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Do the Emotional Benefits of Optimism Vary Across Older Adulthood?

A Life-Span Perspective

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Abstract

Objective. This study examined whether the emotional benefits of dispositional optimism for managing stressful encounters decrease across older adulthood. Such an effect might emerge because age-related declines in opportunities for overcoming stressors could reduce the effectiveness of optimism. **Method**. This hypothesis was tested in a six-year longitudinal study of 171 community-dwelling older adults (age range = 64 to 90 years). **Results**. Hierarchical linear models showed that dispositional optimism protected relatively young participants from exhibiting elevations in depressive symptoms over time, but that these benefits became increasingly reduced among their older counterparts. Moreover, the findings showed that an age-related association between optimism and depressive symptoms was observed particularly during periods of enhanced, as compared to reduced, stress. **Conclusions**. These results suggest that dispositional optimism protects emotional well-being during the early phases of older adulthood, but that its effects are reduced in advanced old age.

KEY WORDS: dispositional optimism; depressive symptoms; perceived stress; older adulthood.

Introduction

A large body of research suggests that optimists fare better in life than pessimists (Carver, Scheier, & Segerstrom, 2010; Mens, Scheier, & Carver, in press).[1] Dispositional optimism is defined as individuals' generalized expectations about the extent to which positive versus negative events will occur in a person's future across life domains (Scheier & Carver, 1985). This definition makes it different from other forms of expectations that target, for example, individuals' future behaviors (e.g., self-efficacy, Bandura, 1997) or optimistic patterns of attributions (Seligman, 1991).

Theoretical accounts of why dispositional optimism benefits a person's quality of life stem from a tradition of expectancy-value models of motivation (Atkinson, 1964; Feather, 1982). Because optimists generally expect positive future outcomes, they continue to exert effort if they confront an important problem. Pessimists, by contrast, are generally more doubtful about their future and likely to withdraw effort from goal-related problems (Carver & Scheier, 1998; Scheier & Carver, 1985). Research supports this assumption by demonstrating particularly strong effects of dispositional optimism on problem-focused coping, which reflects approaching stressors head on (for a meta-analysis, see Nes & Segerstrom, 2006). In addition, optimists tend to engage more frequently in effective emotion-focused coping than pessimists (e.g., benefit finding, Helgeson et al., 2006), although the latter effect appears to be less pronounced than the former. Further, these divergent coping responses can mediate emotional outcomes, indicating that optimists are more likely than pessimists to prevent emotional problems because they strive towards overcoming stressors and regulate emotions more effectively (for reviews, see Mens et al., in press; Rasmussen et al. 2006; Wrosch & Scheier, 2003).

It is less known, however, whether the benefits of optimism could vary across different life circumstances. This possibility has been raised in a recent discussion of whether the adaptive value

of dispositional optimism could, at times, be reduced (Carver & Scheier, 2014). In addition, this idea is consistent with life-span developmental theories, postulating that the effectiveness of self-regulation factors depends on an age-related configuration of opportunities and constraints for successful development. This line of work has documented that an age-related increase in the experience of uncontrollable stressors can constrain individuals' opportunities for overcoming problems and jeopardize their emotional well-being (Baltes & Baltes, 1990; Heckhausen et al., 2010).

Consistent with this argument, research has shown that, unlike adulthood and early old age, advanced old age in particular can be characterized by an enhanced susceptibility to chronic and irreversible problems, a reduction of personal resources, and associated increases in emotional problems (Baltes & Smith, 2003; Smith et al., 2002; Sutin et al., 2013). These age-related changes may require individuals to adjust their self-regulation processes to the controllability of problems. More specifically, life-span developmental research has demonstrated that strategies aimed at goal attainment facilitate emotional well-being particularly at younger ages when many individuals encounter favorable opportunities for overcoming stressors (e.g., persistence, Wrosch, Heckhausen, & Lachman, 2000). However, if such opportunities are absent or sharply reduced, as it is often the case during older adulthood, associations between goal striving and emotional well-being become considerably reduced (for a review, see Heckhausen et al., 2010).

The previous discussion makes it likely that the emotional consequences of dispositional optimism could also vary as a function of age, and that older adulthood may represent a sensitive period during which such differences evolve. To the extent that the benefits of optimism derive from the tendency on the part of optimists to engage in persistent goal pursuits when stressors are encountered, differences in the ensuing emotional consequences experienced by optimists and pessimists could decrease in advanced old age. This may be the case because some of the benefits

of optimism are reduced as occurring stressors become generally less controllable during the later phases of older adulthood. In the earlier phases of old age, by contrast, stressors are generally more likely to involve problems that can be resolved through persistent goal pursuits, and dispositional optimism should buffer stress-related increases in emotional problems. Note that such age differences in the adaptive value of optimism could become pronounced during particularly stressful periods, given that the influence of personal resources on emotional outcomes is paramount in such circumstances (Heckhausen & Wrosch, 2016; Lazarus & Folkman, 1984).

