OPTIMISM AND PESSIMISM AS PARTIALLY INDEPENDENT CONSTRUCTS: RELATIONSHIP TO POSITIVE AND NEGATIVE AFFECTIVITY AND PSYCHOLOGICAL WELL-BEING

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Summary—Using weighted least-squares confirmatory factor analysis, support was found for the bi-dimensionality of optimism and pessimism defined as positive and negative outcome expectancies, thus, replicating previous findings (Chang, D'Zurilla & Maydeu-Olivares, 1994; Marshall *et al.*, 1992). In addition, support was also found for the discriminant validity and utility of employing separate measures of optimism and pessimism for predicting individual differences in measures of life satisfaction and depressive symptoms. Moreover, significant predictive relations with these criterion measures were found even after controlling for the influence of positive and negative affectivity. Implications regarding the present findings for future research on optimism and pessimism are discussed. © 1997 Elsevier Science Ltd

INTRODUCTION

The concepts of optimism and pessimism have been a part of Western thought for more than 200 years (Bailey, 1988), and within the last decade they have generated a great deal of research interest in the areas of personality, social, and clinical psychology. A number of investigators have attempted to clarify the role of optimism in the use of adaptive coping behavior (e.g. Scheier, Weintraub & Carver, 1986; Scheier & Carver, 1985), as well as in the promotion of better psychological and physical well-being (e.g. Chang *et al.*, 1994; Mroczek *et al.*, 1993). Similarly, studies have also been done to elucidate the role of pessimism in the use of maladaptive coping behavior (e.g. Scheier *et al.*, 1986), and its relation to psychological and physical illnesses (Mroczek *et al.*, 1993; Peterson, Seligman & Vaillant, 1988).

Recently, however, Chang et al. (1994) have argued that this area of research suffers from at least two major problems. First, there are still no generally accepted definitions of optimism and pessimism. The most popular view is Scheier and Carver's (1985) definition of optimism and pessimism as generalized positive and negative outcome expectancies. The widely used Life Orientation Test (LOT; Scheier & Carver, 1985) is based on this definition. In contrast, Dember et al. (1989) have defined optimism and pessimism in a much broader way as a positive and negative outlook on life. Whereas Scheier and Carver's definition is future-oriented, their view includes present perceptions and appraisals as well as future expectancies. On the basis of this broad definition, Dember et al. (1989) have developed the Optimism and Pessimism Scale (OPS). Hence, because different measures of optimism and pessimism are not necessarily assessing the same cognitive processes, caution is needed when interpreting and comparing the empirical findings generated by different measures.

The second problem in this field of study is that there is confusion and controversy about the dimensionality of optimism and pessimism. The dominant view has been Scheier and Carver's (1985) conceptualization of optimism and pessimism as polar opposites on a unidimensional continuum. This view assumes that a person is either optimistic or pessimistic; one cannot be both optimistic and pessimistic. Recently, however, a number of investigators have seriously challenged this unidimensional model, arguing that optimism and pessimism might be better conceived as

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representing two partially independent dimensions (e.g. Fischer & Leitenberg, 1986; Mroczek *et al.*, 1993).

In a recent study, Chang et al. (1994) addressed this issue empirically using both confirmatory and exploratory factor-analytic methods. In a sample of 389 college students, these investigators found that a two-factor model was more appropriate than a one-factor model for the LOT, with one factor corresponding to optimism and the other to pessimism. The correlation between the factors was found to be −0.54. In contrast to these results, however, Chang et al. (1994) found that the OPS was multidimensional. Because of the very broad definition of optimism and pessimism on which this instrument is based, these findings suggest that the OPS may be confounding optimism and pessimism with other related or overlapping constructs, such as life satisfaction, morale, mood, and self-esteem. When Chang et al. (1994) analyzed an abbreviated version of the OPS that consisted only of items that best fit the definition of optimism and pessimism as positive and negative outcome expectancies, they found that a two-factor model fit this data satisfactorily. The inter-factor correlation was −0.45.

