

ANNOTATION

PITFALLS IN STRESS RESEARCH: RESOLVING THE 'HASSLE'

The recent debate between Lazarus, DeLongis, Folkman and Gruen¹ and Dohrenwend and ShROUT² in the July issue of the *American Psychologist* brings to the fore two pitfalls that should concern every investigator in stress research: namely, the difficulty of defining stress, and the problem of confounded measures. In this paper, we seek to reconcile two polarized views on these issues and propose research strategies to reduce the confound.

Given the complex and global nature of stress, and the different theoretical orientations of investigators, it is not surprising that different definitions of stress have been offered. Alternatively, stress has been defined in terms of inherent stimulus properties, physiological response patterns and cognitive appraisals. Whatever definition one adopts, it reflects certain theoretical biases and delimits the domain of empirical research.

The current dispute is between an objective, stimulus definition of stress and a cognitive, relational one. Dohrenwend and ShROUT² argue that environmental stressors should be defined and measured according to their objective characteristics, because subjective measures of stress are necessarily confounded with measures of coping outcomes. Lazarus *et al.*¹, on the other hand, contend that 'no environmental event can be identified as a stressor independently of its appraisal by the person' (p. 776), and that the term environmental stress is useless, 'because it is the person-environment relationship that is stressful or emotionally arousing' (p. 777).

Lazarus' relational emphasis stems from his theoretical position that cognition is a necessary precondition for emotion and emotional stress. However, Lazarus³ concedes that given the present state of the art in theoretical development

and empirical knowledge, it is not possible to prove that emotion is always preceded by cognition, and acknowledges that it is more fruitful to ask how cognition affects emotional reactions than to prove that cognition must precede emotion. Dohrenwend and ShROUT² do not dispute the fact that cognition can affect psychological distress, but they advocate the research strategy of obtaining separate measures of subjective perception and environmental stress.

The focal point of debate is whether one can obtain objective measures of environmental stress independently of an individual's cognitive evaluation. We propose that one way to resolve this dispute is to conceptualize environmental input and cognitive appraisal as two opposite poles of the same continuum which encompasses all kinds of stressors.

On the extreme 'environmental' end are stressors that are readily definable by their physical attributes and are relatively independent of an individual's appraisal. For example, nuclear explosion can be objectively identified as a stressor by virtue of its well-known destructive power and the lethal level of radioactive fallout. One does not need to interview the surviving victims to determine whether it is stressful to them. Similarly, a plane crash can be identified as a stressful event on *a priori* grounds. Inasmuch as an event is known to destroy life, inflict tissue damage and victimize people, regardless of their coping resources, idiosyncratic appraisal becomes superfluous. This type of life stress process is best described by Dohrenwend and Dohrenwend's⁴ victimization model.

On the other extreme end of the continuum, one may experience stressors that are primarily created by one's own cognitive activities, such

as reflection, imagination or anticipation. These cognitive activities can produce stress independently of any specific environmental input. For example, one can experience existential stress simply from reflections on the lack of meaning and purpose in one's life.^{5, 6} It is not any specific stressful encounter, but appraisal of the overall pattern of one's existence—its past, present and future, its values, commitments and aspirations or the lack of these personal qualities—that generates existential stress. Such stressors cannot be described in terms of objective characteristics, nor can they be tied to any specific environmental event.

In between these two opposite poles lie various stressors involving different amounts of input from the objectively definable environment and from subjective appraisal processes. The current debate whether stress should be defined solely in environmental or relational terms probably generates more heat than light in much the same way as the age-old nature–nurture controversy of intelligence. Our conception of an environment–person continuum implicitly recognizes different kinds of stressors, ranging from those which are relatively independent of individuals' cognitive appraisal to those stressors that are relatively independent of specific environmental input. Viewed in this way, it is no longer a question of whether stress can be identified apart from appraisal, but to what extent appraisal contributes to the stress process. It is important to recognize that cognitive appraisal should play an increasingly important role as one moves from the 'environmental' pole towards the 'person' pole.

The placement of stressors on the environment–person continuum can be determined conceptually or empirically. We have placed nuclear war and existential anxiety on opposite ends of this continuum on the basis of conceptual analysis. But we can also determine the relative location of various stressors on this dimension empirically. For example, the amount of variance accounted for by appraisal in the relation between stressful events and adaptational outcome would be a useful index. If little or no variance is attributable to appraisal, then we can conclude that the stressor is near the extreme 'environmental' end of this continuum and the stress process is victimization.⁴ The most appropriate way to determine the role of cognitive appraisal in various stressful encounters is through systematic research.

The second pitfall of stress research concerns the confounding between independent and dependent variables. This problem reminds us of the circular definition of reinforcement. One widely accepted definition of reinforcement is that it can be any event that increases the probability of response that precedes it. Reinforcement is the cause, and an increase in response rate is the effect. Thus, the cause is defined entirely in terms of its effect. One way to overcome the problem of circularity is to identify a reinforcer in one situation and measure its effect in another situation. For example, food increases the rate of lever-pressing in hungry rats, thus establishing itself as a reinforcer. One can then predict and investigate the effect of food as a reinforcer on some other forms of operant in food-deprived rats. This 'transituational' effect is said to circumvent the problem of circularity, because the same measure is no longer applied to both the independent and dependent variables.⁷

A similar case can be made in stress research. Once a particular event has been defined as a stressor, whether on the basis of physiological, behavioural or cognitive responses in one situation, one can predict and measure its effects in another situation. In a certain sense, Dohrenwend and ShROUT² are correct in stating that the hassle scale is an outcome measure, in the same way that lever-pressing is an outcome measure of the effect of food reinforcement. However, by applying the transituational argument, it is no longer circular to measure the effects of these hassles on some other psychological and physiological responses. In other words, certain daily events are defined or established as hassles by *cognitive appraisals*; then the effects of these hassles on adaptational outcomes are measured by *psychosomatic symptoms*.

