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# Optimism, Coping, and <sup>DISPOSITIONAL</sup>Health Assessment and Implications of Generalized Outcome Expectancies

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This article describes a scale measuring dispositional optimism, defined in terms of generalized outcome expectancies. Two preliminary studies assessed the scale's psychometric properties and its relationships with several other instruments. The scale was then used in a longitudinal study of symptom reporting among a group of undergraduates. Specifically, respondents were asked to complete three questionnaires 4 weeks before the end of a semester. Included in the questionnaire battery was the measure of optimism, a measure of private self-consciousness, and a 39-item physical symptom checklist. Subjects completed the same set of questionnaires again on the last day of class. Consistent with predictions, subjects who initially reported being highly optimistic were subsequently less likely to report being bothered by symptoms (even after correcting for initial symptom-report levels) than were subjects who initially reported being less optimistic. This effect tended to be stronger among persons high in private self-consciousness than among those lower in private self-consciousness. Discussion centers on other health related applications of the optimism scale, and the relationships between our theoretical orientation and several related theories.

People differ widely from each other in how they approach the world. Some persons tend to be favorable in their outlook. These optimists expect things to go their way, and generally believe that good rather than bad things will happen to them. Other persons have an opposite set of beliefs. These pessimists expect things not to go their way, and tend to anticipate bad outcomes.

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Moreover, casual observation suggests that these individual differences are relatively stable across time and context. Optimists often appear to be optimistic "in general," in that their positive expectations are not limited to a particular behavioral domain or class of settings. In the same fashion, pessimistic persons often give the appearance of being universally glum.

Given what appears to be an easily observed individual difference with a high degree of trans-situational consistency and a wide range of applicability, one might reasonably assume that optimism has been the subject of thorough research in the past. Such is not the case, however. A review of the relevant personality literature reveals that very little attention has been paid to individual differences in optimism, and to the possibility that these differences may have important consequences for behavior.

This is not to say that conceptually related constructs do not appear in the literature at all. They do (see, e.g., George, 1981, for a review of investigations involving concepts such as morale, life satisfaction, and psychological well-being; see also Rotter, 1954; Rotter, Chance, & Phares, 1972, for discussions of generalized outcome expectancies). Remarkably enough, however, in empirical work these variables have been treated almost universally as *outcome* variables—effects rather than causes, and transient states rather than enduring dispositions (see, e.g., Brown & Rawlinson, 1976; Reich & Zautra, 1981; Zautra & Reich, 1980; Zautra & Simons, 1979).

The primary purpose of this article is to report our attempt to begin the exploration of the possibility that optimism, construed as a stable personality characteristic, has important implications for the manner in which people regulate their actions. We propose that optimism may have a variety of consequences, including some that are clearly health-related. In this article we present a scale to measure optimism, a study of the relationships between this instrument and scales measuring other constructs, and a study that was conducted to assess in a preliminary way whether or not the scale has predictive utility in a health relevant context.

### Theoretical Background

Our approach to the possibility that optimism has important behavioral consequences derives in a straightforward manner from a rather general model of behavioral self-regulation (Carver & Scheier, 1981, 1982a, 1983; Scheier & Carver, 1982a). This model has conceptual roots in several distinct theoretical traditions in psychology. It is partly based on the assumption that goal-directed behavior is guided by a hierarchy of closed-loop negative feedback systems (cf. Heckhausen, 1967; MacKay, 1966; Norman, 1981; Powers, 1973). We further assume that the feedback system guiding behavior becomes more fully engaged when a person focuses attention inward to the self at a time when some behavioral goal or standard is salient (cf. Duval &

Wicklund, 1972). The normal result of such focusing on the self is the emitting (or changing) of behavior so as to reduce (and keep minimized) any perceived discrepancy between present behavior and the goal or standard (see top portion of Fig. 1).

Sometimes, however, a person may perceive that discrepancy reduction is going to be difficult, either because of some situational impediment, or because of some real or imagined personal inability to execute the desired behavior (cf. Weiner et al., 1971). Alternatively, obstacles to discrepancy reduction may be met along the way, after the attempt to match-to-standard has been initiated. In either case, we assume that the effect of such impediments is to cause behavior to be momentarily interrupted (cf. Simon, 1967) and an assessment process to be evoked (see Fig. 1).

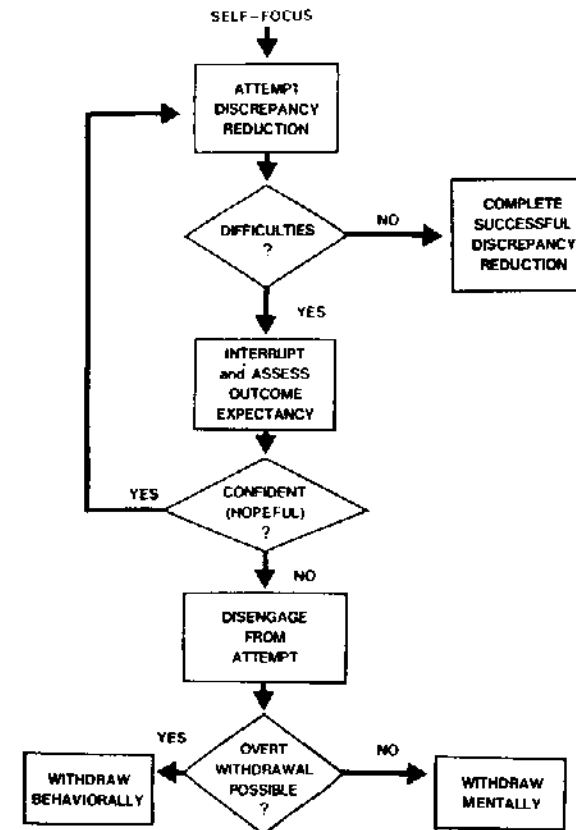


FIG. 1 Diagram of behavioral consequences of self-focused attention, including illustration of interrupt mechanism and assessment of outcome expectancy (adapted from Carver & Scheier, 1982a)

This assessment process yields an outcome expectancy (see Rotter, 1954) — a subjective impression of the likelihood of discrepancy reduction. This outcome expectancy influences subsequent behavior in the following way: If expectancies are favorable, the result is renewed effort. If expectancies are sufficiently unfavorable, the result is reduced effort, or even complete disengagement from further attempts (see also Klinger, 1975; Kukla, 1972). Both renewed effort and disengagement are presumed to be exaggerated by further self-focus.