Consistent with these results, Marshall et al. (1992) factor analyzed the LOT and found it to be bidimensional in two large samples of male navy recruits. Moreover, in the same samples, they also found that a two-dimensional model fit the Hopelessness Scale (HS; Beck *et al.*, 1974) which, like the LOT, was designed to assess positive and negative future expectancies. It is important to note, however, that a modified version of the HS was used in this study. Instead of using the original true–false format, Marshall et al. (1992) had *S*s respond to each item on a 5-point Likert-type scale (ranging from 'strongly disagree' to 'strongly agree'). In contrast, in two different studies that analyzed the original HS, a one-factor model was found to be most appropriate for the data, and in both cases the scale was interpreted by the investigators as measuring a unipolar pessimism dimension in the more extreme range (Chang *et al.*, 1994).

Taken together, the findings reported by Chang et al. (1994) and Marshall et al. (1992) join those of other studies (e.g. Dember *et al.*, 1989; Fischer & Leitenberg, 1986) in casting growing concerns about the presumed validity of the traditional one-dimensional view of optimism and pessimism. When optimism and pessimism are defined as positive and negative outcome expectancies, a two-dimensional model appears to be a more appropriate conceptualization for these constructs.

In an attempt to build upon previous research, the present study had several objectives. First, we attempted to replicate the findings of Chang et al. (1994) by attempting to construct a bidimensional measure of optimism and pessimism, which consisted of items from both the LOT and the OPS that best fit the definition of these constructs as positive and negative outcome expectancies. The construction of this measure, which we will call the Extended Life Orientation Test (ELOT), will be later described. If successful, this replication would strengthen the conclusion that optimism and pessimism, when defined in this way, are bidimensional in structure. The second objective was to examine the discriminant validity and utility of separate measures of optimism and pessimism in predicting external criteria of psychological well-being, specifically, life satisfaction and depressive symptoms. We chose these particular criteria because they are important indicators of adjustment in a college student population, from which the participants will be drawn (see Dunkel-Schetter & Lobel, 1990). The third objective of this study was to investigate the discriminant validity and utility of optimism and pessimism in predicting the same criterion measures of psychological well-being when positive and negative affectivity are controlled. Finally, because all of the measures used in this study are self-report instruments that overlap with the global constructs of positive and negative affectivity (Watson & Tellegen, 1985), it is important to show that correlations between optimism and pessimism measures on the one hand, and the criterion measures of well-being on the other, are not merely reflecting the variance that these measures have in common with positive or negative affectivity.

METHOD

Participants

The participants were 425 undergraduate college students at the State University of New York at Stony Brook who were enrolled in the introductory psychology course. All students participated

in the study in order to fulfill a course requirement. The sample included 151 men and 274 women. Their mean age was 18.7 years.

Measures

Bidimensional measure of optimism and pessimism. In order to assess the reliability and validity of bidimensional optimism and pessimism, we *a priori* selected the best items that fitted the definition of positive and negative outcome expectancies, respectively, from the Life Orientation Test (LOT; Scheier & Carver, 1985) and the Optimism and Pessimism Scale (OPS; Dember *et al.*, 1989); The LOT is an 8-item self-report measure of optimism and pessimism defined as generalized positive and negative outcome expectancies, respectively. Four items are optimism items and the other four are pessimism items, with four additional filler items. The OPS is a 56-item self-report measure of optimism and pessimism defined in the broadest sense as biases in favor of the positive and negative features of life, respectively. Eighteen items assess optimism and another 18 items assess pessimism. The remaining 20 items are filler items. Information regarding the psychometric properties of these scales can be found in the references cited above. For further information regarding the factorial validity of these measures see Chang et al. (1994).

This process resulted in a total of 15 items that best fit our working definition of optimism and pessimism as positive and negative outcome expectancies, with six items that assessed for optimism (OPT scale) and nine items that assessed for pessimism (PESS scale). Of the 15 selected, seven items come from the LOT (items 1, 3, 4, 5, 8, 9, and 12), and another eight from the OPS (items 2, 5, 17, 20, 23, 31, 47, and 49). Furthermore, in order to allow for sufficient variance in the respondent's ratings, we kept the original format of the LOT, which assessed responses across a 5-point Likert scale ranging from (1) 'strongly disagree' to (5) 'strongly agree'. Five additional filler items were then added to this bidimensional measure of optimism and pessimism, from here on referred to as the Extended Life Orientation Test (ELOT).

