositional optimism is a personality dimension that reflects individual differences in generalized outcome expectancies about the future (Carver & Scheier, 1985). Unlike their pessimistic counterparts, optimists tend to approach the world expecting positive outcomes to occur across different life domains. Although numerous studies have demonstrated that dispositional optimism predicts greater emotional and physical well-being across the lifespan (Mens, Scheier, & Carver, 2016; Scheier, & Carver, 2018), a paucity of research has examined what contributes to its development. Moreover, given that dispositional optimism is a personality dimension, and is assumed to remain relatively stable over the lifespan, there are even fewer studies examining whether individuals' levels of optimism fluctuate over time. Therefore, the aims of the research presented herein are to identify the developmental antecedents of dispositional optimism, whether levels of dispositional optimism change over time, and what predicts those fluctuations during periods of transition. Understanding the precursors to the development of, and fluctuations in, dispositional optimism has important implications for determining which pathways can contribute to greater well-being throughout the lifespan.

Theoretical Underpinnings of Optimism and Pessimism

Previous research has treated optimism as a continuous, bipolar construct, ranging from high levels of pessimism to high levels of optimism (Carver & Scheier, 1985). Most research examines dispositional optimism by administering the "Life Orientation Test-Revised" (LOT-R), which is a self-report measure that assesses a person's generalized optimistic and pessimistic outcome expectancies (Scheier, Carver, & Bridges, 1994). Using this approach, researchers can examine overall optimism levels to predict well-being outcomes.

Dispositional optimism assesses individuals' generalized outcome expectancies across domains, and thus differs from specific expectancies. In addition, dispositional optimism does not purport to measure the means by which outcomes are achieved. The approach of dispositional optimism contrasts with other, related concepts that address outcome expectancies of specific, situational transactions and behaviours, or that infer optimism through an individual's interpretation of negative life events (Carver & Scheier, 2014; Scheier, Carver, & Bridges, 1994). Another similar theoretical approach to expectancies, "explanatory style", attempts to measure future expectancies based on explanations of past events (Peterson &

Seligman, 1984). According this latter approach, optimists explain negative outcomes in ways that suggest future outcomes will be more positive. By contrast, pessimists explain the same bad prior outcomes in ways that suggest that future outcomes will be negative. Research has shown that explanatory style and dispositional optimism are distinct constructs and yield correlations ranging from .10 - .25 (Dember, 2001; Peterson & Vaidya, 2001; Tomakowsky et al., 2001). Thus, dispositional optimism can be viewed as a unique construct relating specifically to generalized expectancies about future outcomes.

Optimism and Well-being Across the Lifespan

Decades of research have shown that dispositional optimism promotes both subjective and physical well-being beginning early in the lifespan. Because optimists generally expect positive outcomes, even when they encounter obstacles, optimists experience more positive emotions compared to their pessimistic counterparts (Carver & Scheier, 1998; Scheier & Carver, 1992). Indeed, numerous studies have documented the link between optimism and emotional well-being or indicators that promote emotional well-being (Carver, Scheier, & Segerstrom, 2010). In childhood and adolescence, greater optimism is associated with greater emotional well-being, higher academic motivation, and achievement (Ey et al., 2004; Shulman, 1995; Yates, 2002), as well as fewer social and behaviour problems (Ey et al., 2004; Oberle, Schonert-Reichi, & Zumbo, 2011). Greater optimism in adolescence is also associated with greater subsequent life satisfaction in middle age (Daukantaite & Zukauskiene, 2011). In young adulthood, optimism predicts better adjustment to the first semester of college and less distress at the end of the semester (Aspinwall & Taylor, 1992). Further, optimists are more likely to complete college than their pessimistic counterparts (Nes et al., 2009). Finally, meta-analytic findings have also shown that optimism is associated with better subjective and objective indicators of physical health and mortality from all causes, with effect sizes ranging from small to moderate (for review, see Rasmussen, Scheier, & Greenhouse, 2009).

The construct of dispositional optimism does not account for how these aforementioned positive outcomes are achieved. However, the main mechanisms through which optimism facilitates subjective well-being and physical health relate to individual differences in coping with goal-related stressors (Carver et al., 2010). This proposition is rooted in expectancy-value models of motivation. Expectancy refers to the confidence that a goal can be attained and value refers to the importance of a goal (Carver & Scheier, 1998). Given that optimists generally

expect positive outcomes to occur in the future, they will continue to invest effort and commitment even if progress toward a goal is threatened or slowed. By contrast, pessimists typically experience considerable doubt about desired future outcomes, and thus are more likely to withdraw effort and commitment when they confront problems in the pursuit of important goals (Scheier & Carver, 1992). These individual differences in how people perceive challenge have important implications for how individuals cope with stressors (Scheier & Carver, 1992).

Meta-analytic research supports this assumption by documenting strong associations between dispositional optimism and adaptive coping (Nes & Segerstrom, 2006). Specifically, this research shows that greater optimism is associated with using more problem-focused or approach-oriented coping (e.g., planning or problem solving), which directly alter cognitions and behaviours aimed at overcoming stressors. Pessimists, by contrast, tend to manage stressors by engaging in avoidant coping (e.g., denial or behavioral disengagement). Furthermore, as compared to pessimists, optimists also engage more frequently in effective emotion-focused coping (e.g., acceptance or positive reframing) and develop more extensive and supportive social networks in stressful life circumstances (Nes & Segerstrom). Of importance, the differences in coping tactics and social networks observed between optimists and pessimists have been linked to individual differences in subjective well-being and physical health. Thus, adaptive self-regulation processes (i.e., coping) represent important mechanisms that mediate associations between dispositional optimism and an individual's quality of life. Overall, the empirical evidence suggests that optimism contributes to more persistence, effective and successful goal pursuit. The use of adaptive coping strategies could result in achieving important developmental outcomes, which in turn could make people more optimistic over time (Renaud, Wrosch, & Scheier, 2018).

The Development of Optimism

Despite the clear advantages of being more optimistic, the developmental origins of dispositional optimism remain relatively unknown. Although multiple pathways have been hypothesized to account for the emergence of individual differences in dispositional optimism, both genetic and environmental contributions are likely to be implicated in optimism development (Gilham & Reivich, 2004).

Results from twin studies have shown that between 25-30% of the variability in optimism can be explained by genetic factors (Mosing, Zietsch, Shekar, Wright, & Martin, 2009; Mosing,

Pederson, Martin, & Wright, 2010; Plomin, Scheier, Bergeman, Pedersen, Nesselroade, & McClearn, 1992). A couple of candidate genes have been implicated in optimism development, including an oxytocin receptor gene (Saphire-Bernstein, Baldwin, Kim, Sherman, & Taylor, 2011) and a mineralcorticoid receptor gene (Klok et al., 2011). However, subsequent research has failed to replicate these findings (Cornelis et al., 2012). The difficulty in identifying specific candidate genes is not unique to the study of optimism (Zuk, Hechter, Sunyaev, & Lander, 2011; Kaprio, 2012) and the overall evidence points to optimism being partially inherited.

Given that heritability does not account for the entirety of individual differences in optimism, environmental processes are likely to play a role. Early developmental periods, such as childhood, are a likely context in which the foundation of inter-individual differences in optimism may emerge (Renaud, Wrosch, & Scheier, 2018). In early childhood, optimism may be transmitted through parental modelling or more directly through parental instruction about adaptive coping strategies which foster successes and result in expectancies for subsequent successes (Carver & Scheier, 2014). More generally, greater optimism may be observed later in life if early experiences foster the development of psychological assets that enhance an individuals' mastery of developmental tasks and overcoming challenges (Renaud et al., 2018).

Although these possibilities have not been examined empirically, the possibility that parents contribute to inter-individual differences in their child's optimism is consistent with broader theories of personality development. Parental influence on personality development may occur in a variety of ways. While some researchers have suggested that the parental influence on offspring personality is more directly transmitted (e.g., Thompson, 2000), others have argued that parents are part of the broader environment in which individuals live, and thus provide the context in which personality differences are expressed (McCrae et al., 2000).

Empirically, researchers have shown that several early environmental factors may be associated with optimism in young adulthood. In one longitudinal study, the authors found that higher childhood socio-economic status was related to greater optimism 21 years later (Heinonen et al., 2006). The remaining research has focused on the contribution of parent-child relationships in later individual differences in optimism. Specifically, 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).

Attachment security. Based on the aforementioned associations between parent-child relationships and optimism in adulthood, the quality of parent-child relationships appears to be one especially promising context for understanding how optimism develops. One way to examine the quality of parent-child relationships is by measuring attachment security. According to Bowlby (Bowlby, 1969; 1973), attachment security develops from interactions with caregivers who are available, sensitive and responsive to a child's needs. 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, Blehar, Waters, & Wall, 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.

Initial assessment of attachment relied on the Strange-Situation paradigm, an observational method of children's responses to separations and reunions with caregivers (Ainsworth et al., 1978). The Strange-Situation paradigm resulted in attachment dimensions which were validated in samples of children 12-18 months. Other approaches to measuring attachment security included the Q-set developed for infants and pre-school aged children and

self-report measures developed for older adolescents and adults (Greenberg, Siegel, & Leitch, 1983; Hazan & Shaver, 1987). However, none of the above methodologies were designed for assessment of attachment in the later middle-childhood and early adolescent years. To assess attachment security during this period of the lifespan, the Security Scale was developed (Kerns, Klepac, & Cole, 1996). The Security Scale emphasized the secure base phenomenon and assessed perceptions of attachment security in early adolescence. Attachment security was therefore assessed based on an individuals' perceptions of maternal responsiveness, availability and open communication. Using this approach, attachment security is assessed as a continuous construct with greater sensitivity to variations in security, rather than relying on specific dimensions of insecure attachment patterns.

Despite researchers having posited that attachment security is a promising context to examine the developmental antecedents of dispositional optimism (Heinonen et al., 2005; Hjelle et al., 1996; Korkeila et al., 2004), there is a paucity of empirical longitudinal research examining the associations between parent-child relationships and optimism development (Carver & Scheier, 2014). Much of the research conducted has relied on cross-sectional data and retrospective designs. Therefore, 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 to illuminate how early attachment experiences might exert long term effects on optimism.

Internal locus of control. The construct of internal locus of control reflects the extent to which individuals perceive that events are contingent on one's own behaviour, or on relatively stable internal characteristics (Rotter, 1966). The development of a generalized locus of control takes root early on (Carton & Nowicki, 1994; Carton & Nowicki, 1996; Rotter, 1966) and can be reliably measured as early as preschool age (Skinner, 1986). According to Rotter (1966), differences in locus of control perceptions arise as children develop the capacity to observe and recognize causal associations between events. In this regard, attachment security may be especially influential in the development of an internal locus of control.

The empirical literature has demonstrated support for the association between parent-child relationship quality and the development of generalized locus of control perceptions. In one review of the literature, Carton and Nowicki (1994) found that greater internal locus of control

was associated with parental consistency in reinforcement, with parents fostering opportunities for children to become independent, and with parents who were warmer, more supportive, accepting, and nurturing. By contrast, external locus of control perceptions were associated with parents who were more controlling and authoritarian. A subsequent examination of the contributions to locus of control perceptions by Carton and Nowicki (1996) revealed that maternal control and maternal warmth were uniquely associated with greater internal locus of control in children, independent of experiences of life stress. Further, evidence from the *Minnesota Longitudinal Study* also showed that insecurely attached children were more reliant on teachers and more dependent than their securely attached counterparts (Sroufe, Egeland, Carlson, & Collings, 2005). More recently, a longitudinal cohort study showed that parenting behaviors, including greater supervision in the home and refraining from the use of harsh discipline, were found to predict the development of an internal locus of control in children (Ahlin & Lobo Antunes, 2015). Together, these findings demonstrate that the quality of parent-child relationships is an important antecedent of the development of generalized locus of control perceptions.

While the quality of parent-child relationships contribute to the development of an internal locus of control, internal locus of control may also in turn contribute to the development of dispositional optimism. According to Rotter (1966), individuals are less likely to have positive outcome expectancies for future success when they perceive events as occurring as a consequence of causes outside of their control. This association may occur because individuals engage in adaptive coping which increases the likelihood of future successes.