Empirical research examining the theoretical proposition of age effects of dispositional optimism, however, is scarce. One of the few cross-sectional studies shows that optimism buffered the association between stress perceptions and reduced life satisfaction among young, but not older, adults (Chang, 2002), while another cross-sectional study did not find age effects of optimism on life satisfaction or depressive symptoms if comparing young, middle-aged, and older adults (Isaacowitz, 2005). Moreover, longitudinal research documents that low pessimism predicted reduced mortality among relatively young adults who had a cancer, but was unrelated to mortality among their older counterparts (Schulz et al., 1996). Although this research suggests that some of the benefits of optimism could become smaller as a function of age, it is noteworthy that most of these studies did not examine emotional outcomes or, more importantly, whether such a process could evolve during older adulthood.

Here, we address this research question by examining changes in older adults' depressive symptoms as a function of age, dispositional optimism, and perceived stress. We hypothesized that among individuals in early old age, optimists (but not pessimists) would be protected from experiencing increases in depressive symptoms over time. This beneficial effect of optimism, however, was expected to be smaller among their older counterparts. Moreover, we hypothesized that age effects of optimism would vary as a function of the level of stress experienced over time.

To this end, we compared within-person assessments of depressive symptoms during times at which participants perceived higher versus lower levels of perceived stress. We expected that differences in an age-related association between dispositional optimism and depressive symptoms would be observed particularly in periods when older adults perceive higher (as compared to lower) levels of stress.

Method

Participants

Participants of this study were recruited from the community through newspaper advertisements targeted to older adults from Montreal (Montreal Aging and Health Study [MAHS]; Wrosch et al., 2007).[2] A normative sample of older adults was obtained by enrolling individuals who were older than 60 years. At baseline (T1), a total of 215 participants were either visited in their homes or invited to the laboratory. At each follow-up wave, they responded to a self-report questionnaire as well as to a daily questionnaire over three non-consecutive days. Subsequent waves of the MAHS were conducted approximately two years (T2: M = 1.88, SD = 0.08, *range* = 1.72 to 2.13 years; n = 184), four years (T3: M = 3.78, SD = 0.23, *range* = 3.28 to 4.77 years; n = 164), and six years after baseline (T4: M = 6.05, SD = 0.18, *range* = 5.51 to 6.39 years; n = 137). Because we were interested in predicting changes in depressive symptoms, participants who did not provide data on the outcome variable in at least two waves of the study (n = 25) were excluded from the analyses. In addition, we excluded participants who were deceased (n = 19) because it is not common practice to estimate long-term trajectories of psychological constructs among deceased individuals. After the exclusion of these participants, the analytic sample consisted of 171 participants.[3] At baseline, excluded participants were older (t = 2.07, p = .04) and reported slightly higher levels of stress (t = 2.02, p = .05) than those who remained in the study. However, excluded participants did not differ from other subjects on any of the other baseline measures used in this

study or the earliest measure of dispositional optimism (i.e., 2-year follow-up; $|ts| < 1.35$, $ps > .18$). The analytic sample exhibited demographic characteristics that are within the normative range of community-dwelling older adults (National Advisory Council on Aging, 2006). At baseline, participants were on average approximately 72 years old, 52% were female, 35% received a university education, and 40% had an income of more than $34,000 (see also Table 1).

Materials

The descriptive statistics for, and zero-order correlations among, the main study variables are reported in Table 1 and Table 2.

Depressive symptoms were assessed in each wave, using the 10-item Center for Epidemiological Studies Depression Scale (Andresen et al., 1994), which includes items assessing negative emotional states (e.g., "I felt depressed") and positive emotional states (e.g., "I was happy"). Participants were asked to indicate how often each statement applied to them during the past week on a 4-point Likert-type scale, (0= *rarely or none of the time* to 3 = *most or almost all of the time*). Sum scores of the 10 items were computed for each assessment, after reverse coding of the positively formulated items. Measures of depressive symptoms demonstrated appropriate internal consistency ($\alpha s = .70$ to .83), were positively correlated across waves ($rs = .56$ to .66, $ps < .01$), and increased across assessments (ANOVA: $F = 4.92$, $p < .01$).

Perceived stress was assessed on three non-consecutive typical days at each of the four waves over a period of six years. Because we were interested in measuring age-normative stress experiences, we attempted to eliminate the influence an unusual specific stressor by spacing out the assessment days and by asking participants to skip untypical days. At the end of each assessment day, participants were asked to rate how 1) *stressed* and 2) *overwhelmed* they felt during the day, using 5-point Likert-type scales (0 = *very slightly or not at all* to 4 = *extremely*). Sum scores were computed across days to obtain a measure of perceived stress at each wave ($\alpha s = .75$ to .84). Stress

perceptions were positively correlated within waves (rs = .42 to .64, ps < .01), and across waves (rs = .25 to .44, ps < .01), and exhibited an increase across assessments (ANOVA: F = 3.02, p = .03).