This, then, is the essence of the theory. This brief account, though sufficient for present purposes, does not really convey the complexity of some of the issues that the theory addresses, or the breadth of its applicability. Readers who are interested in examining the theory in detail are referred to a more comprehensive description (Carver & Scheier, 1981; Carver & Scheier, 1983). A less elaborate discussion, which focuses on the generality of the principles employed in the theory, may also be found elsewhere (Carver & Scheier, 1982a).

### Empirical Support

A number of studies have already provided evidence that variations in expectancy produce divergent responses to self-focus. In one such study (Carver, Blaney, & Scheier, 1979a) chronic expectancies of being able to cope with a specific strong fear interacted with self-focused attention to predict overt behavior. The fear was induced by asking a group of persons with moderate fear of snakes to pick up and hold a nonpoisonous snake. Among subjects induced to be self-attentive (through the presence of a mirror), those holding positive expectancies displayed enhanced effort to hold the snake, whereas those holding unfavorable expectancies displayed early withdrawal from the task attempt.

In other research, we manipulated expectancies of being able to overcome a prior poor performance. These expectancies interacted with self-focus to influence persistence on a subsequent cognitive task (Carver, Blaney, & Scheier, 1979b). Among subjects with favorable expectancies, self-focus led to increased persistence. Among subjects with unfavorable expectancies, self-focus led to decreased persistence.

These effects, enhanced efforts versus disengagement, have been conceptually replicated with a measure of performance rather than persistence (Carver & Scheier, 1982b), and with a measure of individual differences in self-focus rather than a manipulation of self-focus (Scheier & Carver, 1982b). Still other studies have implicated the interactive effects of outcome expectancies and self-attention in the variations in performance associated with individual differences in self-esteem (Brockner, 1979) and test anxiety (Carver, Peterson, Follansbee, & Scheier, 1983). Support for this formula-

tion also comes from a variety of other sources (e.g., Bandura & Cervone, 1983; Burgio, Merluzzi, & Pryor, 1984; Kernis, Zuckerman, Cohen, & Spadafora, 1982).

### Rationale Behind the Present Scale Development

Although these various studies provide support for the outcome expectancy portion of the model outlined earlier, the studies are limited in two important respects. First, without exception, the studies have all been conducted in the laboratory. Though this is not bad, in and of itself, there is always a danger inherently present when one restricts oneself to laboratory research — a danger having to do with limiting the investigation to behaviors that are often artificially contrived. Thus, none of the research to date has attempted to gather information about behaviors that occur more naturalistically, arising during the course of everyday transactions.

Second, and perhaps more importantly, the outcome expectancies under study were restricted in each case to one very specific domain of behavior or to one experimental setting. Expectancy-based theories typically assume that the best prediction of an outcome comes from an expectancy whose level of specificity matches that of the outcome (or from some combination of specific, moderately general, and very general outcome expectancies — see Leffcourt, 1976; Rotter, 1954). It is doubtlessly the case that some categories of dependent variables — for example, successful or healthful adaptation to a range of difficulties experienced across a period of time — are influenced by more than a single task-specific expectancy. This would be particularly true for cases in which the outcomes of interest are either general in scope (assessed via multiple measures) or are multiply determined. For research on such phenomena, it seems desirable to be able to assess people's generalized outcome expectancies.

In short, we found ourselves wanting a measure of what we take to be dispositional optimism.

There was one more issue that influenced our decision as to how to proceed. Our own theoretical approach emphasizes a person's expectancies of good or bad outcomes. Most of the current measures that might otherwise be seen as adequate measures of optimism have confounded these *outcome* expectancies with a host of related variables such as morale, meaningfulness, well-being, and most notably, attributions of causes for the expectancies. It is our position that outcome expectancies per se are the best predictors of behavior rather than the bases from which those expectancies were derived. A person may hold favorable expectancies for a number of reasons — personal ability, because the person is lucky, or because he is favored by others. The result in any case should be an optimistic outlook — expectations that good things will happen. In searching the preexisting literature, we could find no

measure of optimism that focused exclusively on the assessment of generalized outcome expectancies. Thus, we decided to construct our own scale.

### STUDY 1: THE LIFE ORIENTATION TEST (LOT)

The first step in constructing the optimism scale was to generate a pool of items aimed at assessing generalized outcome expectancies. In devising items, an attempt was made to generate an equal number of positively worded and negatively worded statements. In addition, an attempt was made to word each item in such a way that it did not imply any specific basis for the expectancy—that is, whether the cause for the particular expectancy resided in the person, the environment, or luck and chance factors.

Initially, 16 items were written and administered to a group of 81 undergraduate men and 69 undergraduate women. Following the suggestion of Lee and Comrey (1979), a principal-factors (as opposed to a principal-components) factor analysis was performed on the data, in which the communalities for the diagonal of the intercorrelation matrix were estimated and iterated. An oblique rotational technique was used to attain a final solution (for details, see, Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Two major factors emerged from this analysis, along with several subsidiary factors. The first major factor was comprised of items worded in a negative direction, the second, of items worded in a positive direction. The subsidiary factors consisted of only a few items each and were essentially uninterpretable.

Although the initial version of the scale proved to be fairly uniform with respect to the properties it measured (e.g., all of the items loaded relatively highly on the first unrotated factor), revision of the scale was needed for several reasons. As just mentioned, some of the original items loaded separately on factors by themselves; other items were endorsed either too frequently or too infrequently; a few of the items were reported to be ambiguous by some of the respondents; and perhaps most importantly, there was a clear need for replication. Accordingly, some of the items were discarded, some of the items were rewritten, and some new items were added, as the scale went through several revisions. Prior to the final version of the scale, the various revisions were administered to four independent samples, with a combined  $n$  of over 1,000. With each revision, the scale became more uniform in its focus.

#### Final Psychometric Properties

**Scale format and instructions for administration.** The final version of the LOT consists of eight items, plus four filler items that were included in order to disguise (somewhat) the underlying purpose of the test (see

Table 1). Of these eight items, four are keyed in a positive direction, and four are keyed in a negative direction. Respondents are asked to indicate the extent to which they agree with each of the items, using the following response format: 4 = *strongly agree*, 3 = *agree*, 2 = *neutral*, 1 = *disagree*, and 0 = *strongly disagree*. Additional instructions caution respondents to be as accurate and honest as they can throughout, and to try not to let their answers to one question influence their answers to other questions. They are explicitly told that there are no correct or incorrect answers. All negatively worded items are reversed prior to scoring.

The final version of the LOT was administered to several independent samples of male and female undergraduate students attending classes at Carnegie-Mellon University and the University of Miami, in order to establish its psychometric properties. Analyses were initially performed separately for men and women, and in all cases, the gender differences that arose were minimal. Therefore, the data from males and females are combined in the analyses that follow.

