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Optimism–Pessimism and Stress Appraisal: Testing a Cognitive Interactive Model of Psychological Adjustment in Adults

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An interactive model of optimism–pessimism and stress was examined in predicting psychological symptoms and life satisfaction in a group of younger ($n = 340$*;* $M = 20.4$ *years*) *and a group of older adults* ($n = 316$*;* $M = 46.6$ *years*). *For each group, results of conducting a series of regression analyses indicated that optimism–pessimism and stress appraisal accounted for a significant amount of the variance in each of the adjustment measures. Moreover, a significant optimism–pessimism* × *Stress Appraisal interaction was found in predicting each of the outcomes for both younger and older adults, even after controlling for the main effects of optimism–pessimism and stress appraisal. However, no significant interaction was found in predicting life satisfaction in older adults. For both younger and older adults, post hoc analyses of the significant interactions indicated a consistent pattern in which pessimism exacerbated the association between appraised stress and poor psychological adjustment. Potential implications of the present findings for future research are discussed.*

KEY WORDS: optimism; pessimism; stress; psychological adjustment; age differences.

According to Scheier and Carver's model, *optimism* and *pessimism*, defined as generalized positive and negative outcome expectancies, respectively, are believed to represent important proximal determinants of adjustment (Scheier & Carver, 1985). Consistent with their model, generalized outcome expectancies have been found to be significantly associated with psychological adjustment in both younger (e.g., Chang, 1998b; Scheier & Carver, 1985) and older adults (e.g., Mroczek, Spiro, Aldwin, Ozer, & Bossé, 1993). In general, optimism has been found to be associated with greater positive psychological outcomes, whereas pessimism has been found to be associated with greater negative psychological outcomes. For example, in studies of adults, optimism has been found to be positively associated with greater life satisfaction (Chang, Maydeu-Olivares, & D'Zurilla, 1997), positive mood (Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992), and greater self-esteem

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(Scheier, Carver, & Bridges, 1994), whereas pessimism has been found to be positively associated with greater depressive symptoms (Chang et al., 1997), negative mood (Marshall et al., 1992), and greater psychological symptoms (Chang, in press). In general, findings from numerous studies over the past decade have shown that adult optimists are better adjusted than adult pessimists (Scheier & Carver, 1992; Scheier, Carver, & Bridges, 2001).

Research examining the utility of cognitive models of psychological adjustment in adult populations have shown that beyond direct influences, cognitive factors can interact significantly with stress in the prediction of adjustment (Ingram, Miranda, & Segal, 1998). Specifically, studies have found that negative relative to positive cognitions tend to exacerbate or worsen the influence of stress on psychological adjustment, and hence, operate as a vulnerability factor in the link between stress and adjustment. For example, studies predicting depressive symptoms in adults have found that the influence of stress on symptoms is often heightened for those who tend to hold a pessimistic explanatory style (e.g., Abramson, Metalsky, & Alloy, 1989; Metalsky, Halberstadt, & Abramson, 1987). In contrast, studies have found that positive compared to negative cognitions typically abate or lessen the negative influence of stress on adjustment, thus acting as a stress buffer. For example, recent studies examining the role of positive cognitions in the link between stress and adjustment have found that positive automatic thoughts (Lightsey, 1994) and optimistic beliefs about personal control (Alloy & Clements, 1992) are associated with reducing the influence of stress on the severity and duration of psychological symptoms in adults.

Insofar that optimism and pessimism, respectively, represent important dimensions of positive and negative cognition that have been found to be associated with psychological adjustment in adults (Scheier et al., 2001; Scheier & Carver, 1985, 1992), it is likely that these variables also interact with stress in predicting adjustment. Noteworthy, in a recent study looking at optimism–pessimism and stress, Bromberger and Matthews (1996) found a significant interaction between these variables in predicting depressive symptoms in a sample of 460 middle-aged adults. Moreover, a plot of the interactions by these investigators revealed that pessimistic adults experienced depressive symptoms, especially under conditions of greater stress, compared to more optimistic adults. Although their findings have been interpreted as evidence for an interactive model of optimism–pessimism and stress in predicting psychological adjustment in older adults, several important methodological and theoretical questions remain to be resolved.