Dispositional optimism was assessed at T2, T3, and T4, using the 6-item Life Orientation Test-Revised (Scheier, Carver, & Bridges, 1994). This measure of dispositional optimism has generally been used as a bipolar construct, incorporating both optimistic and pessimistic outcome expectancies (but see Kubzansky et al., 2004; Marshall et al., 1992; Mroczek et al., 1993). Participants were asked to indicate their agreement with each of the six items, using 5-point Likert-type scales (0 = *strongly disagree,* to 4 = *strongly agree*). The scale includes three positively formulated items (e.g., *I am always optimistic about my future*) and three negatively formulated items (e.g., *If something can go wrong for me, it will*). For each wave, the sum of the six items was computed to obtain a total optimism score, after the negatively formulated items were reverse coded. Measures of optimism demonstrated appropriate internal consistency (αs = .74 to .79), were correlated across waves (rs = .70 to .75, ps < .01), and did not linearly change across assessments (ANOVA: F = .64, p = .53). The optimism scores were averaged across waves to obtain the most reliable measure of dispositional optimism.

Sociodemographic variables were included in the study either as predictors or covariates. Age and sex were measured at baseline through self-report. Socioeconomic status (SES) was assessed at baseline using three variables; highest education completed, yearly family income, and perceived social status (Adler et al., 2000). All three SES measures were standardized and subsequently averaged to obtain a reliable indicator of SES (rs = .37 to .55, ps < .01; α = .70).

Data Analysis

We tested the study's hypotheses by performing two sets of hierarchical linear models, using HLM 7.0.[4] The first set examined the effects of optimism and age on longitudinal changes in depressive symptoms. This analysis predicted in a Level-1 model participants' depressive

symptoms across waves by person-centered scores of years since study entry, an intercept, and a residual term. The intercept represented averaged levels of depressive symptoms across waves, and the slope referred to the amount of yearly change in depressive symptoms over six years of study. The subsequently conducted Level-2 model predicted the intercept and slope coefficients obtained in the Level-1 model by between-person differences in dispositional optimism, age, and the covariates (sex and SES). In a second step of the Level-2 model, we tested whether the additional inclusion of the interaction term involving dispositional optimism and age would significantly predict the intercept and slope coefficients of participant's depressive symptoms.

A second set of hierarchical linear models was conducted to examine whether age-related associations between dispositional optimism and depressive symptoms would be particularly strong during periods when individuals perceive enhanced levels of stress. In this analysis, the Level-1 model estimated variability in depressive symptoms across assessments by person-centered scores of perceived stress, an intercept, and a residual term. The model's intercept represented average levels of depressive symptoms across waves, and its slope indicated the extent to which deviations from a person's average level of perceived stress would be associated with changes in depressive symptoms across waves. We did not include years since study entry into the Level-1 model since perceptions of stress can be expected to increase over time, and controlling for time would thus attenuate some of the higher stress levels observed in the later waves of the study (but we address this possibility in supplemental analyses, reported in Footnote 5). The subsequently conducted Level-2 model estimated the intercept and slope coefficients obtained in the Level-1 model by between-person differences in dispositional optimism, age, and the covariates. In a final step, we tested whether the additional inclusion of the interaction between dispositional optimism and age would significantly predict the obtained intercept and slope coefficients. Level-2 predictors were standardized prior to the analyses, and the reported results are based on using restricted maximum

likelihood estimation and robust standard errors.

Results

Longitudinal Changes in Depressive Symptoms

The results of the analysis examining the effects of optimism and age on longitudinal changes in depressive symptoms are reported in Table 3. The Level-1 model showed a significant effect for the intercept of depressive symptoms, indicating that participants' average levels of depressive symptoms were significantly different from zero. In addition, the Level-1 model demonstrated a significant slope effect for depressive symptoms, suggesting that levels of depressive symptoms linearly increased over time. Finally, the Level-1 model showed considerable variability in the intercept, $\chi 2 = 1146.08$, $p < .01$, and slope, $\chi 2 = 175.70$, $p = .37$, coefficients of participants' depressive symptoms, indicating the possible presence of individual differences in these estimates.