In support of this argument, researchers have documented that when individuals encounter stressful situations, they are more likely to engage in coping efforts that facilitate overcoming obstacles (e.g., problem-focused coping) if they perceive those events as within their control (Nes & Segerstrom, 2006; Scheier, Weintraub, & Carver, 1986). These findings are further supported by developmental theories of perceived control that posit that when individuals perceive themselves as having control, they are more likely to engage in goal striving, and will consequently have more opportunities to experience success (Lachman & Firth, 2004; Lang & Heckhausen, 2001). This line of research has shown in numerous studies that high perceptions of control encourage engagement in control striving and the implementation of specific strategies that facilitate the attainment of goals (Lachman, 2006; Lachman & Firth, 2004; Lang &

Heckhausen, 2001). Greater perceptions of control are also associated with adaptive management of stress and overcoming challenges across the lifespan (Lachman & Firth, 2004). In addition, recent results from an intervention study aiming to enhance goal striving in university students showed that the intervention enhanced goal striving in at-risk students with higher perceived academic control (Hamm, Perry, Chipperfield, Heckhausen, & Parker, 2016). In sum, perceptions of control appear to be related to greater optimism in adulthood and this association appears to be attributable to the use of adaptive coping strategies to increase experiences of success.

Overall, optimism appears to have both genetic and environment underpinnings. The available research 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 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).

Although there is evidence supporting the possibility that maternal attachment security initiates a trajectory of positive development toward greater internal locus of control and greater optimism, there is no research examining this possibility. Moreover, much of the research on the role of maternal attachment security and internal locus of control on promoting optimism has relied on cross-sectional data and retrospective designs. Additional longitudinal research is therefore necessary to clarify the inter-relations using prospective designs.

Stability and Variability in Optimism

Once optimism develops, the question remains whether or not it can change over time, and under what circumstances these changes tend to occur. Personality traits are, by definition, relatively stable over time (Roberts & DelVecchio, 2000). However, consistency does not preclude the possibility that fluctuations, or even lasting changes, can be observed over time (Roberts et al., 2006). To date, there is a paucity of research on within-person fluctuations in

optimism. However, studies examining changes in other well-studied personality traits (i.e., Big Five) supports the possibility that individual differences in optimism levels can fluctuate.

Measuring personality changes. Personality fluctuations can be examined by measuring population level or individual level changes. A majority of longitudinal studies conducted to date on personality consistency have examined population level changes using one of either two approaches: Rank-order consistency and mean-level changes. Rank-order consistency refers to the extent to which an individual's relative placement within a population changes over time. Mean-level change refers to average trait change at the population level over time. They are also occasionally referred to as *normative* changes because they tend to occur because of predictable maturational changes or societal changes. Using a meta-analytic approach to examine mean-level changes of personality traits, Roberts, Walton, and Viechtbauer (2006) found that traits tend to change in a positive direction, thereby supporting the maturation hypothesis. Furthermore, they noted that more mean-level change in personality occurs during the twenties than during any other period of the lifespan (Roberts, Walton, & Viechtbauer, 2006). This suggests that young adulthood may be an especially important context in which to examine optimism fluctuations. With respect to rank-order consistency, Roberts and DelVecchio (2000) found that rank-order consistency increases linearly with age from adolescence into young adulthood, and that consistency plateaus between 50-70 years of age. However, even in young adults, other studies have shown that rank-order changes were small (e.g., Roberts, Caspi, & Moffitt, 2001).

Examining population level changes via rank order consistency or mean-level changes over relatively long periods of time or age spans can mask fluctuations that can be occurring on an individual level over shorter periods of time/age (Roberts & Chapman, 2000). Consider that while overall mean levels of a given trait might remain constant over time, there may be subsets of individuals who are increasing, while others are decreasing, resulting in no mean-level changes. There may also be variations in the extent to which individuals change (Roberts & Mroczek, 2008). Thus, to understand growth in individual differences in optimism, it is imperative to examine changes within individuals over relatively short periods of time. Individual differences in this regard refer to gains and losses in absolute levels of an individual's personality trait (Nesselroade, 1991).

While researchers have suggested that individual deviations may be due to measurement error (e.g., Costa et al., 2000), others have argued that measurement error does not account for all

fluctuations in personality traits (Watson, 2004). Studies using growth modelling statistical techniques have largely overcome this criticism (Roberts, Wood, & Caspi, 2008). These studies have shown that there is indeed variability in traits across individuals both in terms of direction and rate of change (e.g., Helson, Jones, & Kwan, 2002; Jones, Livson, & Peskin, 2003; Mroczek & Spiro, 2003; Roberts & Chapman, 2000; Scollon & Diener, 2006; Small, Herzog, Hultsch, & Dixon, 2003). In addition, this line of research has yielded evidence that life experiences are associated with differential patterns of trait development (Roberts & Mroczek, 2008).

Predictors of fluctuations in optimism. Past research on optimism has shown that over periods ranging from a few weeks to three years, optimism is relatively stable with *r*s of .58 - .79 (Atienza, Stephens, & Townsend, 2004; Lucas, Diener, & Suh, 1996; Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994). However, not all studies have found similarly high test re-test reliabilities (r = .35; Segerstrom, 2007). This suggests that, at least under some conditions, optimism is subject to fluctuations. Additional research is necessary to examine the extent to which such fluctuations in optimism occur within individuals over time. In addition, the variables that predict those changes have yet to be identified.

Stress. Experiences of stress may play a role in fluctuations of optimism. The role of stress in predicting fluctuations in optimism is consistent with theoretical arguments that changes in optimism are more likely to occur if individuals can successfully overcome stressful life events via adaptive coping (Renaud et al., 2018). In a study on relationship role stressors, researchers found that increases in traditional "wife role" stress (i.e., household responsibilities, interactions with spouse) predicted decreases in optimism over time (Atienza, Stephens & Townsend, 2004). In another study of end-of life patients with renal disease, belonging social support, the extent to which individuals perceived others' availability for engagement in activities, predicted increases in optimism (Symister & Friend, 2003). Thus, if individuals perceive support in stressful contexts, they may become more optimistic. Although there are only a handful of studies examining the role of stress in optimism changes, it may be that stressful experiences provide an important context for changes in optimism to unfold.

Developmental transitions. The importance of transitional life phases in promoting changes in optimism is consistent with broader theories of lifespan and personality development which have long posited that periods characterized by role transitions might be sensitive periods for changes in dispositional characteristics, likely in part because navigating challenges

associated with transitions may be stressful (e.g., Baltes, 1997; Caspi & Roberts, 2001; Roberts & Mroczek, 2008). Transitional periods of the lifespan are presumed to contribute to fluctuations in personality traits because changes in the context may either call for individuals to behave differently or even actively discourage past behaviours (Caspi & Moffitt, 1993). Transitions may also serve to accentuate and strengthen personality traits for some individuals (Caspi & Roberts, 2001). This possibility is supported by research on personality development showing that during emerging adulthood, a period between adolescence and young adulthood (Arnett, 2000), personality traits appear to be most amenable to change (e.g., Schwaba & Bleidorn, 2016). Malleability in traits during emerging adulthood may be more evident because this period is characterized by multiple and simultaneous demands and role transitions across a variety of domains (Arnett, 2000). The many pathways available for managing these contextual and role transitions provide ample opportunity for corresponding changes in behaviors. These changes in behaviors in response to changing contexts are hypothesized to underly personality changes (e.g., Caspi & Moffatt, 1993). Thus, the extent to which optimism undergoes changes during these periods may depend on how much individuals respond differently to contextual demands. In this regard, adaptive management of these new contexts will determine whether individuals can harness the available opportunities, and become newly successful, or alternatively experience failure despite previous successes.

With respect to developmental transitions and optimism, researchers have found that educational and occupational transitions are associated with less optimism stability (Segerstrom, 2007). In a study of first year law students who were followed over 10 years as they transitioned into and out of law school, Segerstrom (2007) found that stability in optimism was relatively low across 10 years (r = .35). Given that their study followed young adults transitioning in and out of law school, the authors suggested that less stability in optimism may have been observed because participants were experiencing a period of transition. This possibility is consistent with broader theories of personality change that posit that periods characterized by role transition might be a sensitive period for changes in dispositional characteristics (e.g., Caspi & Roberts, 2001; Roberts & Mroczek, 2008). Transitions may provide a context for change in individual differences in personality because in these new contexts there is often a press to behave differently or past behaviours are actively discouraged (Caspi & Moffitt, 1993).

Overall, although the broader personality literature indicates that while personality traits are generally stable over the lifespan, changes in personality traits do occur over time and under some conditions. Although early empirical evidence appears to support the potential roles of stress and developmental transitions in predicting fluctuations in optimism, additional research is necessary to the identify to what extent optimism remains fluctuates within individuals as well as to qualify the conditions under which such fluctuations occur. In particular, the evidence points to young adulthood as a particularly sensitive for these changes.

Current Studies

The overarching aim of the research presented herein is to address the gaps in the empirical literature on dispositional optimism by identifying what predicts its development into young adulthood and to ascertain whether, and under what conditions, optimism levels fluctuate over the time during young adulthood. To examine these research questions, the results from two longitudinal prospective studies will be presented. The first study examines the role of early environmental experiences in childhood for predicting the development of optimism during the transition to early adulthood. The second study explores the extent to which dispositional optimism and its two sub-dimensions (optimism and pessimism) fluctuate over time in early adulthood, and whether individual differences in coping may predict those fluctuations.

Study 1: Early developmental antecedents of dispositional optimism. To identify the early developmental antecedents that contribute to greater optimism during the transition into early adulthood, *Study 1* examines whether maternal attachment security in late childhood contributes to greater dispositional optimism in late adolescence and early adulthood via the development of internal locus of control beliefs. The possibility that greater optimism develops through experiences of having more attachment security and perceptions of internal control has been supported both by theoretical arguments and empirical studies. However, prior research has relied on retrospective designs (Heinonen et al., 2004; Hjelle et al., 1996; Korkeila et al., 2004) and caregiver reports of attachment (Heinonen et al., 2005) which are subject to biases.

To address the aforementioned limitations, we used self-report data and a prospective design to examine the inter-relations between maternal attachment security and internal locus of control for predicting early adulthood levels of optimism. The use of a prospective design in the present study attenuates the possibility that individual differences in optimism might account for retrospective reports of parent-child attachment security or locus of control beliefs.

Data for this study were collected across four waves of a larger 23-year prospective study on child development. Participants included 218 firstborn children recruited from two east coast areas in the United States. Participants were intentionally selected for ethnic homogeneity to avoid confounding differences that exist in parenting across different ethnicities (Bornstein, Jager, & Putnick, 2013).

Hypotheses. Using path analyses, we expected that greater maternal attachment security would predict the development of greater optimism in late adolescence. In addition, we hypothesized that the link between greater attachment security and optimism would be mediated by greater perceived internal locus of control in early adolescence. We posit that greater internal locus of control would provide opportunities for individuals to associate their own efforts with accumulated successes, thereby increasing their positive outcome expectancies for future endeavours. Finally, we expected that greater optimism in adolescence would promote greater psychological well-being into young adulthood.

Study 2: Predictors of fluctuations in dispositional optimism in young adulthood. The aim of the second study is to determine to what extent dispositional optimism fluctuates during early adulthood and whether coping predicts these fluctuations. Despite the empirical evidence that optimism exhibits some variability over time and that personality traits in general are subject to fluctuations, especially during periods of transition, no study to date has examined prospectively the degree to which optimism fluctuates. Furthermore, previous research on the associations between coping and optimism have only tested the possibility that dispositional optimism predicts coping (e.g., Nes & Segerstrom, 2006).

To address these empirical gaps, *Study 2* is the first study to examine whether individual differences in coping can contribute to (shorter- and longer-term) changes in dispositional optimism. We assessed fluctuations in the LOT-R, and in the optimism and pessimism sub-dimensions, in a sample of university students (N = 309) over three waves across one academic year. Using hierarchical linear models, we first tested whether optimism and pessimism levels fluctuates over the academic year. Second, we tested whether the use of different coping strategies at different time points during the year might result in short-term co-occurring fluctuations in optimism and pessimism. Third, we tested whether engaging in different coping strategies at the beginning of the academic year would predict long-term changes in optimism and pessimism.

Hypotheses. We hypothesized that optimism and pessimism would show some fluctuation over the academic year. Second, we expected that engaging in more adaptive coping strategies would be associated with increases in optimism and decreases in pessimism. By contrast, we expected that engaging in maladaptive coping strategies would be associated with decreases in optimism and increases in pessimism. Third, we tested whether the use of different coping strategies at the beginning of the academic year predicted linear changes in optimism over time. We hypothesized that adaptive strategies (e.g., planning) as compared to maladaptive strategies (e.g., substance use) at the beginning of the academic year would promote greater optimism and less pessimism over the year.