Measure of positive and negative affectivity. The Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988) is a 20-item self-report measure of positive and negative affect, with 10 items that assess positive affect (PA scale) and 10 items that assess negative affect (NA scale). Cronbach alpha's range from 0.86 to 0.90 and from 0.84 to 0.87, for the positive and negative affect scales, respectively, have been reported (Watson *et al.*, 1988). When longer-term instructions were used (e.g. 'past year' vs 'right now'), test–retest reliabilities have ranged from 0.63 to 0.68 and from 0.60 to 0.71, for the positive and negative affect scales, respectively (see Watson *et al.*, 1988). As a result, the authors have concluded that "the stability coefficients of the general ratings are high enough to suggest that they may in fact be used as *trait* measures of affect" (italics added; p. 1065). Hence, in order to assess trait affectivity rather than affect for the present study, instructions asked how respondents felt in general (i.e. "Indicate to what extent you 'generally' feel this way, that is, how you feel on the 'average'").

Measures of psychological well-being. The following two self-report measures of psychological well-being were used in the present study: (1) the Satisfaction With Life Scale (SWLS; Diener *et al.*, 1985; and (2) the Beck Depression Inventory (BDI; Beck *et al.*, 1961).

The SWLS is a seven-item measure of global life satisfaction, or a person's satisfaction with life as a whole, rather than in any specific domain. The BDI is a commonly used 21-item measure of depressive symptomatology. Respondents are asked to rate whether they have experienced each symptom during the past few days. All of these measures of psychological adjustment appear to have good psychometric properties (see references cited above).

Procedure

The study measures were completed in two different testing sessions. At Time 1, all 425 participants were administered the ELOT. A total of 303 of these participants were tested in small groups (40 *S*s or less) and 122 participants completed the test during a large group testing session. At Time 2, approximately 6 weeks after Time 1, 284 of the participants previously tested in small groups at Time 1 completed the following measures in small group testing sessions in the order listed: ELOT, SWLS, PANAS, and BDI. Thus, a subsample of 284 participants completed the ELOT twice, separated by a time period of about 6 weeks. Participants were not made aware of the purpose of the study until after they had completed all measures.

Table 1. Factor loadings obtained by weighted least squares confirmatory factor analysis of the Extended Life Orientation Test

Item		Optimism	Pessimism
3.	In uncertain times, I usually expect the best.	0.498(0.023)	0
6.	I always look on the bright side of things.	0.747(0.023)	0
8.	I'm always optimistic about my future.	0.687(0.023)	0
11.	When I undertake something new, I expect to succeed.	0.661(0.024)	0
15.	Where there's a will, there's a way.	0.637(0.024)	0
19.	In general, things turn out all right in the end.	0.617(0.024)	0
2.	It is best not to get your hopes too high since you will probably be disappointed.	0	0.605(0.020)
4.	Rarely do I expect good things to happen.	0	0.819(0.017)
5.	If something can go wrong for me, it will.	0	0.726(0.019)
10.	I hardly ever expect things to go my way.	0	0.908(0.016)
12.	Things never work out the way I want them to.	0	0.803(0.018)
14.	If I make a decision on my own, I can pretty much count on the fact that it will turn out to be a poor one.	0	0.752(0.019)
16.	I rarely count on good things happening to me.	0	0.861(0.016)
18.	Better to expect defeat: then it doesn't hit so hard when it comes.	0	0.660(0.020)
20.	Give me 50/50 odds and I will choose the wrong answer every time.	0	0.661(0.020)

Note. $N = 425$. The estimated asymptotic standard errors are provided in parentheses.
All factors loadings were significant, $P < 0.05$.

The dimensionality of the ELOT was assessed using weighted least-squares confirmatory factor analysis as implemented in LISREL 7 (Jöreskog & Sörbom, 1989, 1990), the weight matrix being the asymptotic covariance matrix of the estimated polychoric correlations.

RESULTS

Factorial validity

One and two-factor models were fitted to the Time 1 ELOT data separately. As indicated by the chi-square goodness-of-fit index, the one factor model did not fit the data for Time 1, χ^2 (90, $N = 425) = 218.03$, $P < 0.001$. However, an oblique, two-factor independent clusters solution satisfactorily fit the data for Time 1, χ^2 (89, $N = 425) = 113.46$, $P = 0.401$. Table 1 presents the factor loadings and their estimated asymptotic standard errors for the two-factor solutions. As the table shows, each of the ELOT items is loaded by only one factor, and all loadings are very large. For the Time 1 data, the correlation between the factors was -0.796.

