

The Daily Inventory of Stressful Events

An Interview-Based Approach for Measuring Daily Stressors

David M. Almeida

University of Arizona

Elaine Wethington

Cornell University

Ronald C. Kessler

Harvard University

This study introduces the Daily Inventory of Stressful Events (DISE), an interview-based approach to the measurement of multiple aspects of daily stressors through daily telephone interviews. Using a U.S. national sample of adults aged 25 to 74 (N = 1031), the prevalence as well as the affective and physical correlates of daily stressors are examined. Respondents had at least one daily stressor on 40 percent of the study days and multiple stressors on 11 percent of the study days. The most common class of stressors was interpersonal tension followed by work-related stressors for men and network stressors (events that occur to close others) for women. Stressors that involved danger of loss were more prevalent than stressors in which loss actually occurred. Regression analyses showed that specific types of daily stressors such as interpersonal tensions and network stressors were unique predictors of both health symptoms and mood.

Keywords: daily hassles, stress, psychological distress, physical symptoms

The aims of the present study are threefold. First, the study describes a new and innovative technique for assessing exposure to daily stressors. This new technique introduces methods for the assessment and classification of daily stressors by type of stressor and the area of life in which stressors occur. Such content of a stressor affects its impact on symptoms (e.g., Stone, 1987). The new method also introduces investigator-rated measures of stressor severity and stressor threat, recommended by several investigators as a way to reduce some of the bias introduced by self-reported ratings of stressor severity and appraisal (e.g., Monroe & Kelley, 1995). Second, the study aims to assess the prevalence of daily stressors in a U.S. national sample of adults, aged 25 to 74. Most studies of the preva-

lence of daily stressors have used small, volunteer, or local samples, whose characteristics cannot necessarily be generalized to the American population at large. Exposure to daily stressors varies a great deal across different social groups (e.g., Almeida & Kessler, 1998), and failure to document the variety of daily stressors may result in less effective and valid measurement of stressor exposure (Herbert & Cohen, 1996). Third, the study aims to demonstrate the concurrent validity of its measures by examining the extent to which aspects of daily stressors are significantly associated with negative mood and physical health symptoms, two commonly used outcomes in research on the relationship between daily stressors and health.

The research reported in this article was supported by grants from the the MacArthur Foundation Research Network on Successful Midlife Development, the National Institute for Mental Health (MH19734), and the National Institute on Aging (AG19293). The authors wish to thank Amy Chandler, Dan MacDonald, and Melanie Horn for their research assistance.

Measurement of Daily Stressors

Many daily event measures now in use are based on checklist measures of life events (Turner & Wheaton, 1995) and have strengths and weaknesses similar to those measures. Checklist measures of daily stressors have come under increasing criticism. The focus of the critique is that individual differences in stressor appraisals may at least partially determine the propensity to report exposure to a stressor (Stone, Kessler, & Haythornthwaite, 1991). People are less likely to report nonstressful incidents, even if researchers consider that type of incident to have stress-creating potential. Such incidents may not be relevant to goals, an important component of the appraisal process (Lazarus, 1999). This type of bias is difficult to control, short of experimental manipulation of exposure to stressors. Confounding may also occur when the question includes an appraisal judgment (e.g., "a lot of work at home"). To be measured validly, both stressor exposure and appraisal of stressors must be differentiated from underlying personality traits that affect stressor reactivity (Lazarus, 1999).

Monroe and Kelley (1995) argued for an interview-based, investigator-rated approach (e.g., Brown & Harris, 1978) as a way to differentiate measures of stressor exposure from appraisal. They recommended personal, semistructured interviews to collect information appropriate for investigators to rate the objective content, severity, and threat of events. The information collected is rated for severity and threat using documented dictionary guidelines for each type of life event or stressor (Wethington, Brown, & Kessler, 1995). The threat and severity ratings estimate the amount of emotional arousal likely to result from life events with different types of objective characteristics. Obviously, the diagnosis of inoperable cancer is rated as being objectively much more severe than a diagnosis of a bad cold. The threat to life represented by the cancer diagnosis is hypothesized to create a qualitatively more severe appraisal of threat for the individual reporting it than the diagnosis of a cold, no matter how uncomfortable the cold symptoms. Such investigator-rated methods can be applied to rating the content and severity of daily events. For example, an argument with a child over household chores would be rated as less severe than an argument over damaging the family car.

Almeida (1998) has developed a personal interview assessing the occurrence of daily stressors, as well as their severity and threat, called the Daily Inventory of Stressful Events (DISE). This interview technique uses narrative descriptions of daily stressors reported in telephone interviews for investigator rating of stressor severity and dimension of threat. Dimension of threat and severity ratings are based not on self-report appraised measures (e.g.,

"How stressful was this for you?") but on objective characteristics of the stressors as reported by participants. The threat dimensions were adapted from the dimensions of contextual threat developed by Brown and Harris (1978), subsequently modified for use in semistructured personal interview surveys (Wethington, 1997; Wethington et al., 1995). These dimensions reflect the revised model of stress, appraisal, and coping proposed by Lazarus (1999). Each daily stressor is rated by the investigators for the type of threat (loss, danger, disappointment, frustration, and opportunity) and the severity of threat ("none" to "extreme") it would pose to the average individual in that situation.

Prevalence of Daily Stressors

The second aim of the present study is to estimate the prevalence of daily stressors in a U.S. national sample of adults. Although the relationship between exposure to stressors and a specific psychological or health outcome can often be estimated accurately in a small and restricted sample, such findings cannot always be generalized to include all groups in the population. It is useful to know the prevalence of daily stressors in the general population because different social groups have been shown to have different rates of exposure to particular types of daily events. Such group differences in exposure may play an important role in the differences in disorder prevalence, such as the gender difference in psychological distress (Almeida & Kessler, 1998).