Expected Contributions

Together, these two studies are expected to fill in important gaps of the literature on the development and stability of dispositional optimism leading into young adulthood. First, we expect to identify a developmental pathway through adolescence that leads to greater optimism in early adulthood. Second, we expect to ascertain to what extent, and under what conditions, optimism levels are variable during early adulthood. Identifying the predictors of optimism, and of subsequent fluctuations in optimism during young adulthood, has important implications for enhancing well-being of young adults. Specifically, being more optimistic may be especially beneficial at this stage, as individuals navigate multiple and simultaneous psychosocial demands (Arnett, 2000). Successful negotiation of this transitional phase may promote future well-being and reinforced optimism in subsequent stages of the lifespan.

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CHAPTER 2:

Study 1

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

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Abstract

Despite the robust link between dispositional optimism and well-being across the lifespan, the developmental origins of dispositional optimism are unknown. Understanding the pathways that lead to greater optimism during the transition from adolescence into young adulthood may be important given that this stage of the life course involves the navigation of multiple simultaneous psychosocial demands. Maternal attachment security may contribute to greater optimism by promoting perceptions of internal control. Participants were 218 European American children (98 females; 120 males) completed self-report measures across four waves. A path analysis tested the associations between maternal attachment security (ages 10 and 14), locus of control (age 14), dispositional optimism (ages 18 and 23), and psychological well-being (age 23). Tests of indirect effects showed that greater perceptions of internal control at age 14 mediated the association between age 10 maternal attachment security and age 18 dispositional optimism. Age 18 dispositional optimism mediated associations between age 14 internal control and age 23 psychological well-being. Maternal attachment security may promote dispositional optimism through having a greater internal locus of control in adolescence. Given that optimism promotes well-being throughout the lifespan, identifying the pathways through which optimism develops may contribute to understanding how to promote well-being.

Introduction

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 control[1]. 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).

[1] Rotter'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).

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), 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, 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 rs > .37, all ps < .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, χ^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 (β = -.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 (β = .39, p < .001). Having greater attachment security at age 10 predicted greater internal locus of control at age 14 (β = .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 (β = .25, p = .03), but not at age 23 (β = .03, p = .72). There were no direct paths from locus of control to environmental mastery (β = .01, p = .91) or to purpose in life (β = .07, p = .50). There was considerable stability observed in the direct path from dispositional optimism from age 18 to age 23 (β = .58, p < .001). Dispositional optimism at age 18 predicted greater environmental mastery (β = .34, p = .001) and purpose in life (β = .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 mediational 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 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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Table 1

Descriptive Statistics for Key Study Variables

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

Note. *$p \leq .05$.

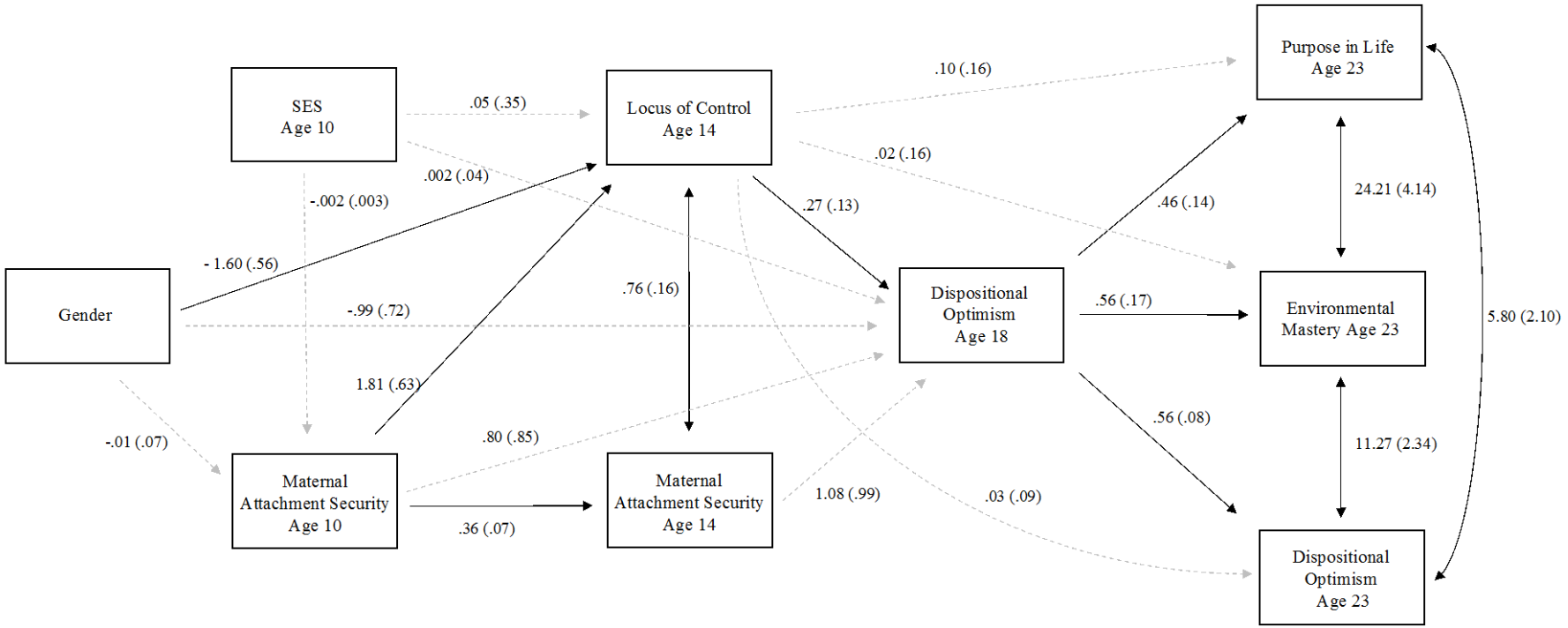

Figure 1. Path analysis examining the associations between covariates, maternal attachment security, locus of control, dispositional optimism, and psychological well-being. Solid lines represent statistically significant paths ($p < .05$). Values represent unstandardized coefficients.

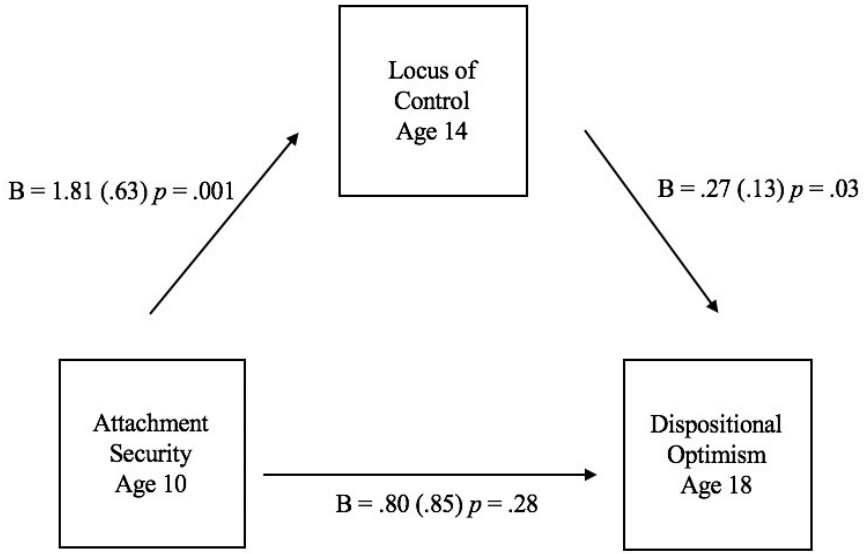

Figure 2. Unstandardized coefficients for the relationship between maternal attachment security at age 10 and dispositional optimism at age 18 as mediated by locus of control at age 14.

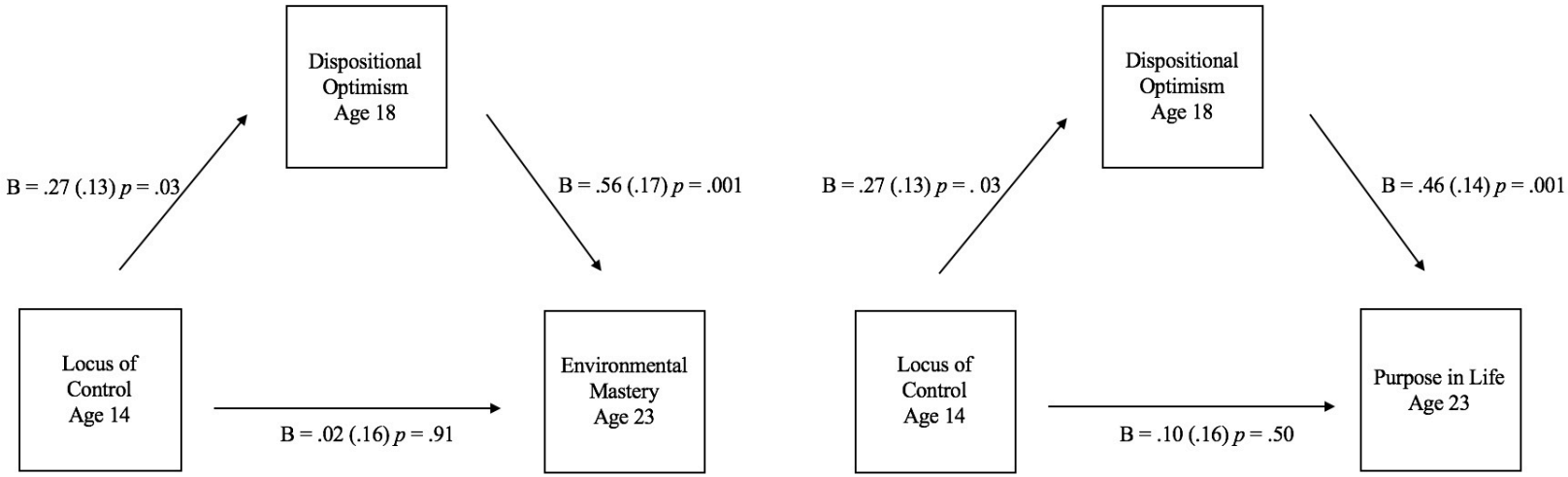

Figure 3. The left side of the panel depicts the standardized coefficients for the relationship between age 14 locus of control and environmental mastery at age 23 as mediated by dispositional optimism at age 18. The right side of the panel depicts the unstandardized coefficients for the relationship between age 14 locus of control and purpose in life at age 23 as mediated by dispositional optimism at age 18

CHAPTER 3: BRIDGE

The findings from Study 1 demonstrate that greater maternal attachment security in childhood promotes greater dispositional optimism during the transition from late adolescence into emerging adulthood via higher levels of perceived internal locus of control. Further, the results suggest that greater perceived internal locus of control in adolescence contributes to higher levels of psychological well-being in young adulthood via greater dispositional optimism. Overall, these results suggest that early experiences with caregivers can set the stage for subsequent positive development into emerging adulthood, including higher levels of dispositional optimism and psychological well-being. However, whether these adaptive processes continue to mature during emerging adulthood, a period characterized by transition and numerous opportunities, is unclear. Moreover, the extent to which any occurring changes in dispositional optimism are short-lived versus more longstanding is unknown.

Therefore, in Study 2, the extent to which dispositional optimism fluctuates across the academic year in a sample of university students is examined. To ascertain whether any occurring fluctuations might unfold differentially for the total LOT-R score versus the LOT-R's subscales of optimism and pessimism, the LOT-R totals, as well as optimism and pessimism subscales are examined separately. To explore potential mechanisms underlying any observed fluctuations in optimism and pessimism, it was first examined whether optimism and pessimism would be associated with co-occurring fluctuations in the use of adaptive (e.g., problem-solving) and maladaptive (e.g., substance use) coping strategies. In addition, whether individual differences in adaptive and maladaptive coping would forecast subsequent directional changes in dispositional optimism across time is examined.