First, Bromberger and Matthews' study did not involve additional probing of the data to determine the manner in which optimism and pessimism interacted to exacerbate or abate the influence of stress on symptoms (Bromberger & Matthews, 1996). That is, it would have been important to examine whether the simple slopes for optimists and pessimists were significant, as well as whether these slopes were significantly different from each other (Aiken & West, 1991). This can be especially important in trying to determine the generalizability of such findings across different populations or across studies. Second, these investigators measured stress using dichotomous ratings (reflecting presence or absence of stress) based on participants' reports of chronic stress and of stressful life events. Yet, the use of such ratings are not likely to accurately reflect the range of variability in people's perception or

experience of chronic or acute stress. Noteworthy, although no single model or measure of stress has emerged from the stress and adjustment literature, there has been a growing tendency to consider stress and its measurement in more cognitive terms (Lazarus, 1993, 1999; Lazarus & Folkman, 1984). Accordingly, Cohen, Kamarck, and Mermelstein (1983) developed the Perceived Stress Scale (PSS) to assess for stress appraisal or the extent to which individuals view their lives as unpredictable, uncontrollable, and overloading. Importantly, in contrast to some of the problems associated with the use of life events measures (for a discussion, see Perkins, 1982), the PSS does not constrain respondents to a specific list of life stressors. Hence, using measures like the PSS can be of particular advantage for researchers seeking a reliable way to compare interaction findings involving stress across groups that may differ in their experience of or exposure to different life events.

In addition, because a majority of the studies conducted on optimism–pessimism have been based almost exclusively on using young adult college student samples, it may be inappropriate to generalize from a narrow database of young adults to older adults (Sears, 1986). For example, Isaacowitz and Seligman's unexpectedly found that older optimistic adults reported greater psychological symptoms than their more pessimistic counterparts (Isaacowitz & Siligman, 2001). Furthermore, although Bromberger and Matthews' study provides an important examination of the influence of optimism–pessimism and stress in an older adult population, recall that their findings were based on women only (Bromberger & Matthews, 1996). No doubt, despite the fact that sex differences have typically not been found in studies of optimism–pessimism in adults (Scheier & Carver, 1985, 1992), the use of a more representative sample that included both middle-aged women and men would have been more useful. Accordingly, it would seem useful to directly examine the generalizability of an interactive model in a sample of college students as well as in a sample of older adults.

Finally, insofar that optimism and pessimism in adults have been linked to both positive and negative psychological outcomes, it would be important to examine an interaction model for not only predicting negative outcomes such as psychological symptoms, but also positive outcomes such as life satisfaction. This latter point is particularly critical insofar that most studies examining interaction models between psychological variables and stress (e.g., diathesis-stress studies) have often failed to consider the specificity or generalizability of their model for predicting different psychological outcomes (Garber & Hollon, 1991). In addition, such an endeavor would also be consistent with the growing efforts of psychologists to understand ways to not only reduce maladjustment, but also ways to promote positive psychological adjustment (Diener, 1984; Ryff, 1989; Seligman & Csikszentmihalyi, 2000).

Given these limitations and concerns, the purpose of this study was to (a) examine the relations between optimism–pessimism, stress appraisal, and psychological adjustment (e.g., life satisfaction and psychological symptoms) in a sample of younger (viz., college students) and older adults (viz., parents of students); and (b) determine if optimism–pessimism interacts with stress appraisal in predictions of psychological adjustment for both age groups. Consistent with the extant literature indicating that optimism is an adaptive variable in both younger and older adults, greater optimism (or less pessimism) was expected to be associated with less appraised stress,

greater positive psychological outcome, and less negative psychological outcome for both groups. In addition, consistent with evidence for an interactive model involving optimism–pessimism and stress appraisal in predicting psychological adjustment in both younger and older adults, pessimism was expected to exacerbate the negative influence of appraised stress on adjustment, whereas optimism was expected to abate such influences on adjustment. Thus, for example, the association found between appraised stress and psychological symptoms for pessimists was expected to be greater than the association found between appraised stress and psychological symptoms for optimists.

METHOD

Participants

Three hundred and forty-four college students from a midsized Midwestern university were solicited to participate in this study. To obtain a sample of older adults, each student participant was also asked to solicit participation from either a parent, an older relative, an older friend, or a friend/relative, in that particular order. All student participants were enrolled in an introductory psychology course and earned course credit for participation as part of a course requirement. Ages across student and nonstudent participants ranged from 16 to 76 years, with a mean age of 33.8 years. Participants were predominantly White (95.7%). The individuals in this study have not participated in any other research conducted by the author.

All study measures were administered to all 344 college student participants in the form of a take home survey. All participants were carefully instructed (verbally and on the survey itself) to complete the survey in one sitting and to do the survey away from any distracting activities. To maximize the opportunity to obtain an older sample, each participant was asked to give a second set of questionnaires identical to the ones they were to complete to either a parent, an older relative, an older friend, or a friend/relative, in that particular order.