**Factor analysis.** The results of a principal-factors (as opposed to a principal-components) factor analysis for a combined final sample of 624 undergraduate men and women are presented in Table 2. For this analysis, the communalities for the diagonal of the intercorrelation matrix were estimated and iterated, and an oblique rotational technique was used to achieve a final solution. The number of factors retained for final rotation was determined

TABLE 1  
Items Comprising Final Version of the LOT

- |  |
|--|
| 1. In uncertain times, I usually expect the best.                      |
| 2. It's easy for me to relax. (Filler item)                            |
| 3. If something can go wrong for me, it will. <sup>a</sup>             |
| 4. I always look on the bright side of things.                         |
| 5. I'm always optimistic about my future.                              |
| 6. I enjoy my friends a lot. (Filler item)                             |
| 7. It's important for me to keep busy. (Filler item)                   |
| 8. I hardly ever expect things to go my way. <sup>a</sup>              |
| 9. Things never work out the way I want them to. <sup>a</sup>          |
| 10. I don't get upset too easily. (Filler item)                        |
| 11. I'm a believer in the idea that "every cloud has a silver lining". |
| 12. I rarely count on good things happening to me. <sup>a</sup>        |

<sup>a</sup>These items are reversed prior to scoring.

TABLE 2  
Factor Loadings for the LOT

	Factor 1	Factor 2
Item 1	-.06	.56
Item 3	.62	.02
Item 4	.01	.72
Item 5	.09	.61
Item 8	.83	-.03
Item 9	.68	-.02
Item 11	.01	.66
Item 12	.53	.04

Note: Above findings are based on a sample of 267 women and 357 men ( $n = 624$ ). Appropriate items were reversed prior to analysis.

by setting the eigenvalue at 1.0 (for a discussion of the rationale underlying the selection of these particular procedures, see Lee & Comrey, 1979). As can be seen in Table 2, two factors emerged from this analysis. The first factor was defined by those items worded in a negative direction, and the second factor was defined by those items worded in a positive direction. The same two-factor structure also emerged when a subsequent orthogonal (varimax) rotation was performed on the data.

These data were further examined by confirmatory factor analytic procedures (Jöreskog & Sörbom, 1978; Kenny, 1979), using LISREL VI. Preliminary examination revealed two kinds of unexpected disturbances in the data. The first was a higher degree of shared disturbance among positively phrased items than among negatively phrased items. Our inference is that this reflects the fact that responses to the former are somewhat more straightforward than to the latter, due to differences in semantic complexity. This may result in greater measurement error due to response style (i.e., yea saying). The second unexpected finding was a correlated disturbance between one of the positive items (Item 5) and one of the negative items (Item 3). The fact that the latter is the only negative item to be phrased in an affirmative manner suggests that this correlated disturbance once again reflects measurement variance associated with response styles.

After this preliminary examination, LISREL VI was used to test the data against two measurement models. A single factor solution yielded an acceptable fit to the data, when allowing for both correlated disturbances noted above,  $\chi^2(18) = 28.50$ ,  $p < .11$ , delta = .99. A two-factor solution with the same constraints also yielded an acceptable fit,  $\chi^2(17) = 24.32$ ,  $p < .12$ , delta

= .99. Indeed, this fit was revealed by a hierarchical or nested test (cf. Bentler & Bonett, 1980) to be somewhat better than that of the one-factor solution,  $\chi^2(1) = 4.18$ ,  $p < .05$ . Two additional pieces of evidence, however, support the assertion that the scale may just as reasonably be considered unidimensional. First, all of its items loaded at least .50 on the first unrotated factor extracted from the initial principle-factors analysis. Second, there was a high positive correlation between the factors emerging from the LISREL two-factor solution,  $r = .64$ . In sum, though there is justification for examining the two halves of the scale separately, the available data base (when taken in its entirety) suggests that it may be most reasonable to treat the scale as unidimensional for most purposes.

*Internal consistency and test-retest reliability.* Table 3 presents corrected item-scale correlations for the LOT, as well as the Cronbach alphas for the scale if individual items were removed. As can be seen, item-scale correlations were all in the moderate range, suggesting that each of the items is at least partially measuring the same underlying construct, but not to such an extent that any one of the items is overly redundant with the others. In addition, all of the items seem to add equivalently to Cronbach's alpha—that is, the alpha level remained relatively unchanged when individual items were systematically removed from the scale. Cronbach's alpha for the entire eight-

TABLE 3  
Internal Consistency and Test-Retest Reliability of the LOT

	Corrected Item-Scale Correlation	Alpha with Item Removed
Item 1	.37	.77
Item 3	.46	.75
Item 4	.54	.74
Item 5	.53	.74
Item 8	.56	.74
Item 9	.47	.75
Item 11	.50	.75
Item 12	.42	.76
Cronbach's Alpha = .76		
Test-Retest Reliability = .79		

Note: Coefficient alphas are based on a combined sample of 357 men and 267 women ( $n = 624$ ).

Test-retest reliability is based on a combined sample of 81 men and 61 women ( $n = 142$ ). The interval between testing was 4 weeks.

item scale was .76. Overall, the LOT seems to exhibit an acceptable level of internal consistency.

One remaining reliability issue concerns the stability of individual scores over time. In order to assess the test-retest reliability of the LOT, a separate sample of 142 respondents was asked to complete the scale twice, with a 4-week interval between administrations. The test-retest correlation was .79, suggesting that the LOT possesses reasonable stability across time.

**Norms.** In order to provide separate norms for men and women, means and standard deviations were computed separately for a sample of 357 undergraduate men and 267 undergraduate women. The mean and standard deviation for men were 21.03 and 4.56, respectively; the comparable numbers for women were 21.41 and 5.22. These norms for college undergraduates are currently the only norms available, and norms for other age, class, and occupational groupings are clearly needed if the scale is to be used on a wider basis.

## STUDY 2: CONVERGENT AND DISCRIMINANT VALIDATION

Establishing convergent and discriminant validity for a measurement instrument is a continuous process, in that new constructs always arise against which the scale must be evaluated. In an effort to begin to establish convergent and discriminant validity for the LOT, we gave the LOT to several groups of undergraduates, along with a number of different scales that seemed reasonable to evaluate the LOT against. Included among these other scales were a measure of internal-external control (Rotter, 1966), Rosenberg's Self-Esteem Scale (Rosenberg, 1965), a hopelessness scale (Beck, Weissman, Lester, & Trexler, 1974), Beck's Depression Inventory (BDI, Beck, 1967), a measure of perceived stress (Cohen, Kamarck, & Mermelstein, 1983), a measure of social desirability (Crowne & Marlowe, 1964), the Self-Consciousness Scale—scored for each of its three subscales (Fenigstein, Scheier, & Buss, 1975), and a test of alienation—scored for both the context areas and types of alienation that it measures (Maddi, Kobasa, & Hoover, 1979).

