

We hope that there was no ambiguity about our position on this matter. In any case, we are pleased to have the point emphasized and expanded on by Green (this issue, pp. 714-715).

Deutsch's (this issue, pp. 713-714) comments give us pause. We would be chagrined if our exchange with Lazarus, DeLongis, Folkman, and Gruen could reasonably be interpreted as a discouraging message to persons interested or involved in life stress research. It was meant to be just the opposite. For us, the exchange was an interesting experience that helped us to think through some important problems of theory and method. We hope that it will do the same for others.

#### REFERENCES

- Deutsch, F. (1986). Calling a freeze on "stress wars": There is hope for adaptational outcomes. *American Psychologist*, 41, 713-714.
- Green, B. L. (1986). On the confounding of "hassles" stress and outcome. *American Psychologist*, 41, 714-715.

### Contrasting the Hassles Scale and the Perceived Stress Scale: Who's Really Measuring Appraised Stress?

Sheldon Cohen  
Carnegie-Mellon University

In Lazarus, DeLongis, Folkman, and Gruen's (July 1985) defense of the Hassles Scale, they used the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) as an illustration of "circularity or confounding" in present-day research. They argued that "in this strategy of stress measurement, the antecedent and consequent measures seem to overlap entirely, making it questionable whether the correlation provides any gains in knowledge" (p. 771). We would like to respond to their criticism of the PSS and to address the question of the relative conceptual merits of the PSS and Hassles scales. We present evidence demonstrating that the PSS does *not* measure the same thing as psychologic symptom scales and that even after controlling for the possible overlap of the PSS and psychopathology, the PSS prospectively predicts psychologic symptoms, physical symptoms, and health behaviors. We also discuss conceptual problems with the Hassles Scale and argue that the PSS provides a better (conceptually clearer) measure of appraised stress.

The PSS is a 14-item scale designed to measure the degree to which individuals appraise situations in their lives as stressful. An abbreviated scale, including 4 of

the original scale items, has also been developed. PSS items were designed to tap the degree to which respondents find their lives unpredictable, uncontrollable, and overloading: three issues central to the appraisal of stress. Respondents are asked how often in the last month they experienced specific feelings. As examples, items in the 4-item scale inquire about "ability to control important things in your life," "feeling confident about your ability to handle personal problems," "feeling that things were going your way," and "difficulties piling up so high that you could not overcome them." In short, the scale attempts to represent situations where persons perceive that their demands exceed their ability to cope.

#### To What Degree Is the PSS Confounded With Psychopathology?

We concur with Lazarus and his colleagues' argument that a valid measure of appraised stress could (and should) not be totally independent of psychopathology. Because Lazarus et al. (1985) addressed the inevitability of some overlap between these concepts, we will limit our argument to the presentation of data indicating that although there is overlap between what is measured by the PSS and psychological symptom scales, there are also significant and important differences.

#### Evidence Relating the PSS to Symptoms and Health Behaviors

Partial correlation provides a powerful and conservative tool for establishing the independence of appraised stress and psychologic symptomatology. By partialing concurrently assessed symptomatology out of the relationship between the PSS and various outcomes, we are able to eliminate the possibility that any remaining effect is attributable to the overlap between symptoms and the PSS. This is a very conservative approach in that any variance that is common to both the PSS and psychologic symptoms is attributed to psychologic symptoms.

In our original article (Cohen et al., 1983), we presented data showing that correlations between the PSS and physical symptomatology are reduced but remained statistically significant even after partialing out depressive symptomatology, hence establishing that the PSS was associated with physical symptoms even when the possible role of psychological symptoms was controlled for. (We were puzzled as to why Lazarus and his colleagues failed to acknowledge this aspect of our work.) Similar results were found in our recent prospective work with a sample of 125 college freshmen who were tested twice, two and a half months apart. In this work,

we found that the correlation between the PSS at Time 1 and the Center for the Epidemiologic Study of Depression Scale (CES-D) at Time 2 was .55 ( $p < .001$ ). When we partialled CES-D at Time 1 out of this relationship, the resulting correlation was .24 ( $p < .003$ ), reduced but substantial for a prospective lag correlation. A similar lag correlation between PSS at Time 1 and physical symptomatology at Time 2 was .49 ( $p < .01$ ). This lag correlation was reduced to .20 ( $p < .01$ ) when initial physical symptom level was partialled out. When initial depressive symptom level was partialled out, the remaining partial correlation was .17 ( $p < .03$ ). These data establish relations between the PSS and physical and psychologic symptoms after controlling for any possible redundancy of the PSS and symptomatology. Moreover, they help clarify causal interpretation of these relations by eliminating the possibility that these associations could be attributable to symptoms causing perceived stress.