The subsequently conducted Level-2 models predicted variability in participants' average levels (i.e., intercepts) and longitudinal changes (i.e., slopes) in depressive symptoms by interindividual differences in dispositional optimism, age, and the covariates (sex and SES). The results of the Level-2 main effects showed that only dipositional optimism (but not age, sex, or SES) predicted the intercept (i.e., average levels) of depressive symptoms. Optimists reported lower levels of depressive symptoms than pessimists across the entire study period (see intercept values in Table 3). In addition, optimism, age, and sex did not exert significant effects on changes in depressive symptoms. However, SES positively predicted longitudinal changes in depressive symptoms, indicating that participants who had a higher SES experienced a steeper increase in depressive symptoms than their lower SES counterparts (see slope values in Table 3). In the final step, the inclusion of the interaction term between optimism and age showed that this interaction did not significantly predict average levels of depressive symptoms (see intercept values in Table 3),

but (consistent with arguments presented in the introduction) was significantly associated with changes in depressive symptoms (see slope values in Table 3). Above and beyond the main effects, the interaction effect explained 12.64% of additional variance in longitudinal changes of depressive symptoms (Kreft & De Leeuw, 1998).

To interpret the significant interaction effect, we plotted in Figure 1 the associations between optimism and 6-year changes in depressive symptoms separately for younger-old (left panel) and older-old participants (right panel). These associations were illustrated by using the averaged upper and lower quartiles of the continuous distributions of baseline age (lower quartile = 65.74 years; upper quartile = 80.30 years) and the averaged scores of dispositional optimism across waves (lower quartile = 11.73; upper quartile = 20.77) as reference points (Preacher, Curran, & Bauer, 2006). Simple slope analyses showed that among younger-old participants, optimists maintained relatively low and stable levels of depressive symptoms over time, $\beta = -.05$, $SE = .12$, $p = .67$, while pessimists' levels of depressive symptoms increased over time, $\beta = .50$, $SE = .17$, $p < .01$. Among older-old participants, by contrast, optimists' low baseline levels of depressive symptoms increased significantly over time, $\beta = .55$, $SE = .17$, $p < .01$, while pessimists' maintained relatively high and stable levels of depressive symptoms, $\beta = -.01$, $SE = .24$, $p = .98$.

Effects of Perceived Stress on Depressive Symptoms

The results of the analysis examining whether age effects of optimism on depression would occur particularly when older adults experience periods of enhanced (as compared to reduced) stress are reported in Table 4. Identical to the first set of analyses, the Level-1 model showed that average levels of depressive symptoms were significantly different from zero (see intercept values in Table 4). In addition, it documented a significant effect of within-person changes in perceived stress on depressive symptoms (see slope values in Table 4). Participants reported higher levels of depressive symptoms in waves in which they experienced higher, as compared with lower, levels of stress.

Note that there was also considerable variability in the average levels of depressive symptoms, $\chi 2 = 1247.03$, $p < .01$, and in the within-person associations between perceived stress and depressive symptomatology, $\chi 2 = 191.94$, $p < .01$.

The subsequent Level-2 model attempted to explain variability in within-person associations between perceived stress and depressive symptoms by individual differences in age, dispositional optimism, and the covariates. The pattern of findings for average levels of depressive symptoms (i.e., intercept) was highly similar to the first set of analyses, suggesting that dispositional optimism (but not age, sex, or SES) was significantly associated with lower average levels of depressive symptoms across waves (see intercept values in Table 4). In addition, the Level-2 model showed that optimism, age, sex, and SES did not exert significant main effects on the within-person associations of perceived stress and depressive symptoms (see slope values in Table 4).

In the final step of the Level-2 model, the additional inclusion of the interaction term between age and optimism indicated that this interaction did not significantly predict average levels of depressive symptoms (see intercept values in Table 4). However, as suggested, a significant interaction effect between age and optimism in predicting the within-person associations between perceived stress and depressive symptoms was obtained (see slope values in Table 4). Above and beyond the main effects, the interaction explained 7.15% of additional variance in the association between intra-individual stress levels and depressive symptoms (Kreft & De Leeuw, 1998).[5]

To illustrate the significant interaction effect, we plotted in Figure 2 the within-person associations between perceived stress and depressive symptoms for optimistic and pessimistic younger-old participants (left panel) and for optimistic and pessimistic older-old participants (right panel). As in the first set of analyses, averaged upper and lower quartiles of the predictor variables were used as reference points. Simple slope analyses showed that among younger-old participants, optimists' levels of depressive symptoms remained low and stable, independent of within-person

variation in perceived stress, β = .17, *SE* = .14, *p* = .24, while pessimists' levels of depressive symptoms were significantly enhanced in periods of high, as compared to low, stress, β = .37, *SE* = .13, *p* < .01. Among older-old participants, by contrast, optimists experienced significantly higher levels of depressive symptoms in periods of enhanced, as compared to reduced, stress, β = .58, *SE* = .15, *p* < .01, while pessimists maintained high and relatively stable levels of depressive symptoms, independent of within-person variation in perceived stress, β = -.23, *SE* = .20, *p* = .24.