Because of different time limitations operating in different testing sessions, it was not possible to have each group of respondents complete all of the various assessment devices that we wanted to administer. Consequently, for each group tested, the respondents were asked to complete the LOT and only some subset of the scales listed in the previous paragraph. This accounts for the unequal number of respondents associated with each of the relationships reported in Table 4, which presents the correlations by gender that were obtained between the LOT and the other scales.

There are several questions that need to be asked about the findings reported in Table 4. First, does the LOT correlate in a conceptually meaningful direction with the scales that it should correlate with? The answer here appears to be an unqualified "yes." That is, compared to pessimistic persons, those higher in optimism report having a more internal locus of control and being higher in self-esteem. They score lower on measures of hopelessness, depression, perceived stress, alienation, and social anxiety than do persons who are more pessimistic. The direction of each of these relationships is exactly as might be expected, thus offering initial support for the convergent validity of the LOT.

The second question that must be asked about the findings is also related to the issue of convergent validity, but it begins to raise the issue of discriminant validity as well. That is, although it is important for the LOT to correlate in the appropriate direction with conceptually related scales, it is equally important that the strength of these relationships not be too strong. As can be seen in Table 4, the magnitude of the correlations that were obtained are such that the LOT does not appear to be completely redundant with the other measures that were collected.

Unexpectedly, the correlations between the LOT and a number of the other scales were noticeably higher for women than for men (see Table 4). In this regard, we might note that the remaining intercorrelations that were obtained among the other scales listed in Table 4 also tended to be higher for women than for men, at about the same levels of magnitude as are reflected in the correlations involving the LOT. These consistent gender differences raise the interesting possibility that women of this age group and developmental stage may be less differentiated (less compartmentalized) than men on the dimensions in question. Further data are obviously needed to determine whether similar findings would emerge from different age and population groupings. In brief, we suggest that the LOT is measuring something that is only moderately associated with the other conceptually related scales that were administered, but it should also be clear (given the available data base) that this characterization applies more readily to men than to women.

We should perhaps make one further point concerning the complex questions surrounding the convergent/discriminant validity interface that we have been discussing. The point is simply that there are no hard and fast rules for deciding when a test is sufficiently redundant with other measures available that its independent existence becomes unwarranted. In the present case, the correlations between the LOT and the other scales administered may strike some as being so high as to question the need for a scale like the LOT.

We obviously think that such a scale is needed. Consider, for example, the relationships among optimism, self-esteem, and locus of control. Most optimists presumably derive their sense of optimism from a history of successes, in which they have demonstrated their own personal mastery over difficult

TABLE 4  
Convergent and Discriminant Validity of the LOT

	LOT		
	Women	Men	Combined
Internal-External Control	.42 (151) $p < .01$	.24 (169) $p < .01$	.34 (320) $p < .01$
Self-Esteem	.60 (151) $p < .01$	.33 (173) $p < .01$	.48 (324) $p < .01$
Hopelessness	-.58 (152) $p < .01$	-.35 (170) $p < .01$	-.47 (322) $p < .01$
Depression	-.57 (152) $p < .01$	-.40 (170) $p < .01$	-.49 (322) $p < .01$
Perceived Stress	-.51 (62) $p < .01$	-.60 (78) $p < .01$	-.55 (140) $p < .01$
Social Desirability	.32 (33) $p < .08$	.23 (69) $p < .06$	.26 (102) $p < .01$
Self-Consciousness			
Private Self-Consciousness	-.14 (223) $p < .05$	.08 (253) <i>ns</i>	-.04 (476) <i>ns</i>
Public Self-Consciousness	-.23 (213) $p < .01$	.10 (252) <i>ns</i>	-.05 (465) <i>ns</i>
Social Anxiety	-.37 (214) $p < .01$	-.29 (253) $p < .01$	-.33 (467) $p < .01$
Alienation (Context Domains)			
Work	-.42 (148) $p < .01$	-.31 (168) $p < .01$	-.35 (316) $p < .01$
Self	-.49 (151) $p < .01$	-.25 (174) $p < .01$	-.36 (325) $p < .01$
Social Relations	-.47 (152) $p < .01$	-.16 (172) $p < .05$	-.31 (324) $p < .01$

TABLE 4 (continued)

	LOT		
	Women	Men	Combined
Family	-.37 (152) $p < .01$	-.16 (172) $p < .05$	-.27 (324) $p < .01$
Social Institutions	-.35 (152) $p < .01$	-.18 (173) $p < .05$	-.26 (325) $p < .01$
Alienation (Types of Alienation)			
Powerlessness	-.52 (148) $p < .01$	-.26 (168) $p < .01$	-.40 (316) $p < .01$
Vegetativeness	.49 (152) $p < .01$	-.29 (170) $p < .01$	-.39 (322) $p < .01$
Nihilism	-.49 (152) $p < .01$	-.27 (172) $p < .01$	-.36 (324) $p < .01$
Adventurousness	-.27 (151) $p < .01$	-.08 (173) <i>ns</i>	-.17 (324) $p < .01$

Note: All tests of statistical significance are two-tailed. Numbers in parentheses refer to sample size.

situations. Thus, we are not surprised that there is a tendency, even a strong tendency, for optimists to be higher in self-esteem and more internal in their locus of causality than persons less optimistic. It is also undoubtedly true, however, that there exists a substantial minority of people for whom a sense of optimism derives from external rather than internal causes, for example, people who are optimistic because of a belief in a benign provider, or people who just consider themselves to be lucky persons. Of the various scales under consideration, only the LOT holds the promise of classifying such optimists correctly. It is this capability on the part of the LOT that we also see reflected in the magnitude of the intercorrelations that were obtained, and that we see as making the scale an important one to have available.

Moreover, in addition to the intercorrelations that we have been discussing, two further analyses were conducted on the data, in order to provide a slightly different perspective on the convergent/discriminant validity issue. In one of these analyses, LOT items were factor analyzed along with the items on Maddi et al.'s (1979) Alienation Test. In the second analysis, LOT



items were factor analyzed along with the items on Rotter's (1966) I-E Scale, Rosenberg's (1965) Self-Esteem Scale, Beck et al.'s (1974) Hopelessness Scale, and Beck's (1967) Depression Inventory. In each case, a principal-factors (as opposed to a principal-components) analysis was performed, using a varimax rotation technique, in which all factors were retained that had eigenvalues greater than 1.0. In each case, the LOT items tended to load by themselves, defining factors somewhat distinct from the remaining factors that emerged. These findings offer further corroboration regarding the independence of optimism as assessed by the LOT from the conceptually similar variables being measured by the other scales that were administered.