Given that the present student sample included nontraditional students (i.e., older-aged students), classification of all participants into either the younger adult (Sample 1) or the older adult (Sample 2) group was made based solely on age, employing a median break at 33 years. The use of a median break was also considered appropriate given the bimodal distribution of age found across student and nonstudent participants. The split resulted in 22 nonstudent participants being placed in the younger adult group, and 16 student participants being placed in the older group. In addition, one participant (aged 16) was dropped from Sample 1 because of that person's particularly younger age. Similarly, 13 participants (aged $\geq$65) were dropped from Sample 2 given their particularly older age. Consequentially, Sample 1 was composed of 340 (139 men and 201 women) young adult participants, representing 94.9% of the student participants who completed the survey, with a mean age of 20.4 ($SD = 3.2$) years (ranging from 18 to 33 years). Sample 2 was composed of 316 (70 men and 246 women) older adult participants, representing 89.6% of the

nonstudent participants who completed the survey, with a mean age of 46.6 (SD = 5.8) years (ranging from 34 to 63 years). For both samples, men and women were not found to differ significantly in age.

Measures

Optimism–Pessimism

The revised Life Orientation Test (LOT-R; Scheier, Carver, & Bridges, 1994) is a 6-item measure (plus 4 filler items) of individual difference in optimism–pessimism (e.g., "In uncertain times, I usually expect the best"). Respondents are asked to rate the extent of their agreement to these items across a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). The LOT-R is a brief modified version of the original Life Orientation Test (LOT; Scheier & Carver, 1985) and has been found to correlate .95 with the latter (see Scheier et al., 1994). Higher scores on the LOT-R generally reflect a greater tendency to expect more positive versus negative outcomes. Evidence for the construct validity and predictive utility of the LOT-R has been reported in Scheier et al. (1994).

Stress Appraisal

The PSS (Cohen et al., 1983) that was mentioned earlier is a 14-item measure of self-appraised life stress (e.g., "In the last month, how often have you been upset because of something that happened unexpectedly?"). Respondents are asked to rate the frequency of these items across a 5-point scale ranging from 0 (*never*) to 4 (*very often*). Higher scores reflect greater appraised stress in the last month. Evidence for the construct validity of the PSS with life events measures has been reported by Cohen and his associates (Cohen et al., 1983; Cohen & Williamson, 1988).

Psychological Adjustment

Psychological adjustment was assessed by the Symptoms Checklist-90-Revised (SCL-90-R; Derogatis, 1983), the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), and the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985).[2]

The SCL-90-R is a 90-item self-report measure of psychological symptomatology. Respondents are asked to rate the extent to which they have been troubled *during the past week, including today*, by specific symptoms (e.g., "Feelings of being trapped or caught") across a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*). Because research has indicated that the SCL-90-R is best regarded as a general distress measure when used with nonclinical populations (Cyr, McKenna-Foley, & Peacock, 1985), the present research employed only a single summary score for this measure. Higher scores generally indicate greater psychological distress.

The SWLS is a 5-item measure of global life satisfaction (e.g., "I am satisfied with my life"), or a person's satisfaction with life as a whole, rather than in any

[2]Findings on the BDI are not reported because they were identical to the results of the SCL-90-R.

specific domain. In support of its validity, scores on the SWLS have been found to be positively related to those obtained from other self-report measures of subjective well-being as well as from external ratings (Pavot & Diener, 1993). Respondents are asked to rate the extent of agreement to these items across a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores generally reflect greater life satisfaction.

Procedure

A packet including a separate student battery and a separate parent battery was distributed to all 344 student participants in the form of a take home survey that was to be returned the next day of class (within 2 days). Both students and parents were instructed to complete their respective battery alone in a single sitting and away from distraction. Student and parent participants were directed to seal their responses in separate envelopes provided in the packet when done and then place the sealed envelopes back in the packet to be returned to the researcher by the student participant. Of the initial student participant sample, nine student participants provided an incomplete set of surveys, and thus left a total of 335 completed pair of responses that were available for subsequent analyses. It is worth noting that there was no systematic evidence of invalid questionnaire responses in the student or adult samples. In addition, a random inspection of student–parent questionnaires indicated different handwriting, different dates of questionnaire completion, and different signatures were obtained that would support the independence of questionnaire completion.

Participants were not made aware of the purpose of the study until after the study was completed. To protect the participants' anonymity, only participant numbers were placed on the instruments. In addition, all student and nonstudent participants signed consent forms that indicated that all test data would be kept strictly confidential.