Discussion

This study showed in a sample of community-dwelling older adults that the emotional benefits of dispositional optimism can vary as a function of age. While optimism buffered longitudinal increases in depressive symptoms in early old age, these beneficial consequences of optimism were reduced in advanced older adulthood. This pattern of findings supports our hypothesis that an age-related configuration of opportunities and constraints for overcoming stressors and attaining personal goals (Baltes & Baltes, 1990; Heckhausen et al., 2010) could determine the adaptive value of dispositional optimism. During the earlier phases of older adulthood, when individuals typically confront stressors that can be overcome through active goal pursuits (Baltes & Smith, 2003), optimists may be more likely than pessimists to resolve their problems and prevent the experience of depressive symptoms. In the later phases of old age, however, when many individuals experience a larger number of uncontrollable stressors, even optimists may may have difficulties overcoming the problems they face and experience an increase in depressive symptoms as a result. Note that pessimists' levels of depressive symptoms did not further increase in advanced old age, which could imply that their emotional distess had already reached a ceiling. Alternatively, pessimists' emotional well-being may have been protected in advanced old age by their observation that most age peers also fail in overcoming problems (cf. Festinger, 1954).

The study's results further documented that intra-individual variability in levels of perceived stress play a role in the age-related functions of dispositional optimism. Here, optimism buffered the association between enhanced stress and depressive symptoms in early old age, but this effect was reduced in advanced old age. These findings suggest that age effects of optimism on older adults' depressive symptoms become apparent particularly during periods of enhanced stress.

In addition, the findings indicate that within-person increases in perceived stress could explain the observed age effects of older adults' optimism on longitudinal increases in depressive symptoms. We suggest that such a process could take place if the age-related associations between optimism and depressive symptoms, obtained under conditions of higher-than-average stress, occurred to a larger extent in the later waves of our study. This may be the case because older adults can be expected to experience an increase of age-related stressors over time (Baltes & Baltes, 1990; Heckhausen et al., 2010).

Consistent with this possibility, the reported data showed that levels of stress increased after baseline (see Method Section). Moreover, our supplemental analyses support this conclusion by showing that the interaction effect between optimism and age on longitudinal changes in depressive symptoms was rendered non-significant if the analysis controlled for within-person differences in perceived stress. By constrast, the same interaction effect on the within-person association between stress perceptions and depressive symptoms remained significant if the analysis controlled for time in study (see Footnote 5). These results suggest that longitudinal changes in older adults' depressive symptoms may have been shaped, over time, by within-person increases in perceived stress.

Note that the effect sizes of the obtained associations were substantial. The observed interaction effects between age and optimism explained 12.64% of the variability in longitudinal changes in depressive symptoms, and 7.50% of the variability in the associations between perceived stress and depressive symptoms. Put differently, over 6 years of study, young-old pessimists' and

older-old optimists' levels of depressive symptoms increased between .72 and .78 standard deviations, respectively (using the *SD* of baseline depression scores as a reference). In a similar vein, young-old pessimists' and older-old optimists' levels of depressive symptoms increased as a function of variation in perceived stress between .43 and .70 standard deviations, respectively. Of note, levels of depressive symptoms among pessimists in early old age reached the clinical cut-off for mild depression (CES-D10 ≥ 10, Andresen et al., 1994) after 6 years of study as well as in the context of high stress perceptions (see Figure 1 and Figure 2).

Finally, we note that the reported findings were statistically independent of socio-demographic variation in sex and socioeconomic status (SES). It is noteworthy, however, that an independent, significant effect of SES was found on changes in depressive symptoms over time, indicating that participants with a *higher* SES experienced a steeper increase in depressive symptoms over time than their lower SES counterparts. To explain this counterintuitive finding, it is important to recognize that SES was associated with lower levels of depressive symptoms across all study waves (see Table 2). Thus, the emotional advantage that high SES individuals held at baseline over their lower SES counterparts became smaller during the study period. This pattern is conceptually similar to the results found for dispositional optimism, in that in both cases the benefits of a positive personal resource became less impactful over time. Perhaps personal resources, such as education and income, also render less effective as older adults advance in age; a possibility that should be addressed more comprehensively in future research.

Overall, the reported research contributes to the literature on dispositional optimism. Although optimism is widely considered an adaptive personality trait, recent work has discussed the possibility that the adaptive value of optimism may be reduced, and possibly reversed, in certain contexts (Carver & Scheier, 2014). Our theoretical rational did not expect pessimistic (relative to optimistic) outcome expectancies to become more adaptive at any point in a person's life since the

vast majority of studies did not reported benefits deriving from dispositional pessimism (Carver & Scheier, 2014).