Because each item is loaded by only one factor, two unidimensional scales were constructed, one measuring optimism and the other measuring pessimism (namely, ELOT Optimism and Pessimism scales). Descriptive statistics and reliability estimates for the two scales are presented in Table 2. Two estimates of internal consistency are reported: coefficient alpha and coefficient omega. According to McDonald (1970), coefficient omega is the better estimate for scales that fit a one-dimensional model. As Table 2 indicates, both scales show adequate internal consistency and test–retest reliabilities. The correlation between the two scales is -0.65, indicating that they have approximately 42% of their variance in common, and hence, are not completely redundant with each other. As predicted, these results attest to a bidimensional interpretation of optimism and pessimism.

Because no significant gender differences were evidenced for either optimism or pessimism, as is consistent with previous findings (see Plomin *et al.*, 1992; see also, Scheier & Carver, 1985), subsequent analyses performed on the ELOT scales at Time 2 are collapsed across gender.

Discriminant validity and utility

In order to assess the degree to which optimism and pessimism empirically overlap with each other in relation to various measures of psychological well-being, a series of separate Pearson

Table 2. Means, standard deviations, and reliability estimates for the Optimism and Pessimism Scales of the Extended Life Orientation Test (ELOT)

ELOT scale	No. items	M^a	SD^a	alpha[a]	omega[a]	Test–retest[b]
OPT	6	21.73	3.69	0.77	0.81	0.73
PESS	9	22.51	6.57	0.89	0.92	0.84

Note. [a]$N = 425$. [b]$N = 284$. OPT, Optimism; PESS, Pessimism.

Table 3. Simple and partial correlations for optimism and pessimism with criterion measures of psychological well-being

Criterion	ELOT OPT[a]		ELOT PESS[b]	
	r	Partial r	r	Partial r
SWLS	0.53*	0.28*	−0.58*	−0.39*
BDI	−0.42*	−0.08	0.56*	0.46*

Note. N = 284. ELOT, Extended Life Orientation Test; OPT, Optimism; PESS, Pessimism; SWLS, Satisfaction With Life Scale; BDI, Beck Depression Inventory.
[a]Partial r's control for pessimism. [b]Partial r's control for optimism.
*P < 0.001.

Table 4. Relations between optimism, pessimism, positive affectivity, and negative affectivity

	PANAS PA	PANAS NA
PANAS NA	−0.32	
ELOT OPT	0.52	−0.43
ELOT PESS	−0.49	0.47
M	34.44	21.72
SD	6.49	6.81

Note. N = 284. ELOT, Extended Life Orientation Test; OPT, Optimism; PESS, Pessimism; PANAS, Positive and Negative Affect Schedule; PA, Positive Affectivity; NA, Negative Affectivity.
All correlations are significant, P < 0.001.

partial correlations were computed that controlled for overlapping influences with life satisfaction, depressive symptoms, and suicide potential. Table 3 presents correlations for optimism and pessimism with and without the variance associated with the alternative construct partialed out. As the table shows, the general pattern of correlations with external criteria, after controlling for optimism and pessimism, respectively, indicate that these two constructs are partially independent of each other. The partial correlations between pessimism and the criterion measures after controlling for pessimism are all highly significant. Similarly, all partial correlations between optimism and the criterion measures after controlling for pessimism are significant, except for the partial correlation between optimism and depressive symptoms. Note that the partial correlation between pessimism and depressive symptoms is much larger than that between optimism and depressive symptoms, suggesting that pessimism is a more relevant correlate of depression than is optimism.

Table 4 presents the correlations for the optimism and pessimism indexes, and measures of positive and negative affectivity. As expected, optimism was positively associated with positive affectivity, and inversely with negative affectivity. Similarly, pessimism was positively associated with negative affectivity, and inversely with positive affectivity.

In order to obtain preliminary evidence regarding the utility of using a bidimensional measure of optimism and pessimism over other important variables (namely, positive and negative affectivity), we conducted a series of separate hierarchical regression analyses for optimism and pessimism, respectively, with each of the dependent variables, controlling for affectivity. For each of the separate analyses, we entered both positive and negative affectivity in the first step, followed by either optimism or pessimism. Results of these separate analyses for optimism and pessimism are presented in Tables 5 and 6, respectively.