CHAPTER 4:

Study 2

"Individual differences in coping for predicting short- and long-term fluctuations in dispositional optimism and pessimism"

Note: An edited version of this study is under revision for the *Journal of Personality,* March 2020

Abstract

Objective: Although dispositional optimism is presumed to be relatively stable, intra-individual fluctuations may occur in stressful contexts. We examine to what extent short or long-term fluctuations in optimism occur, and whether individual differences in coping predict these fluctuations. Associations are examined for the LOT-R and its optimism and pessimism dimensions separately. ***Method:*** 309 undergraduate students between 18-25 years old (M = 20.90; SD = 1.74) completed an online survey across three waves during the academic year. ***Results:*** Using hierarchical linear models, we found intra-individual fluctuations in the LOT-R and both of its dimensions (optimism and pessimism). Brief changes in coping were associated with concurrent short-term fluctuations in the LOT-R and its two dimensions. Increased engagement in emotional support-seeking at baseline predicted increases in the LOT-R and decreases in pessimism across the academic year. Increased planning at baseline also predicted decreases in pessimism over time. ***Conclusions:*** Individual differences in coping are associated with both short- and long-term fluctuations in optimism and pessimism. These results contribute to our understanding of the mechanisms underlying long-term changes in personality. Furthermore, our findings demonstrate that examining of the LOT-R subscales may yield different results, as changes in optimism and pessimism may occur at different rates.

Introduction

Dispositional optimism is a personality trait that reflects the extent to which individuals expect positive versus negative outcomes to occur in the future (Carver & Scheier, 1985). A fundamental assumption of personality research is that traits remain relatively stable across situations and over time. However, some studies have shown that, at least under some circumstances, optimism levels may be less stable (Segerstrom, 2007). Given that decades of research have shown that optimism is associated with greater physical and psychological well-being across the lifespan (Mens, Scheier, & Carver, 2016; Scheier, & Carver, 2018), whether optimism remains relatively stable or fluctuates has important implications for promoting well-being. To address this question, the present study examines the extent to which optimism fluctuates over time and across different circumstances. In addition, we investigate whether individual differences in coping may account for any variability in optimism that occurs.

Previous research has treated optimism as a continuous, bipolar construct, ranging from higher levels of pessimism to higher levels of optimism (Carver & Scheier, 1985). Unlike their pessimistic counterparts, optimists tend to approach the world expecting positive outcomes to occur across different life domains. Most research examines dispositional optimism by administering the "Life Orientation Test-Revised" (LOT-R), a self-report measure that assesses a person's generalized optimistic and pessimistic outcome expectancies (Scheier, Carver, & Bridges, 1994). Using this approach, researchers can examine overall optimism levels to predict well-being outcomes.

Past research has shown that over periods ranging from a few weeks to three years, LOT-R scores are relatively stable with test-retest correlations of .58 - .79 (Atienza, Stephens, & Townsend, 2004; Lucas, Diener, & Suh, 1996; Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994). However, not all studies have found similarly high stability suggesting that, at least under some conditions, optimism levels may fluctuate. In a study of first year law students who were followed over 10 years as they transitioned into and out of law school, stability in optimism was relatively low (r = .35; Segerstrom, 2007). Given that their study followed young adults into and out of law school, the authors suggested that less stability in optimism may have been observed because participants were experiencing a period of transition.

The importance of life transitions in promoting changes in optimism is consistent with broader theories of lifespan and personality development, which have long posited that periods

characterized by role transitions might be sensitive periods for changes in dispositional characteristics (e.g., Baltes, 1997; Caspi & Roberts, 2001; Roberts & Mroczek, 2008). Transitional periods of the lifespan are presumed to contribute to fluctuations in personality traits because changes in the context may either call for individuals to behave differently or even actively discourage past behaviours (Caspi & Moffitt, 1993). Transitions may also serve to accentuate and strengthen personality traits for some individuals (Caspi & Roberts, 2001). This possibility is supported by research on personality development showing that during emerging adulthood, a period between adolescence and young adulthood (Arnett, 2000), personality traits appear to be most amenable to change (Schwaba & Bleidorn, 2016). Malleability in traits during emerging adulthood may be more evident because this period is characterized by multiple and simultaneous demands and role transitions across a variety of domains (Arnett, 2000). The many pathways available for managing these contextual and role transitions provide ample opportunity for corresponding changes in behaviors, which can contribute to supporting adaptive goal attainment during a key developmental stage. These changes in behaviors in response to changing contexts are hypothesized to underly personality changes (Caspi & Moffatt, 1993).

Although optimism is typically viewed as a unidimensional construct, some studies find evidence that the two dimensions of optimism and pessimism are partially independent and differentially predictive of well-being outcomes (Glaesmer et al., 2012; Kubzansky, Kubzansky, & Maselko, 2004). This relative independence suggests that higher scores on optimism, as compared to lower scores on the pessimism dimension, may be associated with different behaviours and outcomes. In light of this possibility, it has been recommended that researchers examine both overall optimism and the dimensions of optimism and pessimism separately in an effort to identify the conditions under which one or two scales might be more relevant to outcomes (Carver & Scheier, 2014). Doing so during this particular developmental transition may be especially important given both the relative likelihood of change during this time but also its likely importance for successfully launching into adult roles.

The extent to which optimism and pessimism undergo short- or long-term changes during this transition may depend on how individuals respond to contextual demands. In this regard, adaptive management of these new contexts will determine whether individuals can harness the available opportunities, and become newly successful, or alternatively experience failure despite previous successes. An implication of the previous argument is that individual differences in

coping with stressors may play an important role in promoting individuals' success or failure, which, for better or worse, could alter their outcome expectancies.

Indeed, there is a vast literature on the associations between coping and optimism, which generally assumes that optimism promotes adaptive coping. This research has shown that optimists are more likely to engage in adaptive coping compared to their pessimistic counterparts (Nes & Segerstrom, 2006). Specifically, greater optimism is associated with using more problem-focused or approach-oriented coping (e.g., planning or problem solving) when individuals are able to directly address problems. When it is impossible to overcome stressors through approach-oriented coping, optimists are more likely to employ more acceptance coping strategies aimed at regulating emotions (e.g., emotional support seeking, positive reappraisal). As compared to pessimists, optimists also develop more extensive and supportive social networks in stressful life circumstances (Brissette, Scheier, & Carver, 2002). By contrast, pessimists tend to manage stressors by engaging in maladaptive coping associated with avoidance (e.g., denial or behavioral disengagement) or preoccupation with their problems which increases distress (Corace & Endler, 2003; Johnson & Endlers, 2002; Nes & Segerstrom, 2006).

In contrast to these other approaches, we also conceptualize the directional association between optimism and coping in the opposite direction. Specifically, we suggest that whether individuals manage periods of transition using adaptive coping strategies, as compared to maladaptive coping strategies, may contribute to experiences of success, which, in turn, may promote greater optimism or decreased pessimism for subsequent outcomes. From this perspective, the extent to which changes in optimism and pessimism occur may depend in part on timing and on whether the use of adaptive or maladaptive coping results in success or failure (Renaud, Wrosch, & Scheier, 2018). If individuals adaptively manage stressful contexts, and experience successes, they may be more likely to expect future successes. Thus, under such circumstances, optimism levels may rise. Conversely, if individuals fail to manage important problems, they may experience failure and have increases in pessimism. This process may be especially pronounced if it occurs repeatedly, which over time, may lead to more enduring changes in optimism and pessimism.

In addition to long-term changes in optimism and pessimism, short-term fluctuations may also be observed. Short-term fluctuations may occur because individuals use of coping strategies may change over time, with some individuals alternating between adaptive (e.g., problem-

solving) and maladaptive (e.g., substance use) strategies across situations. In this scenario, we would not expect linear changes in optimism to occur. Instead, changes in optimism would be relatively short-lived and fluctuate in correspondence with coping. More specifically, temporary increases in optimism, or decreases in pessimism, should be observed only in circumstances that involve the use of adaptive coping. By contrast, temporary increases in pessimism, or decreases in optimism, may only be observed when individuals engage in maladaptive coping.

Present Study

The extent to which optimism and pessimism change during periods of stress or transition is unclear. Furthermore, it is also unknown whether individual differences in coping can account for any observed fluctuations, or whether these fluctuations are short-term or more enduring. To examine whether coping contributes to fluctuations in optimism and pessimism, we first examined whether optimism and pessimism would be associated with co-occurring fluctuations in the use of adaptive and maladaptive coping strategies. In addition, we investigated whether individual differences in coping would forecast subsequent directional changes in optimism and pessimism across time.

To this end, we assessed fluctuations in the LOT-R, and in the optimism and pessimism dimensions, in a sample of university students over three waves during the academic year. Given that past research has shown that there is considerable variability in well-being across the academic year (Barker, Howard, Villemaire-Krajden, Galambos, 2018), we first tested whether the use of coping strategies at different time points during the year might result in short-term co-occurring fluctuations in optimism and pessimism. We hypothesized that engaging in more adaptive coping strategies would be associated with increases in optimism and decreases in pessimism. By contrast, we expected that engaging in maladaptive coping strategies would be associated with decreases in optimism and increases in pessimism. Second, we tested whether the use of different coping strategies at the beginning of the academic year predicted linear changes in optimism over time. We hypothesized that adaptive strategies (e.g., planning) as compared to maladaptive strategies (e.g., substance use) at the beginning of the academic year would promote greater optimism and less pessimism over the year.

Method

Participants

The sample for the present study consisted of 324 undergraduate students recruited from an urban Canadian university. Participants were included in the present study if they completed the outcome measure assessing dispositional optimism at least once across the three waves of data collection (N = 309). Of the 309 participants who were included in the analytic sample, 56% participated in three waves, 24.9% participated in two waves, and 19.4% participated in one wave. Compared to participants who were included in the study, excluded participants did not differ in terms of gender (χ^2 (2) = .58, p = .75), age (t = -.51, p = .61), year of study (t = -.87, p = .36), or subjective socio-economic status (t = .08, p = .94). To assess missing data, Little's MCAR test was conducted, revealing that the data were missing completely at random, χ^2 (2853) = 2740, p = .934.

Participants who were included in the analytic sample were between 18 and 25 years old (M_{age} = 20.90; SD_{age} = 1.74). The majority of participants identified as female (78.3%), white (73.5%), and were born in Canada (73.8%). Approximately 90% of students were registered as full-time students at the start of the academic year.

Measures

Sociodemographic variables. Participants completed a brief self-report demographic questionnaire, which included questions about age, gender, education, and family background characteristics. To assess subjective socioeconomic status, participants were asked to indicate where they ranked as compared to others on a 11-point scale. Participants were instructed to consider that the top of the scale represented those who were best off, have the most money, education and best jobs, whereas the bottom represented those who were the worst off, with the least money, education, and worst jobs or no job where higher scores indicated that participants were better off and lower scores indicating they were worse off than others (Adler, Epel, Castellazzo, & Ickovics, 2000).

Optimism and pessimism. The Life Orientation Test-Revised (LOT-R; Carver, Scheier & Bridges, 1994) assessed optimistic and pessimistic generalized outcome expectancies. The LOT-R comprises 10 items, six of which yield a LOT-R score and four filler items not used in scoring. For the present study, the two dimensions assessing optimism and pessimism separately were computed by obtaining the means of the three items formulated to correspond to either optimistic (e.g., *I am always optimistic about my future*) and pessimistic (e.g., *If something can go wrong for me, it will*) outcomes expectancies. To obtain a LOT-R score assessing optimism as bipolar

construct, the three negatively formulated items were reverse coded and a sum of the six items was computed. Participants were asked to indicate the extent of their agreement with each of the items on a 4-point Likert Type scale (0 = *strongly disagree* to 4 = *strongly agree*). Reliability analyses of the six items comprising the LOT-R score across the 3 waves ranged from $\alpha = .79$ to $\alpha = .86$, indicating high internal consistency. For the 3-item optimism and pessimism dimensions, internal consistency across the 3 waves ranged from $\alpha = .68$ to $\alpha = .77$ and $\alpha = .79$ to $\alpha = .84$, respectively.

Coping. The Brief COPE (Carver, 1997) was used to assess the extent to which individuals used different coping strategies in response to stressful situations over the previous two weeks. Participants were asked to indicate the extent of their agreement with each of the 26 items on a 4-point Likert Type scale (1 = *I haven't been doing this at all* to 4 = *I've been doing this a lot*). Fourteen dimensions consisting of two items each were computed: Self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humour, acceptance, religion, and self-blame. To compute coping subscales, we computed a mean reflecting the average of the two coping items for each subscale.