In support of this assumption, the reported study showed that while the gap between the levels of depressive symptoms among optimists and pessimists became smaller as a function of age, even in advanced old age, optimists still had an emotional advantage over their pessimistic counterparts. This pattern may have emerged because optimists, as compared to pessimists, do not only use problem-focused coping more frequently, but also tend to engage more often in effective emotion-focused coping (irrespective of the controllability of life circumstances, Scheier et al., 1986). As such, the benefits deriving from emotion-focused coping could have partially compensated for losses in the effectiveness of problem-focused strategies among older-old optimists, enabling them to maintain an emotional advantage. Thus, dispositional optimism may not reverse its function entirely and may not become maladaptive. Instead, the benefits of optimism might vary depending on an individual's developmental context. In life circumstances for which an optimist's propensity for effective problem-focused coping is paramount, optimism should have a robust association with emotional well-being. By contrast, if individuals confront life circumstances for which the behavioral consequences of optimism are less effective, the emotional benefits deriving from those concomitants of optimism may also be reduced.

This study further advances theory and research on successful aging. During the past decade, evidence for substantial declines across different aspects of psychological functioning has accumulated in samples including older-old adults (Baird et al., 2010; Gerstorf et al., 2010; Sutin et al., 2013). To this end, our study demonstrates that as individuals enter advanced old age, enhanced emotional distress can be related to reductions in the effectiveness of intrapersonal resources, such as dispositional optimism. Note, however, that our analysis used age as a proxy to operationalize declines in individuals' opportunities for overcoming goal-related problems (Heckhausen et al.,

2010). The underlying factors driving these age effects, however, likely relate to a loss of specific resources (e.g., reduction of energy, health problems, or death of a spouse), which different individuals encounter at somewhat different ages. In addition, opportunity structures for goal pursuits undergo historical changes as cultures develop new means for supporting successful aging (Baltes, 1997). Thus, the specific ages at which the adaptive value of dispositional optimism becomes reduced in older adulthood may vary across individuals and are likely to change as a function of historical time.

Finally, the reported results may broaden extant life-span theories of motivation, which have proposed that successful development requires individuals to adjust their goal-specific processes to age-related declines in the controllability of life circumstances (Heckhausen et al., 2010). In this regard, our findings may facilitate an integration of theories on the role of personality dimensions and goal-specific processes. Considering that dispositional optimism reliably predicts persistent goal pursuits, it is likely to represent an underlying factor that influences individuals' specific responses to threatened goals and through this process could trigger age-related changes in emotional well-being (Heckhausen & Wrosch, 2016).

Limitations and Future Directions

There are limitations of the present research. First, the study's results are based on a relatively small longitudinal sample of older adults. This methodology limits the generalizability of findings and prevents us from drawing causal conclusions. Second, our study did not measure the specific coping tactics that could mediate the observed age effects of dispositional optimism on depressive symptoms (e.g., problem and emotion-focused coping, Carver Scheier, & Weintraub, 1989). Third, we acknowledge that our measure of perceived stress was quite brief and did not tap into the type and nature of stress that individuals experience. Fourth, our analyses did not examine the specific factors that could determine opportunity declines in overcoming goal-related stressors

(e.g., onset of health problems or loss of a spouse). This limitation prevents us from excluding the possibility that some participants may have experienced problems with overcoming goal-related stressors earlier than others, which could provide an alternative explanation for the observed increases in depressive symptoms among young-old pessimists and older-old optimists. Finally, this study did not examine whether age effects of optimism could further contribute to older adults' health-related problems, which represents a plausible possibility given the adverse effects of depressive symptomatology on mortality (Schulz et al., 2000).

Future research should address these limitations by conducting long-term longitudinal studies in large representative samples. Such research should assess a wide array of psychological resources (e.g., SES, control beliefs, coping, and other traits) and measure specific life events (e.g., death of spouse or onset of severe health problems). Finally, health-related outcomes (e.g., immune function and clinical disease) should be included with more psychological outcomes to illuminate the psychological mechanisms that result in pathways to successful development.

Declaration of Conflicting Interests

The authors have no conflict of interest to declare.

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Footnotes

[1] We use the terms optimists versus pessimists for the purpose of communication of ideas and results, referring to individual differences in a bipolar and continuous distribution that ranges from high optimism to high pessimism (Scheier, Carver, & Bridges, 1994).

[2] Data previously published from the MAHS have not examined (age-differential) effects of optimism on depressive symptoms (e.g., Jobin et al., 2014).

[3] Please note that our analyses involving optimism and age would have obtained the same significant effects, if deceased participants or only those who participated in at least 3 of the 4 waves were included into the analyses.

[4] Level-1 missing data were addressed in the HLM analyses (depression = 57 of 684; stress = 79 of 684), which calculated intercepts and slopes for each individual based on the number of available data points. There were no missing data for Level-2 variables.

[5] We also conducted a supplemental analysis, which controlled the observed longitudinal changes in depressive symptoms for within-person variation in perceived stress. This analysis documented that the interaction effect between optimism and age on longitudinal changes in depressive symptoms was rendered non-significant, $t = 1.42$, $p = .16$, while the same interaction effect on the within-person association between stress perceptions and depressive symptoms remained significant, $t = 2.52$, $p = .01$.