As Table 5 shows, when controlling for positive and negative affectivity, optimism accounted for

Table 5. Hierarchical regression analyses showing the amount of variance in psychological well-being accounted for by optimism with positive and negative affectivity controlled

Criterion	Without controlling for pessimism			Controlling for pessimism		
	R^2	R^2 Change	F	R^2	R^2 Change	F
SWLS	0.396	0.054	24.72*	0.432	0.026	13.29*
BDI	0.355	0.009	3.75	0.414	0.000	0.00

Note. N = 284. SWLS, Satisfaction With Life Scale; BDI, Beck Depression Inventory.
*P < 0.001.

Table 6. Hierarchical regression analyses showing the amount of variance in psychological well-being accounted for by pessimism with positive and negative affectivity controlled

Criterion	Without controlling for optimism			Controlling for optimism		
	R^2	R^2 Change	F	R^2	R^2 Change	F
SWLS	0.431	0.088	43.22*	0.458	0.046	23.56*
BDI	0.413	0.066	31.54*	0.414	0.056	26.87*

Note. $N = 284$. SWLS, Satisfaction With Life Scale; BDI, Beck Depression Inventory.
*$P < 0.001$.

an additional 5.4% of the variance in life satisfaction, $F(1,280) = 24.72$, $P < 0.001$. In contrast, however, optimism did not account for any significant additional variance in depressive symptoms. When positive and negative affectivity and pessimism were all controlled, optimism was found to account for an additional 2.6% of the variance in life satisfaction, $F(1,279) = 13.29$, $P < 0.001$, but it did not account for any significant additional variance in depressive symptoms.

For pessimism, a consistent pattern that supported the utility of this construct over measures of positive and negative affectivity, was also revealed (see Table 6). Specifically, pessimism was found to account for an additional 8.8% of the variance in life satisfaction, $F(1,280) = 43.22$, $P < 0.001$, and an additional 6.6% of the variance in depressive symptoms, $F(1,280) = 31.54$, $P < 0.001$. When positive and negative affectivity and optimism were all controlled, pessimism still accounted for an additional 4.6% of the variance in life satisfaction, $F(1,279) = 23.56$, $P < 0.001$, and an additional 5.6% of the variance in depressive symptoms, $F(1,279) = 26.87$, $P < 0.001$. In general, these results indicate that both optimism and pessimism remain important predictors of psychological well-being beyond measures of positive and negative affectivity.

DISCUSSION

The present factor-analytic findings partially replicate previous results supporting the bidimensionality of optimism and pessimism defined as positive and negative outcome expectancies. Specifically, confirmatory factor analyses performed on Time 1 self-report data suggested the appropriateness of a two-factor vs a one-factor model of these constructs. However, the interfactor correlations found in the present study were considerably higher than those reported in other studies. For example, Chang et al. (1994) and Marshall et al. (1992) reported interfactor correlations between optimism and pessimism in the -0.45 to -0.54 range as noted earlier. At the other extreme, some studies have found no relation between measures of optimism and pessimism. For example, more consistent with the view that these constructs represent relatively independent dimensions, Plomin et al. (1992) reported a non-significant correlation between separate LOT indexes of optimism and pessimism ($r = -0.02$). Why there is such discrepancy across different studies using similar if not identical measures of optimism and pessimism remains unclear. What is clear, however, is that results from factor-analytic studies will not be sufficient in and of themselves for determining the value of employing separate optimism and pessimism measures. Hence, researchers will need also to look at alternative criteria for determining the utility of conceptualizing and assessing optimism and pessimism as bidimensional.

Consistent with our initial hypothesis, the present study found both optimism and pessimism to be significant correlates of life satisfaction. This replicates the results of Plomin et al. (1992), which found that optimism and pessimism were independently associated with life satisfaction. However, the present findings go even further by demonstrating that these constructs remain significant predictors of life satisfaction even after controlling for the influences of positive and negative affectivity.