Procedure

Participants were recruited by graduate and undergraduate volunteers at back-to-school social events held on campus grounds and by flyers posted around campus in September during the first two weeks of the academic year. Interested participants were emailed a link to an online survey as part of a larger longitudinal study on student well-being in emerging adulthood. Participants who completed the initial survey, and who indicated that they would be interested in participating in additional waves of data collection, were subsequently emailed survey link invitations at subsequent waves. Online surveys were completed in September, December, and March. In exchange for the participation in the study, participants were compensated with a $10-$20 gift card of their choice to one of three popular retailers. Online informed consent was obtained at each wave of data collection. This study was approved by the university ethics board.

Plan of Analyses

To examine the associations between covariates, coping and optimism, we obtained descriptive statistics (Table 1) and correlations using SPSS 25 (Table 2). To test the study hypotheses, hierarchical linear models were estimated using HLM version 7 (Raudenbush, Bryk,

Cheong, Congdon, & Du Toit, 2010). HLM uses restricted maximum likelihood estimation and robust standard errors to estimate the effects of the models. Separate models were tested for the LOT-R and for the two dimensions of optimism and pessimism.

Variability in optimism. To assess whether there are fluctuations in dispositional optimism and pessimism, we first tested separately the unconditional model for the LOT-R and the optimism and pessimism dimensions. Intra-class correlations (ICCs) were examined to ascertain the amount of variance accounted for by between and within-person fluctuations in the LOT-R and its two dimensions.

Short-term fluctuations in optimism. To assess whether changes in dispositional optimism and pessimism occur as function of non-linear changes in coping across the academic year, we conducted separate models for each coping subscale using a time-varying covariate approach, which allows for disentangling of within and between-person effects (Enders & Tofighi, 2007; Howard, 2015; Hoffman & Stawski, 2009). In each analysis, the Level-1 within-person model included an intercept, the person-mean centered coping subscale, and a residual term. At each time point, participants' scores of each of the coping subscales were person-mean centered (i.e., for each participant, the mean of all coping subscale scores across time were subtracted from each single coping score) to allow for the evaluation of average optimism and pessimism across as the intercept estimates. Therefore, each participants' person-mean centered score for a given coping subscale represented the extent to which that person used more or less of that coping strategy at that time point, compared to their usual use of that particular coping strategy. The Level-2 between-person model included an intercept, each participant's mean of the respective coping subscale (i.e. average use of that coping strategy across waves). For each model, we also included the between-person effects of gender and subjective SES, which were standardized prior to the analyses. These analyses were repeated separately for the optimism and pessimism dimensions

Long-term changes in optimism. These analyses were conducted in two steps. First**,** to examine the hypotheses of linear changes in optimism and pessimism, we conducted three separate growth curve models. In the Level-1 models, we estimated variability in the LOT-R and the optimism and pessimism dimensions in separate models by an intercept, person-centered scores of time in study, and a residual term. In these models, the intercepts represented average levels of optimism across the sample, and the time slopes represented the amount of change in

optimism over the academic year. In the next step, we included Level 2 between-person effects of gender and subjective SES, and baseline levels of coping to examine whether coping moderated the Level 1 effects of time on changes in optimism. These analyses were repeated separately for the optimism and pessimism dimensions. To follow up statistically significant cross-level interactions, the simple slopes were tested using the quartiles of the coping subscale distribution as reference points for participants scoring high versus low on coping.

Results

The optimism and pessimism dimensions of the LOT-R were negatively correlated at wave 1 (r = -.54; p < .00), wave 2 (r = -.42; p < .00), and wave 3 (r = -.64; p < .00). The results of the correlational analyses of the LOT-R and the optimism and pessimism dimensions with the demographic variables (gender, subjective SES) and coping subscales at baseline are reported in Table 2. In general, the results show that more adaptive coping strategies (i.e., active coping, positive reframing) were positively associated with greater optimism and lower pessimism across the academic year. Similarly, less adaptive coping strategies at the beginning of the academic year were positively associated with greater pessimism and lower optimism across the academic year (i.e., denial, self-blame, behavioral disengagement). The results also show that while some coping strategies (planning, use of instrumental and emotional support-seeking) were positively correlated with LOT-R scores, they were only correlated with optimism in wave 3, but they were correlated with pessimism across all waves. These results suggest that examining the associations between coping may yield different findings when the dimensions of the LOT-R are examined separately. In addition, participants who were from higher SES backgrounds were more optimistic than their low SES counterparts across the academic year.

Variability in Optimism

The first analysis was conducted to test the unconditional HLM model to identify variance accounted for by between- and within-person variability. For the LOT-R, the ICC was .75, indicating that within person variability accounted for 25%. The ICCs for the optimism (ICC = .67) and pessimism (ICC = .70) dimensions indicated that within person variability accounts for approximately 33% and 30% for of the variability in optimism and pessimism, respectively. These results show that although changes in optimism are mostly accounted for by between person differences, there is also a substantial amount of variance related to intra-individual fluctuations.

Short-Term Fluctuations in Optimism

The results examining short-term fluctuations in the LOT-R and its dimensions showed that gender was not associated with fluctuations on the LOT-R (coefficient = -.01, SE = .24, p = .98), or on either the optimism (coefficient = -.08, SE = .04, p = .06), or pessimism (coefficient = -.07, SE = .05, p = .15) dimensions of the LOT-R. Individuals from higher SES backgrounds had higher scores on the LOT-R (coefficient = .78, SE = .23, $p < .001$) and optimism dimension (coefficient = .12, SE = .04, p = .01), and lower scores on the pessimism dimension as compared to their lower SES counterparts (coefficient = -.15, SE = .05, $p < .001$). The results examining how within-person changes in coping are associated with within-person fluctuations in optimism are summarized in Table 3. Individuals' LOT-R scores were also higher during waves when they increased their use of positive reframing coping. However, LOT-R scores decreased when individuals used more religion, denial, substance use, behavioral disengagement, and self-blame. When examined separately, individuals had higher levels of optimism when they engaged in more positive reframing. However, their optimism levels were lower when they used more denial, behavioral disengagement, and self-blame. Pessimism was higher when individuals used more religion, denial, substance use, and behavioral disengagement.

Long-Term Changes in Optimism

To assess what accounts for the remaining within-person variance in optimism, subsequent models tested whether there was directional change over time. Unconditional models showed that neither the LOT-R, nor the two dimensions of the LOT-R, showed average patterns of linear change across the three waves. However, there was considerable variability for the LOT-R around the average Level-1 intercepts (χ^2 = 1054.05, $p < .001$) and slopes (χ^2 = 259.17, p = .007). Similarly, there was variability around the average Level-1 intercepts (χ^2 = 819.45, $p <$ .001) and slopes (χ^2 = 240.10, p = .052) for the pessimism dimension. For the optimism dimension, there was variability in the Level-1 intercepts (χ^2 = 711.18, $p < .001$), but not the slopes (χ^2 = 215.75, p = .306).

To explain the observed variability in longitudinal changes of levels of optimism across the three waves, we included Level-2 baseline coping, gender, and subjective SES. Gender and SES did not predict linear changes in the LOT-R or its two dimensions. A summary of the separate cross-level interaction effects between each baseline coping scale and time are reported in the Table 4. We found that baseline emotional support seeking predicted increases in the LOT-

R over time. In addition, baseline emotional support seeking predicted decreases in pessimism over time, but not optimism. Baseline planning also predicted decreases in pessimism over time. However, planning was not statistically significantly associated with changes in the LOT-R or the optimism dimension. There were no statistically significant associations for gender or subjective SES.

The statistically significant cross-level interactions were plotted in Figures 1 and 2 using the averaged upper and lower quartiles of the coping variables as reference points. Figure 1 shows the trajectories of the LOT-R (left panel) and pessimism (right panel) separately for participants who used less versus more emotional support seeking coping at the beginning of the academic year. The obtained pattern of results for the first interaction between emotional support seeking and the LOT-R showed that increases in the LOT-R were observed among individuals who used more emotional support seeking coping at the beginning of the academic year. Analyses of the simple slopes were consistent with this interpretation. LOT-R scores increased over time for those individuals who used more emotional support seeking coping at the beginning of the academic year (coefficient = .35, SE = .15, p = .02). However, the LOT-R remains lower and stable for those participants who used less emotional support seeking (coefficient = -.02, SE = .17, p = .93). Similarly, results from the second interaction between emotional support seeking and pessimism showed that pessimism decreased when individuals used more emotional support seeking coping at the beginning of the academic year. Analyses of the simple slopes showed that pessimism decreased over time among those individuals who used more emotional support coping at the beginning of the academic year (coefficient = -.07, SE = .03, p = .03). However, to the extent that participants used less emotional support seeking coping at the beginning of the year compared to other students, their levels of pessimism remained higher and stable across study waves (see Figure 1, right panel; coefficient = .0002, SE = .04, p = .10).

Figure 2 shows the trajectory of pessimism for participants who used lower vs higher levels of planning coping at the beginning of the academic year. The obtained pattern of results for the interaction between planning and pessimism showed that across the academic year, decreases in pessimism were observed among individuals who engaged in more planning coping at the beginning of the academic year. The simple slope analyses showed that pessimism decreased over time among those individuals who used more planning coping at the beginning of

the academic year (coefficient = -.07, SE = .03, p = .03). However, pessimism remained higher and stable if individuals engaged in less planning at the beginning of the year (coefficient = - .02, SE = .04, p = .55).

Discussion

The present study examined the extent to which levels of dispositional optimism and pessimism fluctuate across the academic year in a sample of university students during their transition to adulthood. Consistent with previous research showing that changes in personality traits are more likely to occur during emerging adulthood and during periods of transition (e.g., Schwaba, & Bleidorn, 2017, Segerstrom, 2007), we expected that dispositional optimism and pessimism levels would show some stability over time but that changes across the academic year would also be observed. To explore possible mechanisms underlying any observed fluctuations, we further examined whether the use of adaptive and maladaptive coping strategies would predict short- and long-term changes in optimism and pessimism.

Consistent with past research on the stability of optimism (e.g., Atienza et al., 2004; Lucas et al., 1996; Scheier & Carver, 1985; Scheier et al., 1994), the LOT-R showed considerable stability in our sample across the three waves, from the start to the end of the academic year. However, approximately 25% of the variability in optimism was related to intra-individual variation. Similar levels of intra-individual variability were also observed when the optimism (33%) and pessimism (30%) dimensions of the LOT-R were examined separately. Therefore, despite the overall stability in optimism over the course of the academic year, individual-level fluctuations in both optimism and pessimism were evident.

To our knowledge, this is the first study to examine intra-individual changes in dispositional optimism and pessimism prospectively. While traits are generally presumed to be stable over time, these findings are consistent with the broader personality literature on personality development across the lifespan which shows that personality traits are subject to individual-level fluctuations (e.g., Damian, Spengler, Sutu, & Roberts, 2018; Schwaba & Bleidorn, 2017). These results also support conclusions from research demonstrating that optimism levels may be subject to fluctuations during periods of stress or transition (Segerstrom, 2007). Our sample of emerging adults was in the midst of such a transition, and our study design may have captured potential fluctuations in academic stress.

With respect to short-term fluctuations, our results show that the observed fluctuations in the LOT-R and the optimism and pessimism dimensions were associated with reports of whether individuals concurrently engaged in adaptive coping. Specifically, LOT-R scores increased on occasions when individuals increased their use of positive reframing coping, but decreased when individuals used more religion, denial, substance use, behavioral disengagement, and self-blame to cope with recent stressors. When the dimensions were examined separately, individuals' optimism levels increased when they engaged in more positive reframing, but optimism levels were reduced when they used more denial, behavioral disengagement, and self-blame. Pessimism was higher when individuals used more religion, denial, substance use, and behavioral disengagement. These findings support our hypothesis that as individuals engage in more adaptive coping, they may experience associated increases in optimism and decreases in pessimism. By contrast, comparable increases in maladaptive coping were associated with decreases in optimism and increases in pessimism. These findings demonstrate that even relatively brief changes in how individuals cope with situational stressors are associated with concurrent increases or decreases in individuals' optimism and pessimism levels.

Notably, only emotion-focused coping strategies (e.g., positive reappraisal, denial) were associated with short-term fluctuations in both optimism and pessimism. While we did not initially hypothesize differential effects on optimism and pessimism for emotion- versus problem-focused coping, the immediate associations between these strategies and fluctuations in optimism may be explained by the more rapid influence on changing psychological perceptions of stress and failure experiences that result from managing negative emotions. By contrast, it is likely that problem-focused coping strategies take more time to exert their effects on stressful life circumstances, resulting in delayed opportunities for success and any associated fluctuations in future outcome expectancies.