In an ongoing study of a community sample of persons quitting smoking by themselves or with minimal aid, we have found similar evidence for the independence of the PSS and psychological symptoms. The PSS and subscales representing the depression-dejection, anger-hostility, and tension-anxiety factors of the Profile of Mood States (POMS) were administered before the date each respondent set for quitting smoking. Whether or not a respondent quit for at least 48 hours was assessed one month following the anticipated quit date. Although the PSS as assessed prior to quitting differentiated between persons who quit and those who did not,  $F(1, 163) = 4.06, p < .05$ , none of the three POMS subscales (nor the total of the three subscales) differentiated between quitters and nonquitters. As expected, mean PSS scores (4-item scale used here) were lower for quitters (5.50) than for nonquitters (6.31). (Similar differences on the PSS between quitters and nonquitters are reported in a study of a community-wide stop-smoking contest by Glasgow, Klesges, Mizes, & Pechacek, 1985.) In an analysis of covariance, those who quit smoking had significantly lower PSS scores than those who did not quit even after the POMS total was partialled out of the relationship between quitting and the PSS,  $F(1, 163) = 3.88, p < .05$ .

In sum, the PSS provided significant prediction of a variety of health-related outcomes independent of psychologic (and physical) symptomatology. It is noteworthy that both the CES-D and POMS primarily measure negative affect and hence meet the criteria that Lazarus et al. argued

is at the core of most assessments of psychopathology (p. 773). We feel that the independent prediction of the PSS occurred because the scale principally assesses what it was designed to measure, the cognitive evaluation of stress, that is, appraisal.

Apparently, Lazarus and his colleagues were wrong in asserting that our work was an illustration of "circularity or confounding" in present-day research and that the PSS was just another measure of psychopathology. It would certainly be interesting to see how the Hassles Scale would fare with the stringent tests of independence that we applied to the PSS in the preceding analyses.

#### The PSS Provides a Better Measure of Appraised Stress Than the Hassles Scale

Our work has been profoundly influenced by the relational-cognitive orientation of Lazarus and his colleagues (e.g., Lazarus, 1966; Lazarus & Launier, 1978). In general, this stress-coping model involves situations being appraised in the context of persons' social, environmental, and personal resources. When a person perceives that the demands of the situation exceed the available resources and feels it is important to respond, the situation is appraised as stressful. This appraisal can then lead to the cognitive, motivational, and physiological responses that are commonly associated with stress.

One of our own confusions regarding the Hassles Scale is that the scale does not provide a tool for testing or otherwise examining components of this model (see Dohrenwend & Shrout, 1985). Rather than independently assessing stress appraisal or event occurrence, it confounds the two. Lazarus et al. stated that "it does not matter whether the hassies item refers to a condition of the environment or a reaction or state—*what is important is how the person appraises the condition, reaction, or state with respect to its significance for his or her well-being*" (p. 776, emphasis added). This statement is consistent with the relational-cognitive approach but inconsistent with the structure of the Hassles Scale. First, the scale's "severity" response alternatives do not even provide options for an event being unimportant, neutral, or positive (see Dohrenwend & Shrout, 1985). If an event occurred, it is counted as stressful. Second, the use of the scale without severity scores by merely counting the number of events (as in the data reported in Lazarus et al., 1985) is a more blatant violation of the relational-cognitive model. This scoring method assumes that all events are *equally* stressful. Finally, because the Hassles Scale is composed of a list of events, it is inherently inappro-

priate for assessing appraised stress because it directly ties appraised stress level to the number of occurring events. For example, a person experiencing one "extremely severe" event *cannot* have a level of appraised stress that is as high as or higher than someone experiencing four or more "somewhat severe" events.