RESULTS

Relations Between optimism–pessimism, Stress Appraisal, and Psychological Adjustment in Younger and Older Adults

Zero-order correlations and internal consistency reliabilities for all study measures for both the younger and older adult samples are presented in Table I. As the table shows, for young adults, scores on optimism–pessimism were significantly related in the expected direction to scores on the PSS, SCL-90-R, and SWLS accounting for 38, 19, and 27% of the variance in these measures, respectively. A very similar set of findings also emerged for older adults, accounting for 37, 26, and 24% of the variance in these scales, respectively. The significant inverse correlations between scores on the LOT-R and the PSS in both the younger and older adult samples are consistent with the notion that optimism is associated with less stress, whereas pessimism is associated with greater stress. However, it is important to note that these associations were not so strong as to suggest that measures of optimism–pessimism and stress appraisal were redundant with each other. In

Table I. Correlations and Internal Reliabilities for All Study Measures

Measures	1	2	3	4
1. LOT-R	—			
2. PSS	−.62***	—		
	(−.61***)			
3. SCL-90-R	−.44***	.47***	—	
	(−.51***)	(.54***)		
4. SWLS	.52***	−.54***	.42***	—
	(.49***)	(−.54***)	(−.39***)	
α	.81	.88	.93	.89
	(.82)	(.85)	(.92)	(.89)

Note. Numbers outside of the parentheses are for the sample of young adult participants ($n = 340$). Numbers within the parentheses are for the sample of older adult participants ($n = 316$). LOT-R = Life Orientation Test—Revised; PSS = Perceived Stress Scale; SCL-90-R = Symptoms Checklist-90—Revised; SWLS = Satisfaction With Life Scale.
*** $p < .001$.

addition, appraised stress was significantly related to both of the psychological adjustment measures for both young adults (accounting for 22–29% of their variances) and older adults (accounting for 29% of their variances). It is worth noting that the magnitude and direction of the correlations were very similar across the younger and older adult samples.

Group Differences Between Young and Older Adults on Optimism–Pessimism, Stress Appraisal, and Psychological Adjustment

To examine for group differences between younger and older adults across all of the present measures, I first conducted a MANOVA in which the effects of age (younger versus older) on scores for all of the present measures (viz., LOT-R, PSS, SCL-90-R, and SWLS) were considered simultaneously. This consideration is especially important before conducing univariate analyses in order to reduce Type I error when variables are related to each other. Noteworthy, results of conducting a MANOVA indicated a highly significant main effect for age, Wilk's lamda = .93, $F(4, 651) = 12.57$, $p < .0000001$. Accordingly, I then conducted a series of univariate t tests for each measure. To further reduce spurious findings, standard significance values were modified using a more conservative Bonferroni adjustment. For example, to obtain a standard $p < .05$ for the total number of comparisons, an adjusted $p < .01$ would need to be reached, and so forth. Results of these comparative analyses are presented in Table II. As this table shows, older adults reported significantly higher levels of optimism compared to young adults. In contrast, young adults reported higher levels of stress and psychological symptoms compared to older adults. Noteworthy, there was no significant group difference on life satisfaction. Taken together, these results indicate that although the nomological net of associations between optimism–pessimism, stress appraisal, and psychological adjustment are similar between younger and older adults, there are significant differences in how strongly these variables are experienced between these groups.

Table II. Group Differences Between Younger and Older Adults on Measures of Optimism–Pessimism, Stress Appraisal, and Psychological Adjustment

	Group				
	Young adult ($n = 340$)		Older adult ($n = 316$)		
Measure	*M*	*SD*	*M*	*SD*	*t*(654)
Optimism–pessimism	15.34	4.26	16.87	4.98	−4.23**
Stress appraisal	24.26	6.27	22.93	6.05	2.77*
Psychological adjustment					
Psychological symptoms	75.60	56.38	52.88	45.61	5.65**
Life satisfaction	23.87	6.46	23.68	6.75	0.36

* $p < .01$. ** $p < .001$.

Optimism–Pessimism and Stress Appraisal as Predictors of Psychological Adjustment in Adults

To examine the predictive utility of optimism–pessimism as measured by the LOT-R and stress appraisal as measured by the PSS in accounting for variance in measures of psychological symptoms and life satisfaction, I conducted a series of hierarchical regression analyses for each of these outcomes. For each of the regression equations, scores on the LOT-R were entered as the First Step, followed by PSS scores in the Second Step. Finally, to test for an optimism–pessimism × Stress Appraisal interaction, the multiplicative term was entered in the Final Step of the equation (Aiken & West, 1991). Results of these analyses for predicting variance in psychological symptoms and life satisfaction for younger and older adults are presented in Table III.