On the other hand, in contrast to initial expectations, the present findings indicated that pessimism, but not optimism was a significant correlate of depressive symptoms or dysphoria in a college population. This suggests that the recent finding of Scheier, Carver, and Bridges (1994), which showed that the LOT was significantly associated with a measure of depressive symptomatology, might largely reflect the influence of pessimism, rather than lack of optimism. It is also worth noting that even after controlling for the influences of optimism, positive affectivity, and negative affectivity,

pessimism remained a significant predictor of depressive symptoms. These set of findings for depressive symptoms are noteworthy for two additional reasons. First, because some researchers have argued that BDI scores in non-clinical populations may be considered an index of negative affectivity (e.g. Smith *et al.*, 1989; Watson & Clark, 1984), then controlling for this variable should have left very little if any additional variance to be accounted for, which would have been further diminished by also controlling for positive affectivity (see Watson *et al.*, 1988). Hence, it might be more surprising that pessimism was *not* found to be a non-significant predictor of depressive symptoms. Second, the above findings indicating that pessimism, but not lack of optimism, is a significant predictor of dysphoria, support the view that pessimism is a critical factor in accounting for depressive symptomatology (Beck, 1967).

However, even for non-clinical populations, it remains to be seen whether or not the association between pessimism and dysphoria is moderated by other variables. For example, in a recent study by Chang (1996), who investigated cultural differences in optimism and pessimism among Asian- and Caucasian-Americans, Asian-Americans were found to be significantly more pessimistic, but not less optimistic, than their Caucasian-American counterparts. Moreover, optimism, but not pessimism, was found to be a consistent predictor of psychological and physical health for Asian-Americans, whereas pessimism, but not optimism, was found to be a recurrent predictor of psychological health for Caucasian-Americans (Chang, 1996). Specifically, although pessimism was the strongest predictor of depressive symptoms for Caucasian-Americans, lack of optimism was the strongest predictor of dysphoria for Asian-Americans. Hence, these recent findings provide even further reasons to employ a two-dimensional model of optimism and pessimism, particularly when assessing cross-cultural differences.

Yet despite these findings which support the validity and utility of a two-dimensional model of optimism and pessimism, one might still wonder whether or not a two-dimensional model serves any greater practical value over a one-dimensional model. As we have tried to show, the value of a two-dimensional model resides in its ability to specify the relative contributions of the two variables (i.e. optimism vs pessimism) to the prediction of important adaptational outcomes, which can have important implications for theory as well as practice.

However, the acceptance of a bivariate view of optimism and pessimism need not mean that a dispositional model must necessarily be abandoned. For example, one might accept the view that there are many different types of optimists and pessimists. In support of this broader view, it is noteworthy to mention the research of Norem and Cantor (1986) on 'defensive pessimists', i.e. individuals who anticipate negative outcome expectancies, but nevertheless engage in active coping strategies (like some optimists). And more recently, Wallston (1994) has argued for the existence of another group referred to as 'cautious optimists', or individuals who despite their positive outcome expectancies, engage in behaviors as if favorable outcomes were not assured (like some pessimists).

In closing, at least three important recommendations follow from the above results and discussion. First, because of the growing body of evidence for a two-dimensional model of optimism and pessimism, we recommend the minimal use of separate measures of optimism and pessimism in future research and advise caution when interpreting the results of empirical studies using a one-dimensional model and measure of optimism and pessimism (for example, see Smith *et al.*, 1989; cf. Chang, in press). In that regard, the present findings also provide preliminary evidence for the validity and utility of using the ELOT in assessing optimism and pessimism separately. Given that this instrument is lengthier than measures like the LOT, researchers may find the ELOT particularly valuable when seeking to assess optimism and pessimism in populations where reliability is a concern. Second, in addition to dispositionally based studies that investigate different types of optimists and pessimists, it may also be useful to approach the study of optimism and pessimism from alternative frameworks. For example, from a more cognitive-behavioral or situation-specific framework, one might examine the relationship between the antecedents and consequences that maintain optimistic vs pessimistic expectancies within and across different situations. Such a model, for example, could help clarify the conditions under which self-reported optimism and pessimism measures correlate more or less with each other. Lastly, future research should not only continue to focus on the refinement of existing self-report measures of optimism and pessimism, but also on the development of alternative, non-test means of assessing these constructs separately (e.g. using peer ratings) in order to establish convergent validity.