The Hassles Scale is also insensitive to other sources of stress appraisal. For example, Lazarus et al. (1985) have said that appraised stress can occur as a result of "stressful conditions that are characterized by the absence of an identifiable stimulus, such as when a person who needs approval from a loved one is ignored and reacts with great distress" (p. 778), yet their scale measures only responses to a specific list of events. The scale's format also excludes other important sources of appraised stress including events occurring in the lives of others and expectations of future events (Cohen et al., 1983; Spacapan & Cohen, 1983).

On the other hand, the PSS does not suffer from these problems. Because it does not tie appraisal to particular situations, it is sensitive to the nonoccurrence of events as well as to ongoing life circumstances, to stress resulting from events occurring in the lives of friends and relatives, and to expectations concerning future events.

In sum, we agree with Lazarus and his colleagues that valid measures of appraised stress are imperative for studying the stress and coping process. We believe, however, that the Hassles Scale does not provide an appropriate assessment of appraised stress, whereas the PSS does. Moreover, contrary to Lazarus et al.'s (1985) claim that the PSS is totally redundant with psychopathology, we have demonstrated that the PSS predicts psychologic and physical symptoms and health behaviors after controlling for any redundancy with psychological symptom measures.

Finally, it is worth noting that we do not feel that the PSS is *the* scale to be used in stress research. Scales should be chosen as tools to answer specific questions and should be used in methodological contexts that help reduce ambiguities in interpretation. For the interested reader, the specific advantages and disadvantages of an appraised stress scale are discussed in some detail in Cohen et al. (1983).

#### REFERENCES

- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Dohrenwend, B. P., & Shrout, P. E. (1985).

"Hassles" in the conceptualization and measurement of life stress variables. *American Psychologist, 40*, 780-785.

- Glasgow, R. E., Klesges, R. C., Mizes, J. S., & Pechacek, T. F. (1985). Quitting smoking: Strategies used and variables associated with success in a stop-smoking contest. *Journal of Consulting and Clinical Psychology, 53*, 905-912.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S., DeLongis, A., Folkman, S., & Gruen, R. (1985). Stress and adaptational outcomes: The problem of confounded measures. *American Psychologist, 40*, 770-779.
- Lazarus, R. S., & Launier, R. (1978). Stress-related transactions between person and environment. In L. A. Pervin & M. Lewis (Eds.), *Perspectives in interactional psychology* (pp. 287-327). New York: Plenum Press.
- Spacapan, S., & Cohen, S. (1983). Effects and aftereffects of stressor expectations. *Journal of Personality and Social Psychology, 45*, 1243-1254.

Thanks are due to Scott Monroe, Michael Scheier, and Richard Schulz for their comments on an earlier draft. The self-quit smoking study is supported by a grant from the National Cancer Institute (CA38243) and the Freshman College Student Study by a grant from the Carnegie-Mellon University Committee on Social Science Research in Computing.

#### Reply to Cohen

Richard S. Lazarus and Susan Folkman  
*University of California, Berkeley*

We are pleased by Sheldon Cohen's (this issue, pp. 716-718) statement that he and his colleagues have been influenced by our relational-cognitive orientation and, of course, we have no wish to alienate anyone friendly to our search for a paradigm for the study of stress and emotions. Generating such a paradigm, however, requires a searching analysis of how best to empirically actualize a relational and cognitive theoretical framework.

Our comment in our article (Lazarus, DeLongis, Folkman, & Gruen, 1985) that the Perceived Stress Scale of Cohen, Kamarck, and Mermelstein (1983) was inherently circular was mainly a reaction to the face characteristics of the items of the PSS, referring as they do to feeling nervous, upset, and unable to control important things in life, which strongly suggest a heavy overlap with psychologic symptoms. However, we should have taken into consideration their findings, which showed that the Perceived Stress Scale contributed modestly but significantly to health outcomes independently of psychological symptomatology. We were remiss in al-