Table III. Hierarchical Regression Analyses Showing Amount of Variance Accounted for by optimism–pessimism and Stress Appraisal in Each Outcome Measure for Younger and Older Adult Samples

Outcome measure	*R*	ΔR^2	*df*	*F*
Younger adults ($n = 340$)				
Psychological symptoms				
LOT-R	.44	.19	1, 338	79.47***
PSS	.51	.07	1, 337	30.65***
LOT-R × PSS	.53	.02	1, 336	10.53**
Full equation	.53	.28	3, 336	43.65***
Life satisfaction				
LOT-R	.52	.27	1, 338	122.54***
PSS	.59	.08	1, 337	40.36***
LOT-R × PSS	.62	.04	1, 336	24.54***
Full equation	.62	.39	3, 336	71.36***
Older Adults ($n = 316$)				
Psychological symptoms				
LOT-R	.51	.26	1, 314	107.99***
PSS	.58	.08	1, 313	39.87***
LOT-R × PSS	.59	.01	1, 312	5.61*
Full equation	.59	.35	3, 312	56.41***
Life satisfaction				
LOT-R	.49	.24	1, 314	101.36***
PSS	.58	.09	1, 313	41.82***
LOT-R × PSS	.58	.00	1, 312	0.35
Full equation	.58	.33	3, 312	52.13***

Note. LOT-R = revised Life Orientation Test; PSS = Perceived Stress Scale.
* $p < .05$. ** $p < .01$. *** $p < .001$

Examining an Interactive Model of Psychological Adjustment in Young Adults

As Table III shows, LOT-R scores accounted for a significant amount of the variance in both of the psychological adjustment measures for young adults. In addition, scores on the PSS accounted for a significant amount of additional variance in psychological symptoms and in life satisfaction, even after partialing out variance accounted for by optimism–pessimism. In addition, as the table shows, the LOT-R × PSS interaction was significant for predicting psychological symptoms and for predicting life satisfaction, even after partialing out the variances accounted for by both optimism–pessimism and appraised stress.

To illustrate the LOT-R × PSS interaction for psychological symptoms, I plotted the regression of psychological symptoms on appraised stress at high and low levels of optimism–pessimism for the present sample (see Fig. 1). Consistent with procedures outlined by Aiken and West (1991), I used the simple slope (unstandardized) for the regression of psychological symptoms on appraised stress by using the high (one standard deviation above the mean) and low (one standard deviation below the mean) values for optimism. Because studies have typically considered such values as a reflection of optimism and pessimism (e.g., Chang, 1998b), respectively, these references will be used henceforth. As the figure shows, there was a significant positive relation between appraised stress and psychological symptoms at high levels of pessimism, ($b = 4.49$), $t(336) = 6.37$, $p < .01$. At high levels of optimism, the relation between appraised stress and psychological symptoms was also significant, ($b = 2.04$), $t(336) = 3.37$, $p < .01$. Hence, for both optimistic and pessimistic young adults, appraised stress was a significant determinant of psychological symptoms. However, the slope for pessimists was significantly sharper than the slope for optimists, $t(336) = 3.24$, $p < .01$.

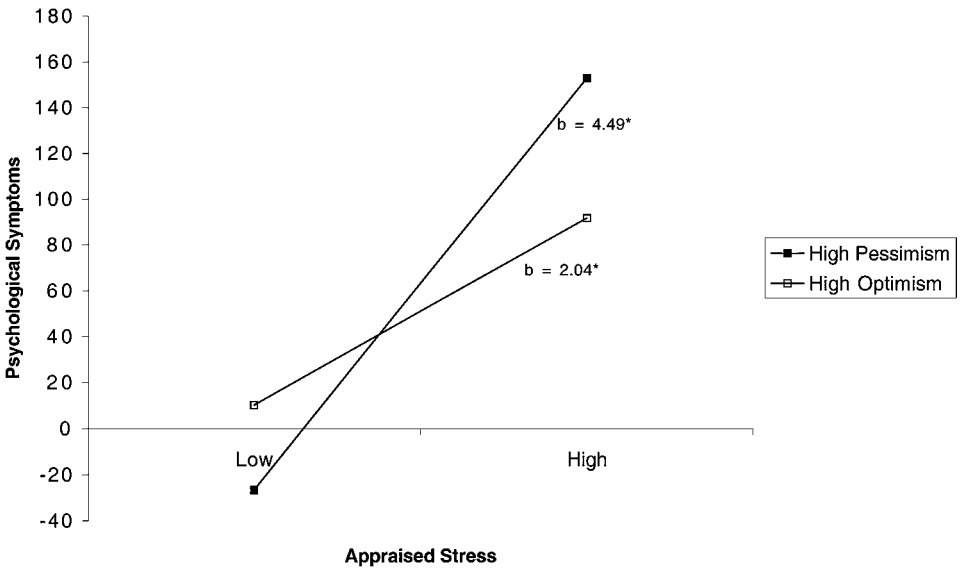

Fig. 1. Relationship of appraised stress with psychological symptoms at high and low levels of optimism–pessimism for young adults ($n = 340$). $^{*}p < .01$.