While our study was limited to the span of one academic year, we were able to demonstrate that inter-individual differences in coping strategies could also predict subsequent linear changes in the LOT-R and the optimism and pessimism dimensions over time. Although there was no evidence for average linear changes across the three waves for the LOT-R in the entire sample, nor for the optimism and pessimism dimensions, there was considerable variability around these trajectories, indicating that some participants increased, and others decreased, their optimism levels over time. In this regard, some individuals who engaged in

certain coping strategies at the beginning of our study experienced either increases or declines in optimism and pessimism. Specifically, we found that individuals who engaged in greater emotional support-seeking at the beginning of the academic year experienced subsequent increases in the LOT-R. The analyses of the separate dimensions further showed that this effect was related only to decreases in pessimism, and did not extend to increases in optimism. In a similar vein, greater use of planning was also associated with decreases in pessimism, but not increases in optimism. The finding that only baseline planning and emotional support-seeking coping strategies were associated with subsequent longer-term changes in the LOT-R and the pessimism dimension suggests that certain coping strategies may be more or less important for promoting success in different developmental contexts. In this regard, it is likely that the successful transition into an academic year requires students to engage in such approach coping tactics early, and that the effects on associated changes in the optimism dimension of the LOT-R may only emerge over longer periods of time. Indeed, college students' use of active coping and social support-seeking at the beginning of the academic year has been linked to better subsequent adjustment three months later (Aspinwall & Taylor, 1992). Similarly, the fact that our results show that levels of initial coping forecast subsequent changes in optimism and pessimism, there is evidence for directional effects, by which coping could influence a person's longer-term trajectory of optimism or pessimism.

The Consequences of Coping Ahead

Both planning and emotional support-seeking can be characterized as approach coping strategies. Approach coping strategies, as opposed to avoidance, are coping strategies that are positively associated with dispositional optimism (Nes & Segerstrom, 2007) whereby individuals strive to eliminate or manage stressors. Engaging in more planning early on in the academic year may be especially beneficial by ensuring that students manage their time effectively and are prepared for the academic stressors and challenges that lie ahead. Planning may also facilitate longer-term engagement in other adaptive coping strategies (e.g., instrumental support-seeking, persistence) that support academic success directly and increase students' expectations of future successes. A lack of effective planning, by contrast, could result in the use of maladaptive coping strategies later on (e.g., substance use or denial), when individuals confront stressful situations that are difficult or impossible to cope with. This possibility is supported by theories of motivation which posit that timing may matter for the use of certain coping strategies. In

particular, the motivational model of action phases (Gollwitzer, 1990; Heckhausen, 1991; Heckhausen & Gollwitzer, 1987) emphasizes the importance of engaging in planning before implementing other strategies that facilitate success toward achieving a goal.

Greater emotional support-seeking at the beginning of the academic year may serve a similar function to planning in that it may also help individuals build a network of peers that can later become a source of instrumental support aiding individuals in their academic endeavors. Additionally, having a strong social network at the beginning of the academic year could help buffer against negative emotional experiences associated with negotiating a new and challenging academic environment. The importance of social support at the beginning of the academic year is supported by research showing that increases in perceived social support is associated with greater optimism and psychological well-being in college students (Brissette et al., 2002).

Coping Strategies and the Changing Context

While planning and social support seeking may be especially important early on in the academic year, other coping strategies may influence changes in optimism and pessimism later on in the year, at the ends of the semesters in this case, when individual face deadlines (e.g., assignment deadlines, examinations). Our results showed that several coping strategies were associated with fluctuations for short-term fluctuations in optimism and pessimism. Research on how individuals manage developmental deadlines posits that people tend to accelerate their efforts when approaching a deadline (for a review, see Wrosch, Heckhausen & Schulz, 2019). Our results may reflect this shifting of effort depending on the context.

The Dimensionality of Optimism and Pessimism

One of the secondary aims of the present study was to examine whether individual differences in situational coping would be associated with fluctuations in the optimism and pessimism dimensions. The distinction between the two LOT-R dimensions was especially pronounced in our examination of the long-term changes, which showed that baseline coping was only associated with the pessimism dimension of the LOT-R. One possible explanation for these differential associations is that changes in the optimism and pessimism dimensions occur at different rates. In particular, our results suggest that levels of pessimism change more quickly than optimism. Pessimism changes may occur earlier because such changes may be associated with short-term experiences of avoiding failure through adaptive coping. For the optimism dimension to change, individuals may need to accumulate more successes to eventually improve

their positive outcome expectancies. Moreover, optimism may require more consistent adaptive coping with problems in order for long-term changes to be observed.

Given that we found that coping was not uniformly associated with changes in both optimism and pessimism, future research should examine optimism and pessimism separately over longer periods of time to ascertain whether optimism changes also follow from pessimism changes, and whether more consistently engaging in adaptive coping can account for these changes.

Limitations and Future Directions

The present study is the first prospective study to examine the role of individual differences in coping for predicting changes in dispositional optimism and pessimism. Although we cannot claim causality, the directional effects of coping on optimism and pessimism trajectories suggests that researchers ought to explore directional and reciprocal effects between coping strategies and optimism. Specifically, future research should include more repeated measurements of coping across periods of fluctuating stress to clarify the impact of different coping strategies at different time periods.

In addition, the present study was limited to the assessment of optimism fluctuations over the course of one academic year. However, it is possible that the changes we observed in optimism and pessimism across the academic year are short-lived. By extending the time frame by years, or by examining changes optimism and pessimism over the entire developmental period of emerging adulthood (ages 18-30), which is marked by multiple role transitions, researchers may be able to ascertain whether individual differences in coping influence the long-term trajectories of optimism and pessimism. By extending study duration, researchers may also be able to conduct more fine-grained analyses of coping to assess the possibility that different coping strategies may be more or less important depending on the context.

Finally, while the current study examined the association between coping in the context of potential academic stress and changes in optimism in emerging adulthood, there may also be other periods of the lifespan (e.g., old age) during which undergoing transitions and life stressors may produce changes in optimism and pessimism. Thus, future studies should examine the relative contributions of different coping strategies in groups of individuals at different life stages to explore the importance of context for determining which coping strategies may be more or less important for promoting changes in optimism and pessimism.

Conclusions

The present study demonstrates support for the possibility that levels of optimism can change during emerging adulthood, In addition, it suggests that coping contributes to short- and long-term changes in dispositional optimism and pessimism. These results enhance our understanding of the potential mechanisms that may promote personality development in emerging adulthood. Furthermore, our findings demonstrate that examining the subscales of the LOT-R may yield different results, as changes in optimism and pessimism may occur at different rates.

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Table 1

Descriptive Statistics for Optimism, Pessimism, and Coping Across 3 Waves

	Wave 1		Wave 2		Wave 3	
	Mean	SD	Mean	SD	Mean	SD
LOT-R	14.87	4.97	15.26	4.62	15.28	5.01
Optimism	2.58	.93	2.66	.83	2.65	.89
Pessimism	1.62	.96	1.58	.99	1.56	.95
Active Coping	3.21	1.58	3.32	1.51	3.31	1.58
Planning	3.27	1.69	3.19	1.62	3.27	1.64
Positive Reframing	2.90	1.72	2.99	1.64	2.99	1.67
Acceptance	3.41	1.63	3.20	1.55	3.32	1.47
Humor	1.99	1.78	2.17	1.81	2.07	1.70
Religion	1.34	1.88	1.20	1.71	1.27	1.82
Emotional Support	3.20	1.82	3.30	1.75	3.33	1.84
Instrumental Support	3.00	1.85	2.89	1.81	3.17	1.75
Self-Distraction	3.25	1.58	3.40	1.54	3.30	1.40
Denial	.94	1.46	.68	1.30	.71	1.18
Venting	2.18	1.53	2.09	1.43	2.18	1.57
Substance Use	.80	1.53	.96	1.59	.78	1.36
Behavioral Disengagement	1.33	1.58	1.26	1.56	1.11	1.36
Self-Blame	2.05	1.80	2.29	1.70	2.01	1.65

Note. The LOT-R scores are calculated as sum scores. Values for all other variables are represented s mean scores.

Table 2

Correlations between Demographics, Baseline Coping Subscales and Optimism and Pessimism Across 3 Waves

	LOT-R			Optimism			Pessimism		
	W1	W2	W3	W1	W2	W3	W1	W2	W3
Active Coping	.16**	.22**	.20**	.16**	.15*	.21**	-.11	-.21**	-.15*
Planning	.09	.20**	.17**	.10	.12	.16*	-.06	-.20**	-.15*
Positive Reframing	.29**	.34**	.27**	.27**	.25**	.27**	-.23**	-.31**	-.22**
Acceptance	.07	.16*	.11	.05	.08	.06	-.07	-.19**	-.13
Humor	-.01	.03	-.09	.02	.04	-.05	.04	-.00	.10
Religion	.08	.07	.01	.08	.09	.07	-.06	-.03	.04
Emotional Support	.11	.21**	.24**	.02	.12	.17*	-.16**	-.22**	-.25**
Instrumental Support	.12	.20**	.22**	.06	.08	.15*	-.14*	-.24**	-.23**
Self-Distraction	-.03	.01	-.05	-.01	-.02	-.06	.04	-.03	.04
Denial	-.23**	-.26**	-.28**	-.15*	-.14*	-.20**	.24**	.30**	.30**
Venting	-.09	-.02	.00	-.14*	-.06	-.03	.01	-.02	-.03
Substance Use	-.07	-.11	-.13	-.08	-.11	-13	.04	.08	.10
Behavioral Disengagement	-.35**	-.39**	-.36**	-.29**	-.29**	-.35**	.31**	.37**	.30**
Self-Blame	-.33**	-.31**	-.32**	-.27**	-.21**	-.30**	.30**	.31**	.28**
Gender	-.02	.00	.07	-.10	-.07	-.03	-.07	-.06	-.15*
Subjective SES	.13*	.21**	.22**	.11*	.17**	.21**	-.11	-.17**	-.20**

Note. Across different coping strategies, valid data were obtained at W1 for N = 234-239 participants (W2 N = 230-235; W3 N = 162-165). * $p < .05$. ** $p < .01$.

Table 3

Summary of the Separate Fixed Effects of Concurrent Within-Person Fluctuations of each Coping on Short-Term Within-Person Fluctuations in Optimism and Pessimism from the Hierarchical Linear Modeling Analyses

Fixed Effects	LOT-R			Optimism			Pessimism		
	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*
Active Coping	.04	.10	.661	.01	.19	.469	.001	.02	.980
Planning	-.06	.12	.598	-.004	.02	.879	.02	.03	.448
Positive Reframing	.18	.08	.043	.04	.02	.018	-.02	.02	.386
Acceptance	.07	.10	.527	.04	.02	.133	.02	.02	.505
Humor	.05	.09	.552	.003	.02	.878	-.02	.02	.427
Religion	-.25	.13	.047	-.05	.03	.114	.051	.03	.046
Emotional Support	.09	.11	.436	.01	.02	.497	-.02	.03	.567
Instrumental Support	.87	.11	.478	.02	.02	.333	-.01	.02	.580
Self-Distraction	.14	.11	.215	.02	.02	.422	-.02	.02	.401
Denial	-.42	.13	.002	-.07	.03	.018	.07	.03	.010
Venting	-.10	.12	.415	-.02	.03	.525	.02	.02	.382
Substance Use	-.34	.16	.011	-.06	.03	.067	.07	.03	.014
Behavioral Disengagement	-.42	.12	<.001	-.07	.02	.003	.07	.02	.006
Self-Blame	-.26	.12	.027	-.06	.02	.008	.03	.03	.360

Note. Coefficients = unstandardized coefficients. *SE* = standard error of estimate. Coping coefficients reported adjust for demographic covariates (gender, subjective SES) and Level 2 between-person levels of each coping subscale, respectively. The Level-2 between-person model included an intercept, each participant's mean of the respective coping subscale (i.e. average use of that coping strategy across waves).