The final question to be asked about the findings bears on a specific aspect of the issue of discriminant validity. In terms of the measures that the respondents were given, it was hoped that the LOT would be relatively independent of both social desirability and private and public self-consciousness. The reason why it is desirable for our measure of optimism to be relatively independent of social desirability is obvious. On the other hand, it would also be unrealistic to expect optimism to be totally independent of social desirability, as assessed by the Crowne-Marlowe (1964) scale. That is, the latter measure operationalizes social desirability as agreement with statements that make oneself appear "too good to be true." Because optimism is also generally regarded as a positive quality, a high degree of optimism may also begin to appear to be too good to be true. We are encouraged by the fact that the correlations obtained between the two measures are no higher than they are (Table 4).

Though it is probably less apparent, there are also reasons — both theoretical and practical — for preferring that optimism be separate from private and public self-consciousness. Theoretically, our model assumes that self-attention and outcome expectancies are orthogonal (see e.g., Carver & Scheier, 1982a). Pragmatically, we hoped that optimism would be independent of self-consciousness so that we could cross the two individual difference variables in subsequent studies. As can be seen in Table 4, the LOT is relatively independent of both private and public self-consciousness.

### Summary

In brief, the Life Orientation Test appears to provide a psychometrically sound measure of optimism, defined in terms of the favorability of a person's generalized outcome expectancy. The LOT would seem to possess an adequate level of internal consistency, test-retest reliability, and convergent and discriminant validity to make it suitable for use in research when such a measure is desired.

### STUDY 3: OPTIMISM AND THE EXPERIENCE OF PHYSICAL SYMPTOMS

As previously noted, the ultimate purpose behind the development of the LOT was to investigate the effects of dispositional optimism on the self-regulation of behavior in a wide variety of domains — including some that are health-related. In other words, we were interested in examining the role played by optimism and dispositional self-consciousness in coping effectively and ineffectively with impediments encountered in the course of goal-directed activities (Carver & Scheier, 1981, 1982a, 1983; Scheier & Carver, 1982a). Study 3 was an initial attempt to determine whether the scale would have predictive utility in such research. We recognize that optimism, as we have conceptualized it here, should have important consequences in a wide range of behavioral domains. Given that we are particularly interested in pursuing health-relevant implications of optimism, we chose to study a phenomenon falling within the purview of health psychology. Although the study that we conducted was not particularly naturalistic in terms of the procedures that were used, it was naturalistic in terms of the behavioral domain it sought to investigate. More to the point, predictions in the study were based on a consideration of people's day-to-day experiences outside the laboratory, over a fairly extended period of time.

The reasoning underlying Study 3 was as follows. Presumably, when persons are confronted with impediments to goal-attainment during the course of their daily lives, they temporarily suspend their behavior and attempt to decide whether or not future efforts will be futile — just as did the subjects in our laboratory studies. Optimistic persons, as we have defined them, should be more likely than pessimistic persons to conclude that the impediments facing them can be overcome. Assuming that the presenting obstacles are in reality capable of resolution, the positive expectancies held by optimistic persons — and the continued efforts to which the expectancies give rise — should cause them to deal with their problems more successfully than those less optimistic. Thus, obstacles that arise during the course of day-to-day self-regulatory activities should be less disruptive and have less adverse consequences for optimistic than pessimistic persons (cf. Reich & Zautra, 1981; Zautra & Simons, 1979). These differences between optimistic and pessimistic persons should also be most pronounced among persons who are also highest in dispositional self-consciousness.

In previous laboratory studies, we have tested the outcome assessment portion of our model in one of three ways: by measuring persistence (Carver et al., 1979b), by measuring actual performance (Carver et al., 1983; Carver & Scheier, 1982b), or by measuring the strength and type of the affective re-

actions subjects reported following goal-directed activities (Carver & Scheier, 1982b). In extrapolating the theory to a study of everyday behavior, we decided to use a slight variant of the affective measure. More specifically, we measured the degree to which a group of undergraduates reported experiencing physical symptoms during an especially stressful time of their lives: the 4-week interval that concluded a semester of studies.

Our use of this measure reflects the following two assumptions: (a) that most of the students in the sample would encounter some degree of obstacles to successful self-management during the time period in question, as they attempted to juggle their schedules in an effort to meet deadlines and study for the final examinations that were confronting them; and (b) that success at coping would (among other ways) be reflected in the frequency with which the students developed and were bothered by physical symptoms over the course of the assessment period.

Based on the reasoning outlined just above and in the article's introduction, the following two predictions were advanced. First, we expected that optimistic persons would cope better with the presumed difficulties confronting them than would persons less optimistic and, therefore, would report fewer physical symptoms. Second, we expected the differences in symptom reporting due to chronic optimism to be most pronounced among persons who were highest in dispositional private self-consciousness. The latter prediction was limited to private self-consciousness because of the greater relevance of private (as opposed to public) self-aspects for the specific self-regulatory activities under investigation (see Scheier & Carver, 1983, for a broader treatment of the importance of matching the aspect of consciousness being measured [private versus public] to the research context at hand).

## Method

**Subjects.** The subjects were 79 undergraduate men and 62 undergraduate women enrolled in introductory psychology courses at Carnegie-Mellon University. Because data were missing from the profiles of some subjects, the  $n$  for the findings reported below vary slightly from analysis to analysis. This accounts for the slightly different degrees of freedom that are reported.

**Procedure.** Each subject in the study completed an identical set of questionnaires at two different points in time. The first set of questionnaires was administered exactly 4 weeks prior to the end of the semester. The second set of questionnaires was administered on the subjects' final day of classes, immediately prior to the start of the final examination period. Both sets of questionnaires were completed while the subjects were in groups, ranging in size from 11 to 38.

Included in the packet of questionnaires was the LOT, the private self-consciousness subscale of the Self-Consciousness Scale (Fenigstein et al., 1975), and a 39-item physical symptom checklist (Cohen & Hoberman, 1983; Cohen et al., 1983). The latter instrument asked the subjects to indicate the extent to which they had been bothered by 39 commonly occurring symptoms (e.g., dizziness, blurred vision, muscle soreness, fatigue) during the immediately preceding 2-week period. Each item on the symptom checklist was answered along a 5-point Likert scale, ranging from *not at all* to *extremely*. Following the completion of the final set of questionnaires, all subjects were thoroughly debriefed, and the major hypotheses of the study were made known to them.