According to the transituational argument, cognitive appraisal is a dependent variable when one is interested in identifying certain daily events as hassles; however, the same measure becomes an independent variable when one is interested in the effects of hassles on affective and somatic responses in broader situations. Thus, the outcome measure in the initial 'definitional' mode becomes the independent variable in the subsequent 'predictive' mode. One cannot differentiate between independent and dependent variables on *a priori* grounds, it all depends on the logic of one's research design and

the particular question one wants to address.

Dohrenwend and Shrout² argue for the need to 'break down hassles into events and reactions to events' (p. 785). They favour the approach of asking subjects to endorse those daily events that have occurred to them and then measuring their appraisal separately. A frequency count of daily events experienced does provide objective and useful information on the cumulative effect of these events on health, but by itself this measure cannot answer questions about sources of hassles or the impact of hassles on health. Unlike extremely traumatic environmental events to which all people are equally vulnerable, the question of whether a particular daily event is a hassle depends very much on the individual's appraisal. By definition, hassles do not exist apart from cognitive and emotional reactions.

The transsituational model helps reduce the problem of confounding in research on the effects of hassles by emphasizing the differences in responses and situations between the 'definitional' phase and the 'predictive' phase. We propose that in the definitional phase, daily events should be described in 'objective terms without reference to negative emotions. Thus, 'concerns about medical treatment' and 'fear of confrontation' should be stated as 'medical treatment' and 'confrontation', respectively. Secondly, cognitive appraisal should be expressed in terms of both positive and negative impacts. A daily event or hassle is rated as having a negative impact if it is appraised as threatening or harmful to one's well-being. However, it may be rated as having a positive impact if it is perceived as challenging the individual to develop more tolerance of the irritation. These appraisals are necessarily accompanied by certain affects, such as frustration or annoyance, but the response measure used to define hassles focuses on cognitive appraisal of implications for one's well-being, and not on one's emotional reactions.

In the 'predictive' phase, the dependent variable should encompass a wide range of symptoms of emotional distress in broader situations. Subjects are asked to indicate how they feel at the time of testing without any specific reference to the daily events appraised earlier. The focus in this phase is on the presence of a variety of negative moods typically associated with psychopathology. The confounds between the definitional and predictive phase could be even further reduced by measuring emotional

distress in situations that are distinctly different from the daily events appraised earlier.

According to Lazarus' recursive and interactive model, the different processes within the rubric of stress are so inextricably interwoven that it is difficult to differentiate between cause and effect. Another strategy to reduce the confound is to take 'slices' of time at different intervals according to the logical sequences of occurrence. Thus, at point A, we measure the amount of stress an individual is experiencing. This may include current annoyances of daily events as well as the residue effect of some major life change in the past. Thus, the residue effect becomes a cause or source of stress in the present analysis. At point B, we measure how the individual copes with the events that annoy him/her and the residue effect of past life change. At point C, we measure symptoms of psychological distress. The greater the interval between points A and C, the less confounding. By incorporating the transsituational model and time-series analysis, we can reduce most of the confounding between stress and outcome measures.

Finally, we need to recognize that four basic approaches are available in studying the complex relationships between stress and health: objective-objective, objective-subjective, subjective-objective and subjective-subjective. In the objective-objective approach, we obtain objective measures of both stress and outcomes. Frequency of occurrence of various objectively definable events and measurement of physical attributes such as loudness, density or temperature, etc are all objective measures uncontaminated by subjective appraisal. Objective measures of health outcomes include physician's diagnosis, physiological indices or levels of performance on various tasks. The objective-subjective approach, which is favoured by Dohrenwend and Shrout,² employs subjective measures of psychological distress. It should be borne in mind that objective measures of stress become increasingly difficult as one moves toward the 'person' end of the environment-person continuum. The subjective-subjective approach characterizes most of Lazarus' approach. Only this one involves the problem of confounded measures. We have proposed transsituational and time-series strategies to deal with this problem.

We want to emphasize that all four approaches are needed to develop a systematic body of

knowledge, and no single one is capable of providing all the answers we need concerning the effects of stress on health. Which approach one adopts is purely a matter of one's theoretical inclination and the kind of questions one asks.

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REFERENCES

1. Lazarus, R. S., DeLongis, A., Folkman, S. and Gruen, R. Stress and adaptational outcomes: The problem of confounded measures. *Am. Psychol.* 1985; **40**: 770-779.
2. Dohrenwend, B. P. and Shrout, P. E. 'Hassles' in the conceptualization and measurement of life stress variables. *Am. Psychol.* 1985; **40**: 780-785.
3. Lazarus, R. S. On the primacy of cognition. *Am. Psychol.* 1984; **39**: 124-129.
4. Dohrenwend, B. S. and Dohrenwend, B. P. Life stress and psychopathology. In: Regier, D. A. and Allen, G. (Eds) *Risk Factor Research in the Major Mental Disorders*. DDHS Publication No ADM 81-1068. Government Printing Office, Washington, DC, pp. 131-141.
5. Frankl, V. E. *Man's Search for Meaning*. Pocket Books, New York, 1963.
6. Reker, G. T., Peacock, E. J. and Wong, P. T. P. Meaning and purpose in life and well-being: A life-span perspective. *J. Gerontol.* (in press).
7. Meehl, P. E. On the circularity of the law of effect. *Psychol. Bull.* 1950; **47**: 52-75.