Table 4

Summary of the Separate Fixed Effects of Baseline Coping Predicting Long-Term Linear Changes in Optimism and Pessimism over the Academic Year

Fixed Effects	LOT-R			Optimism			Pessimism		
	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*
Active Coping	.24	.13	.074	.03	.03	.273	-.05	.03	.111
Planning	.27	.15	.080	.004	.03	.087	-.08	.03	.024
Positive Reframing	-.02	.13	.872	-.02	.02	.306	-.01	.03	.620
Acceptance	.13	.14	.356	-.01	.03	.742	-.05	.03	.158
Humor	.08	.14	.590	-.002	.03	.950	-.02	.03	.469
Religion	.02	.16	.913	.002	.03	.943	-.001	.03	.980
Emotional Support	.31	.14	.026	.04	.02	.074	-.06	.03	.047
Instrumental Support	.19	.15	.198	.02	.03	.507	-.05	.03	.165
Self-Distraction	.23	.14	.869	-.01	.03	.593	-.02	.03	.568
Denial	.13	.13	.287	.01	.03	.637	-.03	.03	.276
Venting	.26	.15	.082	.05	.03	.059	-.03	.03	.274
Substance Use	.09	.13	.521	.01	.03	.688	-.12	.02	.619
Behavioral Disengagement	.04	.13	.766	-.03	.02	.871	-.02	.03	.577
Self-Blame	.26	.15	.083	.022	.29	.424	-.06	.03	.089

Note. Coefficients = unstandardized coefficients. *SE* = standard error of estimate. Coping coefficients reported adjust for demographic covariates (gender, subjective SES).

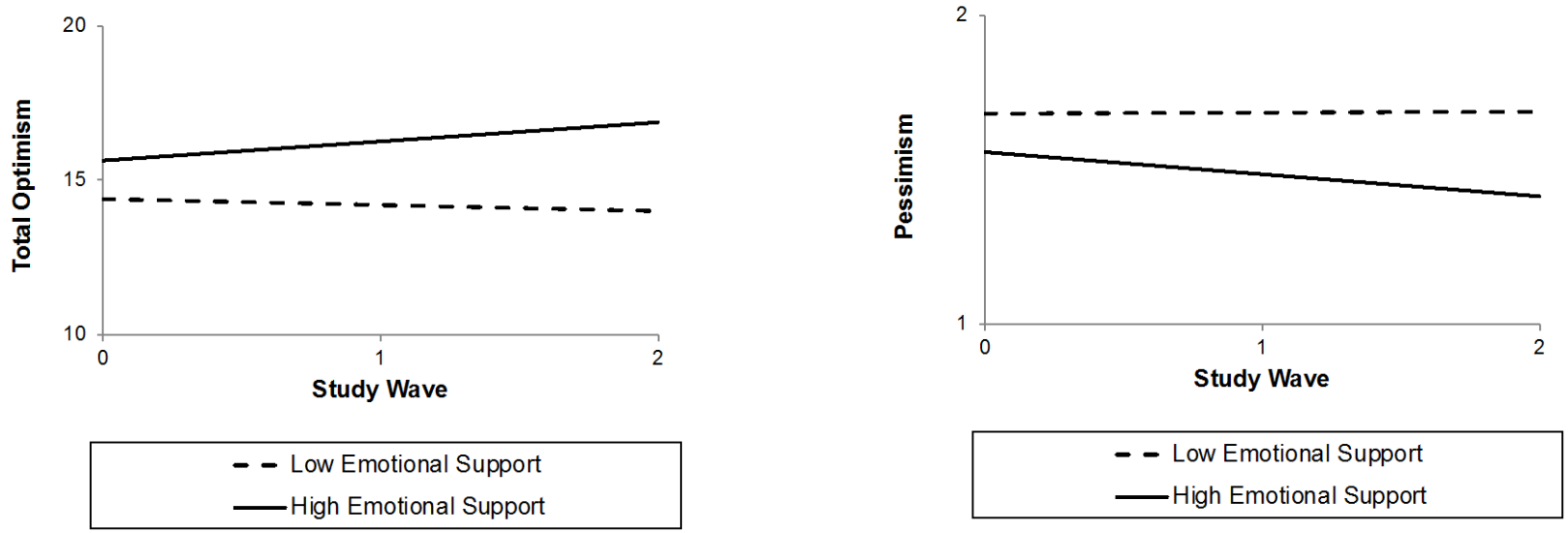

Figure 1. Changes in LOT-R and pessimism among those who used less versus more social support seeking coping at the beginning of the academic year.

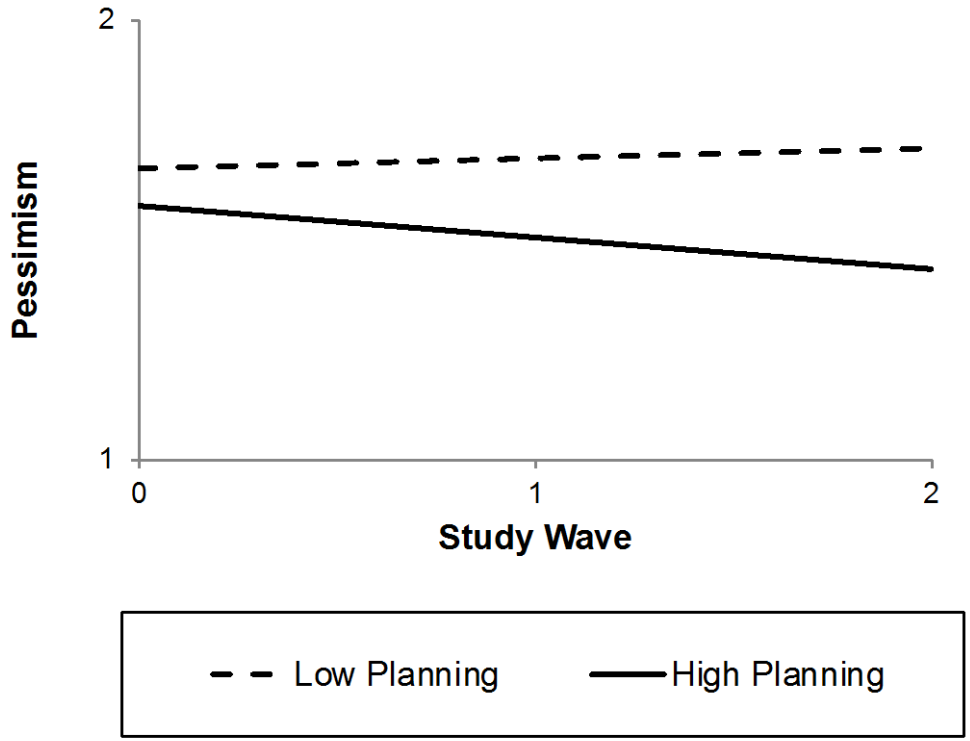

Figure 2. Changes in pessimism among those who used less versus more social planning coping at the beginning of the academic year.

CHAPTER 5:
GENERAL DISCUSSION

There is a vast literature showing that dispositional optimism can contribute to greater psychological well-being across the lifespan (see reviews, Carver, Scheier, & Segerstrom, 2010; Mens, Scheier, & Carver, 2016). However, there is a paucity of research examining how individual differences in dispositional optimism emerge, and whether these differences are subject to fluctuations across different contexts. Identifying how individual differences in dispositional optimism emerge during key developmental stages can enhance our understanding of how to promote greater optimism and better psychological well-being across the lifespan. Consequently, the broad aims of the research presented herein were to identify the contextual and developmental pathways that contribute to becoming more optimistic in emerging adulthood, a period characterized by transition and opportunity, as well as to explore the role of situational coping for predicting variability in optimism over time in young adulthood.

To accomplish the aforementioned aims, data from two longitudinal prospective studies were examined. The results from *Study 1* demonstrated that greater maternal attachment security in childhood promoted greater optimism during the transition from late adolescence into early adulthood via higher levels of perceived internal locus of control. In addition, greater optimism further contributed to higher levels of psychological well-being, measured as purpose in life and environmental mastery. Building on *Study 1*, *Study 2* examined predictors of fluctuations in dispositional optimism and pessimism across the academic year. The results from *Study 2* demonstrated that dispositional optimism and pessimism continue to undergo both short and long-term fluctuations during early adulthood. Moreover, these changes in optimism and pessimism are promoted by individual differences in the engagement in adaptive and maladaptive coping with contextual demands.

Together, the findings from this research have important implications for enhancing our understanding of the precursors to the development of, and predictors of fluctuations in, dispositional optimism and psychological well-being. This knowledge provides a novel contribution to the specific literature on dispositional optimism, as well as the broader literature on predictors of personality development. Furthermore, this research demonstrates the importance of examining the development of personality traits, and optimism in particular, using a lifespan perspective.

Summary of Research Findings

Study 1. The objective of *Study 1* was to examine whether early maternal attachment security predicted the development of optimism via greater internal locus of control. It was reasoned that through experiences with sensitive and reliable caregivers, individuals would internalize a secure base, from which they are more likely to explore and master their environments (Bowlby, 1969). In exploring and mastering their environments, individuals would have more opportunities to learn that their own efforts would yield success, imbuing them with a greater sense of internal control (Carton & Nowicki, 1994; Sroufe et al., 2005). As a consequence of having a greater internalized locus of control, successes experienced by these individuals would be expected to generalize to greater optimism for future success. Further, higher levels of optimism at this stage were expected to enhance psychological well-being. Therefore, it was also anticipated that greater internal locus of control would promote higher levels of psychological well-being via optimism.

Consistent with the aforementioned propositions, the results from *Study 1* showed that greater maternal attachment security in late childhood predicted higher levels of internal locus of control in early adolescence. Moreover, having a greater internal locus of control in early adolescence predicted greater optimism in late adolescence, which remained relatively stable into young adulthood. The results also showed that adolescents who were optimistic remained optimistic and experienced greater psychological well-being in early adulthood, a finding consistent with research on optimism and well-being at all phases of the life course (e.g., Carver, Scheier, & Weintraub, 2006). These results suggest that maternal attachment security early in life may contribute to a sense of reliance on one's own capacity to exert control over one's environment which serves to promote positive outcome expectancies for future success, contributing to better psychological well-being.

To examine the underlying mechanisms accounting for the above associations, two mediational paths were tested and found to support the proposed model. First, it was found that greater perceptions of internal locus of control at age 14 mediated the association between childhood maternal attachment security and dispositional optimism at age 18. Thus, as children enter into adolescence, they are more likely to develop greater internal locus of control if greater attachment security is evident. Moreover, greater internal locus of control enhanced adolescents' outcome expectancies for positive outcomes as they enter into early adulthood. Second, it was

found that optimism at the beginning of this transition to early adulthood mediated associations between perceived internal locus of control and purpose in life and environmental mastery, two indicators of psychological well-being. Thus, a secure attachment early in life appears to be an important precursor to the developing greater optimism and to having greater psychological well-being in early adulthood.

Study 2. The first objective of *Study 2* was to examine the extent to which dispositional optimism and pessimism fluctuate across the academic year in a sample of university students. In addition, the role of individual differences in coping for predicting any observed fluctuations was examined. Importantly, a secondary aim of this study was to examine whether individual differences in the engagement in adaptive and maladaptive coping may differentially predict fluctuations in overall optimism as assessed by the LOT-R vs. examining the two subscales of the LOT-R separately (i.e., optimism and pessimism).

Consistent with past research on the stability of optimism, it was found that approximately 25% of the variability in the LOT-R (i.e., total optimism) over time could be attributed to within-person variation. When the two subscales of the LOT-R were examined separately, it was found that 33% of the variability in optimism and 30% of the variability in pessimism were related to intra-individual variation, suggesting that a person's level of optimism and pessimism is subject to fluctuation, even over the period of an academic year.

To examine whether any observed changes were brief fluctuations in response to situational stressors (e.g., an exam period) versus more longstanding changes that unfold over time (i.e., across the academic year), brief fluctuations and longer-term longitudinal changes in optimism were disentangles in the analyses. In addition, the role of coping strategies for predicting both brief fluctuations and longer-term changes in optimism were examined.

With respect to the short-term fluctuations, our results showed that the observed fluctuations in the LOT-R and the optimism and pessimism dimensions were associated with engagement in adaptive coping. Specifically, LOT-R scores were higher at assessments when individuals used adaptive coping strategies (e.g., positive reframing coping), and lower at assessments when individuals used maladaptive coping tactics (i.e., denial, substance use, behavioral disengagement, and self-blame). Similar patterns were observed when the dimensions of the LOT-R were examined separately. Overall, these findings suggest that even relatively brief

adjustments in coping are associated with concurrent increases or decreases in optimism and pessimism.