Table 1

Means, Standard Deviations, Frequencies, and Range of Main Study Variables (N = 171)

Constructs	*Mean* (*SD*) or *Percentage*	*Range*
Depressive Symptoms		
T1	5.81 (4.21)	0-18.00
T2	6.44 (5.20)	0-23.00
T3	7.10 (5.73)	0-28.00
T4	7.15 (5.27)	0-26.25
Perceived stress		
T1	1.75 (2.49)	0-11.00
T2	2.80 (3.51)	0-14.00
T3	2.80 (3.68)	0-19.00
T4	2.38 (2.89)	0-12.00
Dispositional optimism (*M*[T2, T3, T4])	16.46 (3.45)	7.67-24.00
Age (T1)	71.94 (5.54)	64-90
Female (%)	51.46%	
Education (%)		
None	3.70%	
High school	30.25%	
College/trade	31.48%	
Bachelor	24.07%	
Masters/PhD	10.49%	
Income		
Less than $17,000	22.78%	
$17,001 – $34,000	36.71%	
$34,001 – $51,000	20.25%	
$51,001 – $68,000	12.66%	
> $68,000	7.59%	
Subjective social status	6.11 (1.82)	0-10.00

Table 2

Zero-Order Correlations of Main Study Variables (N = 171)

	1	2	3	4	5	6	7	8	9	10	11
1. Depressive symptoms $_{T1}$											
2. Depressive symptoms $_{T2}$	.59**										
3. Depressive symptoms $_{T3}$	.64**	.66**									
4. Depressive symptoms $_{T4}$	.56**	.65**	.58**								
5. Perceived stress $_{T1}$	.33**	.26**	.36**	.35**							
6. Perceived stress $_{T2}$	.12	.29**	.25**	.30**	.25**						
7. Perceived stress $_{T3}$	.37**	.41**	.61**	.37**	.36**	.32**					
8. Perceived stress $_{T4}$	.33**	.29**	.35**	.47**	.29**	.44**	.41**				
9. Dispositional optimism	-.58**	-.50**	-.53**	-.47**	-.25**	-.15	-.38**	-.29**			
10. Age	.02	.11	-.03	.10	-.09	-.04	-.05	.06	.04		
11. Socioeconomic Status	-.38**	-.25**	-.17*	-.22*	-.07	-.03	-.07	-.03	.27**	-.07	
12. Sex [a]	.13	.06	.08	.11	.05	.10	.11	.11	-.05	.02	-.15*

Note. [a] Higher values represent female participants.

* $p < .05$; ** $p < .01$.

Table 3

Results from HLM Analyses Examining Longitudinal Changes in Depressive Symptoms as a Function of Dispositional Optimism and Age (N = 171)

	Depressive Symptoms			
	Average level (Intercept)		Yearly change (Slope)	
	Coefficient (SE)	*T-Ratio*	*Coefficient (SE)*	*T-Ratio*
Level-1	6.60 (.33)	20.19**	.25 (.06)	4.27**
Level-2 main effects				
Sex [a]	.23 (.26)	.90	-.02 (.06)	-.40
Socioeconomic status	-.48 (.29)	-1.64	.14 (.06)	2.22*
Age	.25 (.26)	.96	.03 (.06)	.48
Dispositional optimism	-2.48 (.25)	-9.98**	-.08 (.07)	-1.17
Level-2 interaction effect				
Age X dispositional optimism	.40 (.27)	1.44	.16 (.07)	2.34*

Note. [a] Higher values represent female participants. The Level-1 model had 170 *dfs* and the Level-2 model had 165 *dfs*.

* $p < .05$; ** $p < .01$.

Table 4

Results from HLM Analyses Examining Within-Person Associations Between Perceived Stress and Depressive Symptoms as a Function of Dispositional Optimism and Age (N = 171)

	Depressive symptoms			
	Average levels (Intercept)		Effect of perceived stress (Slope)	
	Coefficient (SE)	*T-Ratio*	*Coefficient (SE)*	*T-Ratio*
Level-1	6.53 (.33)	20.03**	.26 (.07)	3.71**
Level-2 main effects				
Sex [a]	.22 (.26)	.85	.07 (.07)	.97
Socioeconomic status	-.51 (.29)	-1.78	-.01 (.08)	-.13
Age	.17 (.26)	.66	-.04 (.07)	-.60
Dispositional optimism	-2.46 (.25)	-10.00**	.04 (.06)	.71
Level-2 interaction effect				
Age X dispositional optimism	.35 (.26)	1.35	.15 (.05)	2.89**

Note. [a] Higher values represent female participants. The Level-1 model had 170 *df*s and the Level-2 model had 165 *df*s.

* $p < .05$; ** $p < .01$.