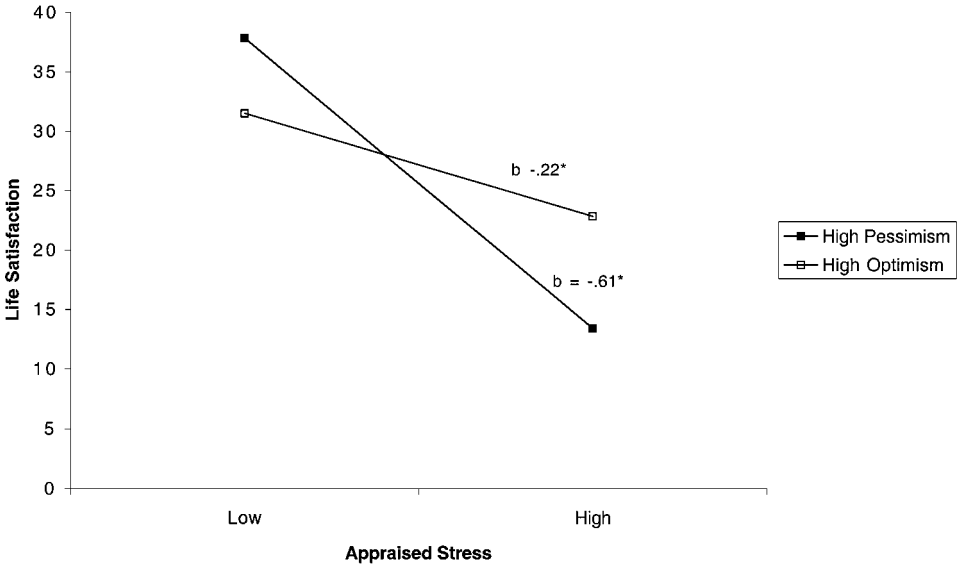

Fig. 2. Relationship of appraised stress with life satisfaction at high and low levels of optimism–pessimism for young adults ($n = 340$). $^{*}p < .01$.

Next, I plotted the regression of life satisfaction on appraised stress at high levels of optimism and pessimism to illustrate the LOT-R X PSS interaction for this outcome (see Fig. 2). As the figure shows, there was a significant relation between appraised stress and life satisfaction at high levels of optimism, ($b = -.22$), $t(336) = -8.23$, $p < .01$. At high levels of pessimism, the relation between appraised stress and life satisfaction was also significant, ($b = -.61$), $t(336) = -3.43$, $p < .01$. Hence, for both optimistic and pessimistic young adults, appraised stress was a significant determinant of life satisfaction. Again, however, the slope for pessimists was significantly steeper than the slope for optimists, $t(336) = 4.96$, $p < .01$. In sum, these results for young adults indicate a relatively consistent pattern in which the influence of appraised stress on poor psychological adjustment is significantly exacerbated for pessimists compared to optimists.

Examining an Interactive Model of Psychological Adjustment in Older Adults

As Table III also shows, LOT-R scores accounted for a significant amount of the variance in both of the psychological adjustment measures used in the older adult sample. That is, LOT-R scores accounted for a significant amount of the variance in psychological symptoms and life satisfaction. In addition, scores on the PSS accounted for a significant amount of additional variance in psychological symptoms and in life satisfaction, even after partialing out variance accounted for by optimism–pessimism. Moreover, as the table shows, the LOT-R $\times$ PSS interaction was significant for predicting psychological symptoms. In contrast, a significant LOT-R $\times$ PSS interaction did not emerge for predicting life satisfaction in this older adult sample.