With respect to longer-term changes, *Study 2* also showed that individual differences in coping predicted linear changes in the LOT-R (Scheier, Carver, & Bridges, 1994) and the optimism and pessimism dimensions over time. Since the results show that levels of initial coping forecast subsequent changes in optimism and pessimism, there is evidence for directional effects, in which coping could influence a person's longer-term trajectory of optimism or pessimism. Specifically, engagement in more emotional support-seeking at the beginning of the academic year contributed to subsequent increases in the LOT-R. Analyses of the separate dimensions further showed that this effect was related only to decreases in pessimism, but not increases in optimism. Similarly, using more planning was associated with decreases in pessimism, but not increases in optimism. Given that only baseline planning and emotional support-seeking predicted long-term fluctuations in the LOT-R and the pessimism dimension, it may be that some coping strategies are more or less important in different developmental contexts. Furthermore, changes in optimism and pessimism may occur at different rates over time, with fluctuations in pessimism being more evident earlier than optimism.

Implications for Research on Dispositional Optimism and Personality Development

The results from *Study 1* suggest that, like other personality traits, the foundation of adult optimism develops earlier on in life. The quality of the attachment bond between mother and child, in particular, appears to set the stage for the development of positive outcome expectancies in early adulthood by enhancing the child's perceived internal control over their environment. This implies that creating the conditions for a secure attachment relationship between mother and child during these early years could contribute to individuals in adulthood experiencing the psychological and physical health benefits that are conferred by being more optimistic. Mothers who themselves were not the recipient of reliable and sensitive caregiving may be particularly at risk of not being able to provide such care to their children. These individuals may especially benefit from explicit instruction and interventions to enhance their sensitivity to their child's emotional and physical needs. Given that research has also shown the reciprocal nature between children's behaviours and parenting behaviours (Serbin, Kingdon, Ruttle, & Stack, 2015), it is also possible that children who exhibit more problem behaviours are less likely to be the recipient of positive parenting behaviours that would facilitate greater attachment security. Therefore, it

may be important to identify these children and intervene with parents to encourage the implementation of positive parenting behaviours which can enhance maternal attachment security.

In addition, research has shown that parenting behaviours are also affected by mothers' own levels of dispositional optimism. For example, optimism has been positively linked to greater maternal warmth and negatively associated with neglect and hostility (Hjelle, Busch, & Warren, 1996). Although maternal optimism was not assessed in *Study 1*, it may be that those mother-child dyads who were lower on maternal security consisted of mothers who themselves were less optimistic, resulting in an intergenerational transmission of low optimism. This association between parental optimism and parenting behaviours highlights the importance of identifying parents who are lower in optimism as they may be at risk of poorer mother-child attachment security, which in turn can lead to their offspring becoming less optimistic and having poorer psychological well-being in adulthood. Although interventions to enhance parents' own levels of optimism at this stage prove challenging and time consuming, interventions that enhance specific parenting behaviours that promote the development of self-reliance may be warranted for such individuals.

Importantly, *Study 1* also demonstrates that greater perceived control over one's life may be one mechanism by which individuals become more optimistic. Although secure maternal attachment experiences may be an important precursor to the internalized sense of control, there may be other pathways to enhanced self-reliance that can provide individuals with opportunities to experience successes and internalize positive future outcome expectancies. For example, fostering opportunities for success and highlighting the links between self-reliance and positive outcomes may help adolescents build up a sense of control over their environments and future outcomes. Such opportunities may best be provided in educational settings, where numerous opportunities for the link between effort and success exist.

Although personality traits are, by definition, relatively stable over time (Roberts & DelVecchio, 2000), it is increasingly evident that even lasting changes in personality traits can be observed over time (Roberts et al., 2006). The results from this research provide additional support demonstrating that while dispositional optimism exhibits stability, there is also ample room for fluctuations, both in the short-term and the long-term. This is consistent with past research on dispositional optimism showing when assessed over relatively brief periods of time,

test-retest correlations for optimism typically range from .50 - .70 (Scheier & Carver, 2018). However, when individuals are undergoing life transitions (e.g., graduating from law school), these test-retest correlations can fall as low as .30 (Segerstrom, 2007). The results from this study are therefore consistent with the findings from previous research showing that the period during which individuals transition into early adulthood (i.e. emerging adulthood) is a sensitive developmental period for changes in personality traits, such as optimism (e.g., Schwaba & Bleidorn, 2016).

One of the secondary aims of *Study 2* was to examine whether individual differences in coping would be associated with fluctuations in the optimism and pessimism dimensions of the LOT-R. Differential patterns between the optimism and pessimism dimensions were found and particularly evident when examining long-term changes, which showed that baseline coping was only associated with the pessimism dimension of the LOT-R. One possible explanation for these differential associations is that changes in the optimism and pessimism dimensions occur at different rates. In particular, the results suggest that compared to optimism, changes in pessimism occur more quickly. It may be that through short-term experiences of avoiding failure, as a consequence of using more adaptive coping, relatively more rapid reductions in pessimism result. Whereas for the optimism dimension to undergo change, more time may be necessary for individuals to accumulate repeated successes which shift into more positive outcome expectancies (for mechanisms of change in optimism, see Renaud et al., 2018).

Alternatively, it may also be that changes in optimism require more consistent use of adaptive coping strategies over time, as compared to the use of adaptive coping at certain times points or in response to certain contexts (i.e. beginning of the academic year) in order for long-term changes to be observed. For individuals who are more pessimistic and had little past experiences with successes, attending university can provide a context for experiencing successes and linking those outcomes with their own efforts (i.e. coping), thereby resulting in decreases in pessimism. To examine these possibilities, research should continue to examine optimism and pessimism separately and over longer periods of time to ascertain whether changes in optimism follow from earlier changes in pessimism, and whether more consistently engaging in adaptive coping can account for these changes.

Prior research on optimism and coping has taken the view that individual differences in optimism drive individuals' engagement in adaptive or maladaptive self-regulation processes.

Building and extending these findings, the present research further demonstrated that the association between optimism and self-regulation processes, including individuals' use of different coping strategies, may be bidirectional. While optimists may engage in more adaptive coping when faced with stressors, the use of adaptive coping strategies can also facilitate the development of more optimism and subsequent well-being. This conclusion has important implications for understanding how to promote a more optimistic life orientation across the lifespan. By changing how individuals cope with life stressors, especially during periods characterized by many opportunities and possibilities for success (i.e. emerging adulthood), they may actually achieve more successes, thereby contributing to an enhanced sense of optimism for futures successes. The role of coping in promoting greater optimism is therefore a key area for further study.

Limitations and Future Directions

In line with previous research showing that emerging adulthood is key developmental period wherein personality traits are subject to fluctuations (e.g., Schwaba & Bleidorn, 2016), the results from this research also point to this developmental phase as a sensitive period for changes in optimism and pessimism to occur. However, changes in optimism and pessimism may also be observable during other periods of the lifespan in which individuals experience important transitions and stressors. For example, in older adulthood, individuals must adjust to new roles as they leave the workforce and enter into retirement and learn to manage changes in their physical functioning and health due to age-related diseases. These changes experienced in old age may therefore provide a context where optimism can become more malleable. Thus, future studies should examine the relative contributions of different coping strategies in groups of individuals at different life stages to explore the importance of context for determining which coping strategies may be more or less important for promoting changes in optimism and pessimism.

A particular strength of this research is that unlike previous studies on dispositional optimism which have largely relied on retrospective reports (e.g., Heinonen, Raikkonen, & Keltikangas-Jarvinen, 2005), the two studies herein used longitudinal prospective designs to capture changes in optimism over time. This approach permitted the examination of mechanisms at different periods of the lifespan that might contribute to the development of optimism and pessimism in emerging adulthood. To build on these findings, future research should include more repeated measurements of proposed developmental antecedents of optimism and pessimism

to clarify the impact of different mechanisms at different developmental periods. In particular, future research ought to examine changes in the underlying mechanisms themselves. In examining these constructs (e.g., attachment security, locus of control, coping) over repeated measurements, it will be possible to account for any changes that might occur in each construct as well as the reciprocal relations among them. 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. Such an approach is likely to be an especially important for the reciprocal relationships between coping strategies and optimism, as research has shown that individuals who are more optimistic tend to engage in more adaptive coping strategies (e.g., Nes & Segerstrom, 2006).

In addition, by conducting future longitudinal studies with additional measurement points, researchers could also determine whether the fluctuations observed in dispositional optimism and pessimism across the academic year (Study 2) are short-lived changes or more enduring individual differences. Extending study time frame by years, or ideally by examining changes in optimism and pessimism over the entire developmental period of emerging adulthood, researchers may also be able to ascertain whether individual differences in adaptive and maladaptive coping influence these long-term trajectories in optimism. Furthermore, with more fine-grained analyses of coping across time, the possibility that different coping strategies may be more or less important depending on the context may also be explored.

Finally, the research presented from both studies did not include demographically diverse samples and the results may therefore not be generalizable to all populations. In particular, the data examined in *Study 1* were collected from an ethnically homogeneous sample of participants who participated in a larger longitudinal study on child development. While there was greater diversity in the data collected in *Study 2*, the sample consisted of university students, thereby limiting any ability to generalize to emerging adults from other segments of the population, namely those individuals who do not attend university. Despite the limitations in generalizability associated with studying homogeneous samples, there are occasions when selecting for homogeneity may be superior to other approaches (e.g., convenience sampling). When research is not focused on sociodemographic variables as key predictors of study outcomes, homogenous samples can actually be preferable because they control for sources of "noise" that could influence the study results (Bornstein, Jager, & Putnick, 2013). However, to determine whether

the results from this research extend to individuals from lower SES or other ethnic backgrounds, future studies ought to examine other samples to ascertain whether the same processes unfold over time.

Conclusions

In conclusion, the research presented herein provides a novel contribution to the understanding of how an individual's early developmental and contextual experiences contribute to the emergence of individual differences in dispositional optimism and pessimism during the transition to early adulthood. In particular, the results from this research highlight that the quality of the mother-child attachment bond provides an early precursor to how individuals view their sense of control over their environments in adolescence and subsequently develop optimistic outcome expectancies. Moreover, this research shows that although dispositional optimism is a relatively stable trait over time, an individual's level of optimism can fluctuate over brief as well as longer periods of time, depending on how individuals cope with contextual demands. Together, this knowledge provides researchers with a roadmap for how to facilitate the development of optimism during different developmental periods. Specifically, the evidence suggests that by enhancing maternal attachment security in childhood and helping individuals successfully negotiate stressors during emerging adulthood, optimism may be enhanced, contributing to greater psychological well-being.

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Appendices

Appendix A

Frequency Statistics for Year of Study and Program Status for Study 2 Participants

Variables	*N* (%)
Year of Study	
First Year	76 (24.9%)
Second Year	94 (30.8%)
Third Year	88 (28.9%)
Fourth Year	37 (12%)
Fifth Year or Above	10 (3.3%)
Program Status	
Full Time Status	279 (90.3%)
Part-Time Status	28 (9.1%)

Notes. Data for year of study was missing for 4 participants. Data for program status was missing for 2 participants. Of those participants who reported their program of enrollment, the vast majority (>85%) were enrolled in programs within the Faculty of Arts and Science. The remaining students were enrolled in degree programs from the Faculty of Fine Arts, Faculty of Business, and Faculty of Engineering and Computer Science.

Appendix B

Study 2 Correlations between Coping Subscales at Wave 1

Coping Strategy	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Active Coping														
2. Planning	.60**													
3. Positive Reframing	.43**	.45**												
4. Acceptance	.47**	.58**	.35**											
5. Humour	.20**	.22**	.37**	.18**										
6. Religion	.09	.23**	.29**	.11	.29**									
7. Emotional Support	.37**	.39**	.39**	.35**	.16**	.06								
8. Instrumental Support	.38**	.43**	.43**	.39**	.20**	.15*	.79**							
9. Self-Distraction	.26**	.34**	.23**	.40**	.21**	.08	.30**	.33**						
10. Denial	.07	.07	.03	-.05	.21**	.28**	.08	.05	.12*					
11. Venting	.30**	.37**	.30**	.31**	.29**	.25**	.39**	.42**	.27**	.32**				
12. Substance Use	.07	.08	.05	-.07	.27**	.23**	.02	-.01	.06	.45**	.16**			
13. Behavioural Disengagement	-.04	.05	.05	.03	.23**	.20**	.03	.06	.11	.52**	.38**	.39**		
14. Self-Blame	.17**	.33**	.07	.12	.24*	.14*	.04	.10	.25**	.36**	.39**	.26**	.39**	

Note. * denotes $p < .01$ and ** denotes $p < .01$.