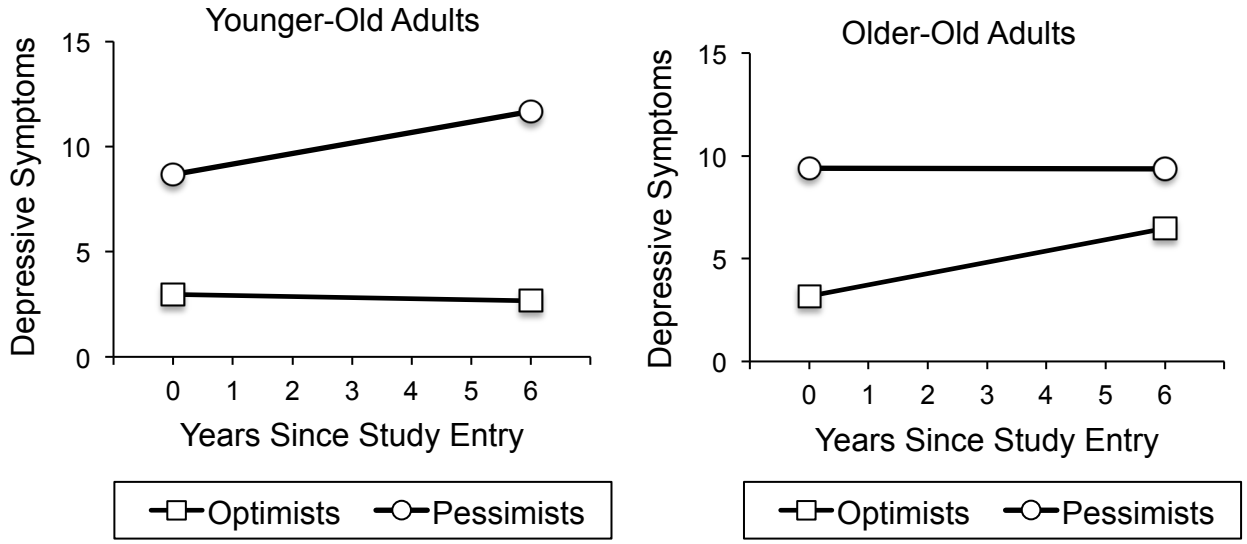

Figure 1. Associations between dispositional optimism and change in depressive symptoms over 6 years separately for younger-old adults (left panel) and older-old adults (right panel). Associations were plotted for the averaged upper and lower quartiles of the continuous predictor variables.

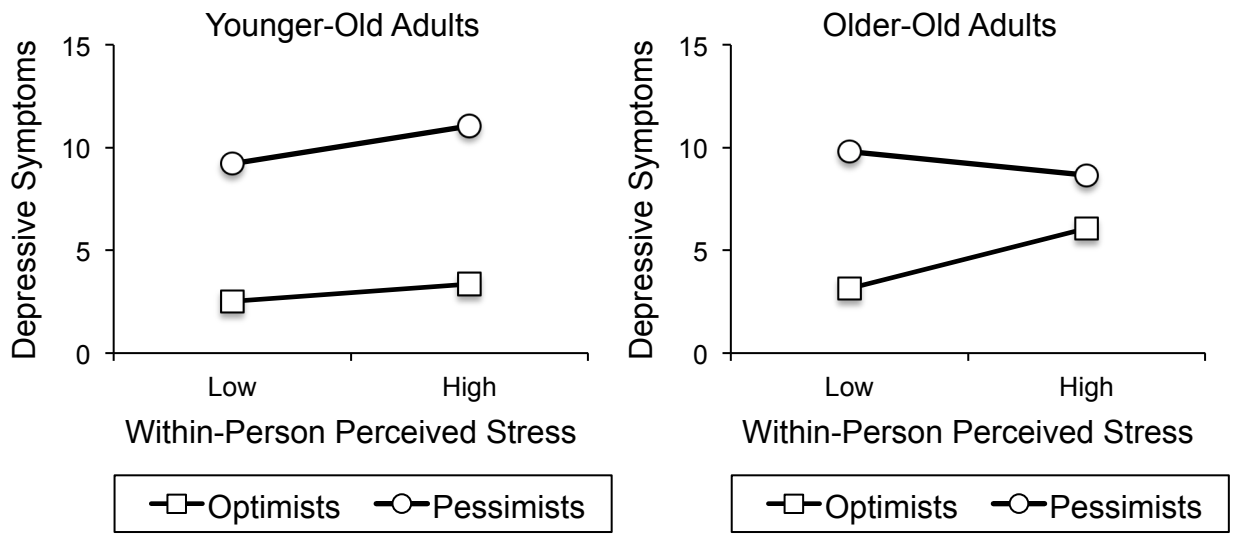

Figure 2. Within-Person associations between perceived stress and depressive symptoms separately for younger-old adults (left panel) and older-old adults (right panel). Associations were plotted for the averaged upper and lower quartiles of the continuous predictor variables.