## Results

We expected individual differences in generalized optimism to predict the extent to which subjects reported being bothered by physical symptoms over the course of the assessment period. Consistent with this reasoning, the LOT correlated significantly with the physical symptom checklist at both Time 1 and Time 2,  $r(139) = -.22, p < .01$ , and  $r(139) = -.31, p < .001$ , respectively.<sup>1</sup> But this only establishes a relationship between chronic optimism and symptom reporting at the same point in time, not across time as the hypothesis demands. In order to document that chronic optimism was related to symptom reporting *prospectively*, it was also important that the correlation between the LOT at Time 1 and symptom reporting at Time 2 be significant. This was the case, as well,  $r(139) = -.27, p < .001$ . Thus, individual differences in chronic optimism did indeed seem to be related to the development of physical symptoms over time, as predicted. Optimistic subjects, as identified by the Life Orientation Test, reported being less bothered by the development of physical symptoms over the course of the assessment period than did subjects who were less optimistic.

While the correlation just reported is consistent with the first hypothesis of the study, the test offered by that correlation is somewhat liberal. This is so because the zero-order correlation between chronic optimism at Time 1 and symptom reporting at Time 2 does not take into account the relationship between the two measures at Time 1. Consequently, in order to test the hypothesis more rigorously, a partial correlation was computed: chronic optimism at Time 1 was correlated with symptom reporting at Time 2, first partialling out the effects of symptom reporting at Time 1. This partial correlation, a much more conservative test, also proved to be significant,  $r(138) = -.18, p < .05$ , thus offering further corroboration for our hypothesis.

<sup>1</sup>Because preliminary analyses revealed all gender differences to be negligible, the data for men and women were combined prior to the main analyses reported above.

Although not directly relevant to the hypotheses of the study, one more interesting question involves the issue of reverse causality. That is, the partial correlation just reported documented that optimism was a prospective predictor of reports of physical well-being. Was the opposite also true? Did the respondents' sense of physical well-being predict how optimistic they were over time? To answer this question, one further partial correlation was computed: symptom reporting at Time 1 was correlated with optimism at Time 2, first partialling out the effects of optimism at Time 1. This correlation proved not to be significant,  $r(138) = -.01, p > .05$ . Thus, for this particular sample at least, a sense of physical well-being did not seem to lead to a sense of optimism over time.

One final question involves the mediating effects of private self-consciousness. We expected that the difference in the development of symptoms over time between those high and low in generalized optimism would be most pronounced among subjects who were also high in dispositional private self-consciousness. To evaluate this possibility, the overall sample was broken into two smaller samples, based on a median split of the private self-consciousness subscale at Time 1. Two partial correlations were then computed for each of these samples separately. In each case, optimism at Time 1 was correlated with symptom reporting at Time 2, first controlling for symptom reporting at Time 1. The partial correlation between generalized optimism at Time 1 and symptom reporting at Time 2 among high private self-conscious subjects was significant,  $r(74) = -.23, p < .05$ , but the comparable partial correlation for subjects low in private self-consciousness was not,  $r(61) = -.11, p > .40$ . Although in the proper direction, the magnitude of the difference between these correlations did not approach statistical significance.

## Discussion

We began this study by assuming that most subjects would encounter some degree of difficulty in managing their behavior, as they attempted to deal with the obstacles confronting them at the close of a semester of their studies. We further assumed that success at coping with these difficulties would be reflected (inversely) in the degree of physical symptoms that the subjects reported developing over the 4-week assessment period. We also expected individual differences in optimism to predict the extent of successful coping, and thus the development of symptoms. Finally, we expected this effect in turn to be mediated by private self-consciousness. Though the effect of self-consciousness failed to attain significance, the data offered substantial support for the rest of these assumptions and predictions. Optimism was a significant prospective predictor of symptom reporting.

In this regard, it is worth noting that symptom reports represent only an imperfect measure of underlying physiological activity. Although symptom reporting can (and often does) reflect one's underlying physiological state, the presentation of physical symptoms is influenced by a host of other factors, including those that are more cognitive, cultural, and psychological in nature (Mechanic, 1972; Pennebaker, 1982). Thus, there is always a degree of uncertainty about the proper interpretation to be placed upon the meaning of symptom reporting. We have assumed that reports of physical symptoms provide some insight into the nature of the physiological states actually experienced. Different interpretations are always possible, however. For example, optimism may not have affected the level of actual symptoms experienced (as we have implicitly argued), but rather only influenced the level of symptoms reported, perhaps because optimists have a tendency to "put on a happy face." Given the multifaceted nature of symptom reporting, such alternative interpretations of the present findings cannot be ruled out, just as such alternative interpretations cannot be ruled out with respect to other research in this area.

There is a second point to be made here, as well, which also derives from the multifaceted nature of the symptom experience. In particular, the effect obtained for optimism in Study 3 was not overwhelmingly large. Given the nature of the dependent measure, however, this should not be terribly surprising. As just described, the reporting of physical symptoms is influenced by a very broad range of variables, many of which went uncontrolled in this study. We would never suggest that optimism is the *only* determinant of the symptom experience. Nevertheless, it does appear — as predicted — to be a reliable contributing factor.

**Mediation.** Although the findings of this study were generally as expected, the research does leave several questions unanswered. Perhaps the most obvious set of questions concerns the nature of the mechanism(s) underlying the effects obtained. There are at least two salient possibilities. The first stems from our assumption that a favorable outcome expectancy causes persons to be more persistent and/or to work harder at attaining their goals than might otherwise be the case. From this perspective, optimistic persons in the present study developed fewer symptoms because their increased efforts paid off in successful goal-attainment, thereby causing any difficulties confronting them to be ultimately experienced as having less impact. As a variation on this theme, perhaps optimists are better able than pessimists to generate effective subgoals that maintain their sense of optimism over time (cf. Kirschenbaum, in press).

An alternative possibility is that optimistic persons may take steps to deal with presenting problems sooner than persons who are less optimistic. This

perspective would suggest that the effects of chronic optimism are not a product of trying hard to attain goals. Rather, the benefit would be attributable to the increased likelihood of successful coping that comes from confronting problems early, before they can become overly burdensome.

It should be noted that Mullen and Suls (1982) have advanced an argument that is similar to this, concerning the effects of private self-consciousness. Specifically, they have argued that persons high in private self-consciousness have a greater propensity to monitor their reactions to stressors than do persons who are lower in private self-consciousness, and are thereby in a better position to take quick action with respect to those stressors. Consistent with this reasoning, they found that life changes predict the development of illness only among persons who are low in private self-consciousness, not among those who are high in private self-consciousness.