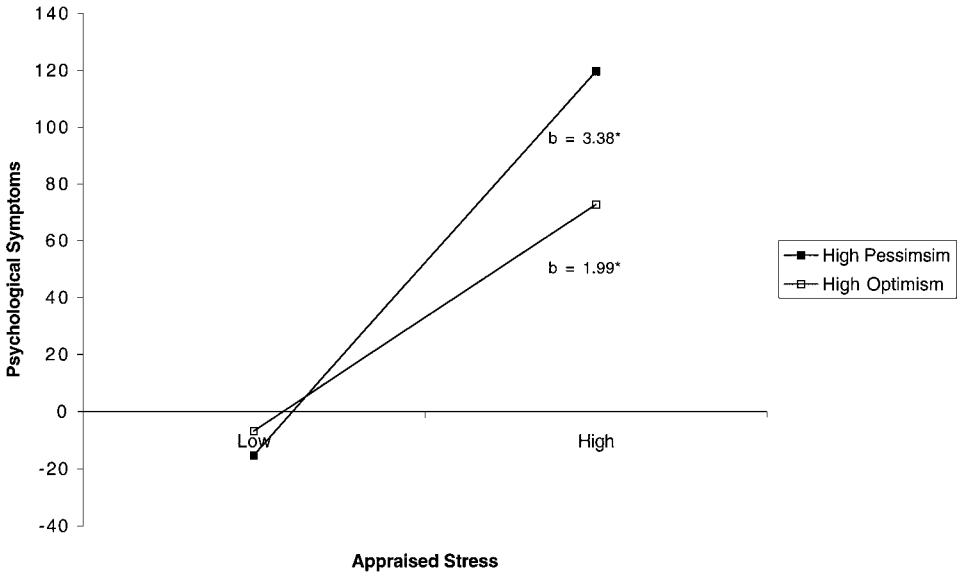

Fig. 3. Relationship of appraised stress with psychological symptoms at high and low levels of optimism–pessimism for older adults ($n = 316$). $^{*}p < .01$.

To illustrate the LOT-R × PSS interaction for predicting psychological symptoms in this older adult sample, I plotted the regression of psychological symptoms on appraised stress at high levels of pessimism and optimism to illustrate the LOT-R × PSS interaction (see Fig. 3). As the figure shows, there was a significant positive relation between appraised stress and psychological symptoms at high levels of pessimism, ($b = 3.38$), $t(312) = 6.66$, $p < .01$. At high levels of optimism, the relation between appraised stress and psychological symptoms was also significant, ($b = 1.99$), $t(312) = 3.70$, $p < .01$. Hence, for optimistic and pessimistic older adults, appraised stress was a significant determinant of psychological symptoms. Again, however, the slope for pessimists was significantly sharper than the slope for optimists, $t(312) = 2.37$, $p < .05$. In sum, these results for predicting psychological symptoms in older adults, as in younger adults, indicate a relatively consistent pattern in which the influence of appraised stress on poor psychological adjustment is exacerbated for pessimists compared to optimists.

DISCUSSION

This study expands on previous research and theory on cognitive models of psychological adjustment in adults by examining the relations between optimism–pessimism, stress appraisal, and positive and negative psychological outcomes, and by testing the generalizability of these relations between younger and older adults. Consistent with previous findings obtained for optimism–pessimism in young adult populations (e.g., Chang, 1998b; Scheier & Carver, 1985), results of this study showed that greater optimism was significantly associated with less psychological symptoms

and with greater life satisfaction in both younger and older adults. In addition, for both groups, optimism–pessimism and appraised stress were found to be significantly related to each other. However, although scores on the PSS and the LOT-R were positively and significantly correlated, they were not so high as to suggest that these measures were redundant with each other.

Likewise, appraised stress was significantly associated with each measure of psychological adjustment in both younger and older adults. Again, the strong associations found between appraised stress and indices of psychological adjustment in both groups were consistent with those found for young adults (e.g., Cohen et al., 1983). Yet, given the moderately large amount of shared variance found between the PSS and the two outcome measures, a question may be raised regarding the lack of discriminant validity of the former from the later. Noteworthy, scores on the PSS have been found to prospectively predict psychological symptoms even after controlling for initial levels of adjustment (Cohen, 1986). Therefore, although stress appraisal has been found to be strongly related to psychological adjustment, the two are not substantively redundant with each other. Taken together, these findings not only confirm the pattern of associations between the present set of variables for young adults as identified in past research, but they also are the first to directly show that the relational net of associations for these variables is quite similar across younger and older adults.

Importantly, significant differences were found between younger and older adults on mean levels of optimism–pessimism, appraised stress, and psychological adjustment however. Specifically, older compared to younger adults were found to express significantly greater optimism. In contrast, younger adults were found to appraise greater stress in their lives and report greater psychological symptoms than older adults. This is not too surprising given that the present sample of young adults were predominantly composed of college students. In that regard, studies involving college students have typically found that this population is particularly vulnerable to poor psychological adjustment and stress (e.g., Dunkel-Schetter & Lobel, 1990).

The lack of a significant difference found between younger and older adults on SWLS scores indicates, however, that despite the greater vulnerability to stress and maladjustment in younger compared to older adults, young adults are no less likely than older adults to experience satisfaction and pleasure in their lives. That is, both groups reported SWLS scores that were on average, greater than the theoretical mean for this scale (23.87 and 23.68 for younger and older adults, respectively, on a scale ranging from 0 to 35). Interestingly, this finding is consistent with results obtained in an independent study of younger and older adults that looked at the role of perfectionism and stress as predictors of psychological adjustment between these two groups. Specifically, Chang (2000) found that young adults compared to middle-aged adults expressed significantly greater perfectionism, appraised stress (using a shortened version of the PSS), worry, and greater negative affect. In contrast, no significant group differences were found in that study for life satisfaction (using the SWLS) and positive affect. Therefore, because this study found that younger adults were less optimistic than older adults, factors other than optimism are likely to be involved in buffering the effects of appraised stress on positive outcomes such as life satisfaction and positive mood for young adults.