Our interpretation of the results of the Mullen and Suls study differs slightly from the one they offered. In our view, the relationships reported between life changes and illness may have been a function not of private self-consciousness per se, but rather of the fact that private self-consciousness promotes greater coping efforts *among persons who have relatively favorable expectancies*. This interpretation assumes, of course, that subjects in their study were generally optimistic. But this is an assumption that appears highly credible in light of the pervasive optimistic bias that has been found by other researchers (see e.g., Weinstein, 1980, 1983, in press), and, indeed, is even reflected in the norms associated with the LOT that have been reported here.

Either of these potential mechanisms (more effective planning or taking action sooner) could provide an explanation of the optimism/symptom reporting relationship. We should also explicitly acknowledge, however, that the relationship between optimism and symptom reporting could be mediated by a number of other factors as well. For example, what if optimism was related in the present study to academic achievement or potential? If one further assumes that the effects of academic potential become most pronounced at the end of a semester, when demands are greatest, then the relationship between optimism and symptom reporting might have been at least partially due to the relationship between optimism and academic potential. In brief, the methodology used in Study 3 allows for the possibility that alternate (unmeasured) paths might exist that underlie the relationship between optimism and the reporting of physical symptoms. While this third variable problem is inherent in all correlational research that employs a similar methodology, it should still be borne in mind when considering the conclusions we have reached.

**Generality.** A final set of questions surrounding Study 3 concerns the extent to which the findings should be expected to generalize—even conceptually—to other combinations of populations and contexts. More specifi-

cally, in designing Study 3 we were careful to choose a context in which we thought that most of the persons involved could take active steps to deal effectively with the problems confronting them. Given this type of context, we predicted and found that dispositional optimism confers benefits—that is, optimistic persons developed less extreme physical symptoms over time than did persons who were less optimistic. Given a context that is less amenable to active coping, however, an entirely different set of results might be obtained. That is, optimistic persons by definition expect things to go their way, and thus take action to effect such an outcome. If they are confronted with a situation in which they are doomed to failure, optimists may not know when to give up (cf. Janoff-Bulman & Brickman, 1982), and their excessive struggling may actually cause them to react more negatively to the setting than persons who are more pessimistic in outlook (see also James, LaCroix, Kleinbaum, & Strogatz, 1984; Lazarus, Kanner, & Folkman, 1980).

## GENERAL DISCUSSION

We began the empirical portion of this article by describing the development of a scale to measure dispositional optimism, assessed in terms of generalized expectations of the occurrence of good outcomes in one's life. We then reported a study in which we used this scale (the LOT) to predict symptom experience, prospectively, during a stressful period of students' lives. Though the findings of this study have obvious limitations and boundary conditions (both empirical and conceptual), the data also indicate that the LOT possesses at least a degree of construct validity, having predicted a theoretically meaningful outcome. Coupled with the psychometric data reported earlier in the article, the findings thus suggest that the LOT is an appropriate scale for use in future research investigating optimism.

### Present Status and Future Potential

Indeed, since the development and initial test of the LOT, the scale has already been incorporated into several other research projects, which focus on a variety of subjects. The data that these projects have generated so far appear to be entirely consistent with the theoretical analysis upon which this article is based. These studies thus provide additional support for the notion that optimism may play an important role in a great many phenomena that are of interest to health psychologists. They also provide yet additional evidence of the LOT's construct validity.

*Optimism and post-partum depression.* One of these studies (Gaines & Carver, 1984) examined the possibility that optimism might be as-

sociated with resistance to post-partum depression (e.g., Cutrona, 1982). Women entered this research project during the third trimester of their pregnancy. At their first testing they completed the LOT, a measure of depression, the BDI (Beck, 1967), and several other scales. They were reassessed for depression at two different times after delivery of the child. When suitable controls were instituted for initial BDI scores, post-partum BDI scores proved to be significantly (inversely) correlated with LOT scores. Stated differently, optimism was associated with lower depression after delivery, even after partialling out the earlier level of depression.

This finding makes two points. The first is that optimism appears to be empirically as well as conceptually distinct from depression, though the two obviously have important connections as well. Thus, the Gaines and Carver (1984) finding contributes further evidence of the LOT's discriminant validity. The second point is that optimism, as assessed by the LOT, once again appeared to function as a buffer against adverse effects during a period of stress, as was true in the present Study 3.

*Optimism and strategies of coping.* Another project (Scheier, Weintraub, & Carver, 1985) has begun to examine the processes that mediate the basic finding underlying the two studies just mentioned, that is, the finding that dispositional optimism acts as a buffer against stress. Subjects in one study were presented with a set of hypothetical events, each of which involved a moderately high degree of stress (e.g., "You have just received your grade on a mid-term exam in a course that is a requirement of your major. This exam contributes half of your final grade, and you did miserably"). They were instructed to imagine the event happening to them, and then write down (using a free response format) what they would actually do if they found themselves in that situation.

Subjects' responses were coded in several ways, according to a scheme that was devised especially for that research. The coding scheme was based in part on the conceptual elements of the theory described in this article's introduction, and based in part on other existing literature describing the various dimensions that appear to underlie people's attempts to cope with stressors (e.g., Coyne, Aldwin, & Lazarus, 1981; Folkman & Lazarus, 1980). Among the dimensions that were rated independently in each response were the following: (a) evidence of active coping efforts, (b) degree of elaboration of these active coping efforts, (c) seeking of social support, (d) focusing on the experience or expression of emotions, and (e) either behavioral or mental disengagement from whatever goal was focal in the hypothetical event.

Analysis of these data suggests that optimists and pessimists spontaneously employ quite different coping strategies when confronted by stressful situations. Optimism was positively correlated, in these written protocols, with indications of active coping, with elaboration or complexity of coping

strategies, and with the seeking of social support. Optimism was inversely correlated with focus on emotion and emotional expression, and with disengagement from the goal. The relationships found with regard to active coping and disengagement are precisely what would be predicted from our theoretical analysis. And both were conceptually replicated in a second study, in which subjects completed a standardized coping strategy scale (Folkman & Lazarus, 1980) in response to a stressful situation that they had previously encountered. The relationship with focusing on emotion, though distinct from the theoretical elements emphasized here, is very consistent conceptually with our analysis of the experience of anxiety and emotion (Carver et al., 1979a; Carver et al., 1983; Carver & Scheier, in press; Scheier & Carver, 1982a).

The positive association between optimism and social support represents the one strong association in these data that was not explicitly predicted. On the other hand, Stone and Neale (1984) have also found such a positive association between problem-directed coping and the seeking of social support. Those authors point out that both of these can be viewed as attempts to deal in an active way with the obstacle being confronted. If one were to accept this assertion, the social support finding would be entirely consistent with the rest of the data.

What are the broader implications of these differences in spontaneous coping style? An answer is suggested by research recently reported by Billings and Moos (1984). They found inverse associations between indices of dysfunction and aspects of coping that focus specifically on problem solving. In contrast, coping that focuses on the discharge of emotion was positively associated with dysfunction. The data of Billings and Moos (1984) combined with the findings of Scheier et al. (1985) appear to suggest that optimists employ the approach to coping that in most life circumstances is most adaptive, least dysfunctional. This conclusion is entirely consistent with the theoretical analysis with which we began, and with the data from Study 3.

### Theoretical Comparisons

*Helplessness.* To our knowledge the present research constitutes the first explicit attempt to investigate the impact of personal optimism on the coping process and physical well-being. On the other hand, researchers have long been interested in the effects of negative outcome expectancies on behavior (e.g., Abramson, Seligman, & Teasdale, 1978; Seligman, 1975; Wortman & Brehm, 1975). The present research adds to these earlier efforts, however, in two important respects. First, because previous approaches have often derived from the notion of "learned helplessness," they have tended to accentuate the negative to the exclusion of the positive. The present research provides balance to the analysis by highlighting the positive consequences of

*favorable* expectancies. Second, we have extended these previous approaches by documenting the existence of relatively stable individual differences in generalized outcome expectancies, that is, dispositional optimism. Until now, the possibility that such individual differences might exist and be important has been largely overlooked.

**Hardiness.** A second useful comparison concerns the relation between the approach we have taken here and research on a construct called hardiness (Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982). The notion of hardiness has its roots in existential psychology. Conceptually, it is a composite of three dimensions—commitment, control, and challenge—that are of central importance in the existentialist orientation to personality. Each of these dimensions, in turn, is measured empirically by several different scales, including separate subscales of an instrument termed the Alienation Test (Maddi et al., 1979). It has been proposed that hardiness serves as a buffer against the adverse consequences of stress, an assertion that appears to be borne out by both retrospective (Kobasa, 1979) and prospective research (Kobasa et al., 1982).

Hardiness as a construct is interesting to us partly because certain of its characteristics appear to overlap with the characteristics we attribute to optimists. Items selected from among the measures that contribute to the operational definition of hardiness make this point very clearly. Consider the following two items: “No matter how hard you work, you never really seem to reach your goals,” and “No matter how hard I try, my efforts will accomplish nothing.” Indeed, Maddi et al. (1979) reported finding that the Alienation Scale, which contributes several separate elements to the overall hardiness construct, was positively correlated with a measure of optimism. Unfortunately, neither the strength of the association nor the name of the optimism measure was specified in the article.

Hardiness as a construct is also interesting to us because other research on hardiness (Kobasa, 1979; Kobasa et al., 1982) has shown it to have consequences for health outcomes that are similar to that demonstrated here for optimism. However, it is just as difficult to assess the degree of similarity between optimism and hardiness from this research, both because hardiness is a multifaceted construct and because the methods used to measure hardiness vary from study to study. For example, in a major prospective study (Kobasa et al., 1982), five dimensions—two of which had not even been significant predictors in an earlier retrospective study (Kobasa, 1979)—were combined into a *single* index, justified on the basis of intercorrelations averaging .42 (ranging from .17 to .74). The conclusion that hardiness operates prospectively as a buffer against stress, then, is based entirely on an analysis using this composite index.

One unfortunate side effect of such a research strategy is that it makes interpretation of the findings exceedingly ambiguous. Rather than keep the conceptual dimensions empirically separate from each other in order to determine whether each dimension makes a unique contribution, these researchers have lumped hardiness dimensions together. This in turn makes it absolutely impossible (short of reanalyzing the original data) to determine what aspect (or aspects) of the composite index may be responsible for the effect that was obtained.

What, then, is hardiness? We don't really know. Though the concept has overtones of optimism, it can not really be viewed as equivalent to optimism as we are using the word (generalized expectancies for good outcomes). How important are the various constituents of hardiness in predicting resistance to stress? Again, this must be regarded an open question. It is certainly conceivable that hardiness serves as a buffer against stress merely because of the undercurrent of *optimism* in certain of its constituents. It may, alternatively, be the case that one or more of the other variables presently confounded with each other in the hardiness construct will prove to be a critical mediator. We will never know, however, unless we attempt to sort the various possibilities out from each other, rather than entangling them with each other. Indeed, this same point can be made when one compares either of these constructs with other conceptually related constructs such as efficacy expectancies, self-esteem, and the like. This effort, which should be an important part of the research agenda of the future, should be facilitated by the availability of the Life Orientation Test.

**Stress and coping.** As a final theoretical comparison, we note that the present analysis also bears some resemblance to aspects of the work of Lazarus (1966, 1981; Lazarus & DeLongis, 1983), who has been concerned for a number of years with understanding psychological stress. In his view, stress arises largely from the manner in which events confronting persons are construed or appraised. Events classified as irrelevant to well-being and events classified as benign or positive in nature do not lead to a stress reaction. Stress appraisal occurs only when events appear to be harmful or threatening.

Lazarus further assumes that the degree of stress experienced is a function of the manner in which people cope with the events confronting them. If people can take direct action or if they can cope emotionally, they will also experience less stress. Coping (and by implication stress) is thus determined by a secondary appraisal process, in which people attempt to determine whether or not they have at their disposal the resources necessary to deal with the threat successfully—a process that has overtones that are similar in some ways to what we have called outcome expectancy assessment.

In recent years, Lazarus has begun to focus more on the role of positive emotions in the coping process (see, e.g., Lazarus et al., 1980). More specifically, positive emotions are believed to affect the coping process in any one of three different ways. First, they can act as *breathers*, allowing persons to take a break from the demands of coping. Second, positively-toned emotions like hope and positive anticipation can act as *sustainers* of action, causing persons to persist in their coping efforts even when situations become extremely taxing and demanding—a function similar to what Antonovsky (1979) has described as deriving from a sense of personal coherence. Finally, Lazarus et al. suggest that positive affect can act as a *restorer*, facilitating recovery from harm or loss by restoring depleted resources.

Clearly, the sustaining function of positive emotions that Lazarus et al. (1980) describe is quite similar to portions of the present analysis (see also Izard & Tomkins, 1966). That is, like our own approach, Lazarus et al. also seem to assume that positively-toned emotions (such as those associated with optimism) can serve to increase persistence when dealing with problems in self-management. In this respect, at least, the two approaches would appear to be highly similar to each other. And in this respect, the findings generated from the present research would appear to provide support for the position advanced by Lazarus, just as they do for the more general model of behavioral self-regulation with which we began.

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