In addition, consistent with support for an interactive model, this study found that optimism–pessimism interacted significantly with stress appraisal in predicting each of the psychological outcomes in young adults. Specifically, for young adults, the positive association between appraised stress and psychological symptoms was found to be significantly more exacerbated for pessimists, than for optimists. For life satisfaction, the negative association between appraised stress and this positive outcome was again found to be significantly more exacerbated for pessimists, than for optimists.

It is interesting to note that the interaction found for life satisfaction in younger adults also indicated one very unexpected finding. Under conditions of low appraised stress, pessimists reported greater life satisfaction than did optimists. Although both pessimists and optimists reported levels of life satisfaction that were more than one standard deviation above the mean under conditions of low stress, it is not clear why optimists were less satisfied with their lives than were pessimists. One possibility is that the experience of low stress may not represent as strong a positive outcome for optimists than for pessimists. For optimists, those who typically expect the best, the presence of low stress may not represent a uniquely uplifting experience. In contrast, for pessimists, those who typically expect the worst, the presence of low stress may actually represent an unexpected and uplifting experience. Clearly, it would be important to examine these possibilities more thoroughly in the future.

For older adults, a similar pattern was also found in predicting psychological symptoms. Specifically, for older adults, the positive association between appraised stress and psychological symptoms was found to be significantly more exacerbated for pessimists, than for optimists. In contrast, the interaction between optimism–pessimism and stress appraisal was not found to be significant in predicting life satisfaction however. Accordingly, these findings raise a possibility that being optimistic versus pessimistic may have more chronic effects on the links between stress and positive and negative psychological outcomes for younger adults than for older adults. For older adults, being optimistic versus pessimistic may not strongly influence the link between stress and positive psychological outcomes (cf. Bromberger & Matthews, 1996). Hence, these findings indicate that the extent to which optimism–pessimism moderates the link between stress and psychological adjustment may depend on often overlooked factors like age and the particular type of outcome considered.

In sum, both younger and older adult samples were included so that a direct comparison across age was possible in this study. The present findings are the first to directly show that there are both similarities and differences in studying optimism–pessimism between younger and older adults. No doubt, given the dearth of studies published on optimism–pessimism in older adult populations, the present findings point to an important need to carefully consider the generalizability of past findings based on young adults to older adult populations.

Limitations of This Study

Some important considerations to the present findings and interpretations must be noted however. Consistent with Lazarus and Folkman's model of stress and coping, studies have shown that the influence of optimism–pessimism is partially mediated

by coping efforts (e.g., Carver et al., 1993; Lazarus & Folkman, 1984). This suggests that the apparent exacerbation of the influence of appraised stress on maladjustment for pessimists may be due not only to differences in their outcome expectancies, but also to differences in how they cope with stress compared to optimists (Scheier, Weintraub, & Carver, 1986). Noteworthy, in a study of 726 college students, Chang (1998b) found that the most consistent difference between optimists and pessimists was the latter group's use of more disengaged coping activities (e.g., wishful thinking, self-criticism, and social withdrawal), but not their use of less engaged coping activities compared to the former group. Hence, it would be important in future studies to examine whether and how coping variables mediates the link between stress and psychological adjustment for optimists compared to for pessimists.

Comparable to most of the studies published on optimism–pessimism, the present samples were largely Caucasian. However, given that important cultural differences have been found on measures of optimism–pessimism between Asians and Caucasians (e.g., Chang, 1996, in press; Chang, Asakawa, & Sanna, 2001), it would be important to determine the extent to which cultural factors play a role in understanding an interaction model involving optimism–pessimism and stress. And related to the previous point, it is important to also note that cultural differences have also been found in the coping strategies and styles of Asians compared to Caucasians (Chang, 1998a, 2001). No doubt, more research is needed to examine the role of optimism–pessimism and its nomological net with other important variables such as coping in more diverse populations.

Lastly, it would be useful to include more advanced methodological approaches in future studies. For example, although this study examined the role of optimism–pessimism on the link between appraised stress and psychological adjustment, one cannot draw any inferences about cause and effect given the cross-sectional nature of this study. Hence, a true prospective design study which assesses for all of the present measures across different points in time would help greatly clarify the causal relations between optimism–pessimism, stress appraisal, and psychological adjustment. Likewise, given that the present findings are based wholly on the use of self-reports, it would be useful in future studies to include more objective behavioral outcomes and measures.

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