Previous studies of daily stressors have relied primarily on self-administered checklists that often yielded relatively coarse information, typically whether a stressor occurred. The present study uses telephone interview methodology. Investigators (e.g., Stone et al., 1991) have recommended telephone interviews as the most feasible way to conduct a nationally representative study of daily stressors. Telephone interviews make it possible to interview larger numbers of people about daily stressors at a reasonable cost. They also make it easier to obtain more detailed and accurate information about daily stressors (e.g., timing and duration) through the use of question probes and complex skip patterns. In addition, the gain in greater control over data recording in telephone interviews will also lead to higher response rates and less missing data. Telephone interviews have been shown to have higher response rates than self-administered questionnaires in general population samples (Dillman, 1989). The researcher also has more control over the quality of the interviews (e.g., whether the respondent is paying full attention to the diary completion task, whether diaries are completed every day). Data are recorded more completely in phone interviews than self-administered diaries because the inter-

viewer can ensure that no questions are skipped. Telephone interviews can also enhance the quality of data through probing incomplete or unclear responses. Finally, phone administration permits rapid feedback about nonresponse such as missed phone appointments, making it possible to implement special efforts to complete the interview. For example, interviewers can contact a participant who missed an appointment or convert refusals (cf. Stone et al., 1991).

Daily Stressors, Mood, and Health Symptoms

The final aim of this study is to demonstrate the concurrent validity of the DISE measures by examining their relationship to health symptoms and mood. Promoters of personal interviews acclaim their potentially greater validity through improved assessment of degree of severity, more precise classification of stressor content, and more valid differentiation between severity and stressor appraisal (Brown, 1989). Interviews improve severity assessment by allowing investigators to analyze whole narratives of stressful events rather than brief responses to abstract phrases and by permitting investigators to rate if experiences meet preestablished thresholds of severity and "seriousness" rather than relying on respondent interpretation of the stimulus question.

A second way in which personal interviews may increase concurrent validity is by better measuring content. A trained interviewer can probe to determine if the situation reported in fact matches the intent of the question and should be counted as a stressor of that type (McQuaid et al., 1992; Raphael, Cloitre, & Dohrenwend, 1991). Previous research has found that the area of life in which a daily stressor occurs, as well as its severity, is differentially related to various outcomes (Stone, 1987). Yet relatively few studies (e.g., Almeida & Kessler, 1998; Bolger, DeLongis, Kessler, & Schilling, 1989) have evaluated the differential impact of stressor content on mood and symptoms. The two studies cited in the previous sentence, moreover, were limited by their inability to assess the differential impact of both stressor content and severity.

A third way in which personal interviews may increase the validity of daily stressor assessment is by providing a way to further differentiate two components of the transactional model of stress: stressor severity and appraisal of stressors. Stressor severity should be measured separately and objectively from stressor appraisal to minimize confounding of stressor severity and components of threat with personal dispositions. Previous studies of daily stressors have often relied on self-rated measures of primary and secondary appraisal (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) to measure severity and threat of an event. Although worded as objec-

tively as possible, the items may still be prone to confounding with underlying mood disturbance, which would allow unmeasured individual differences to affect the judgment whether or how much a stressor threatens physical safety or personal health. Interviewers and investigators can eliminate experiences that do not qualify as serious or that are descriptions of symptoms rather than external events *per se*. Reporting minor events as more severe than they are, moreover, may be related to the respondent's health status at the time of interview (Bebbington, 1986). One innovation of this study was to introduce investigator-rated measures of stressor threat, rather than relying on self-ratings.

In sum, the present article introduces a novel approach for measuring the content, severity, and threat of daily stressors using a national U.S. sample of adults. The goals are to describe the prevalence of exposure to various aspects of daily stressors and to assess the extent to which these measures of daily stressors are associated with physical symptoms and negative mood.

METHOD

Sample

Data for the analyses are from the National Study of Daily Experiences (NSDE). Respondents were 1,031 adults (562 women, 469 men), all of whom had previously participated in the Midlife in the United States Survey (MIDUS), a nationally representative survey of 3,032 people in the age range 25 to 74 carried out in 1995-1996 under the auspices of the John D. and Catherine T. MacArthur Foundation Network on Successful Midlife (Keyes & Ryff, 1998; Lachman & Weaver, 1998; Mroczek & Kolarz, 1998). The MIDUS survey was designed by an interdisciplinary team of 28 researchers to study patterns and correlates of midlife development in the United States with special emphasis on physical health, psychological well-being, and social responsibility. MIDUS respondents were obtained through random digit dialing of telephone numbers. Data collection involved a telephone interview that lasted an average of 30 minutes, as well as mailed questionnaires that were estimated to take an average of an additional 2 hours to complete.

Respondents in the NSDE were randomly selected from the MIDUS sample and received \$20 for their participation in the project. Over the course of 8 consecutive evenings, respondents completed short telephone interviews about their daily experiences. On the final evening of interviewing, respondents also answered several questions about their previous week. The interviews took approximately 10 to 15 minutes to complete. Data collection spanned an

entire year (March 1996 to April 1997) and consisted of 40 separate "flights" of interviews, with each flight representing the 8-day sequence of interviews from approximately 38 respondents. The initiation of interview flights was staggered across the day of the week to control for the possible confounding between day of study and day of week. Of the 1,242 MIDUS respondents we attempted to contact, 1,031 agreed to participate, yielding a response rate of 83%. Respondents completed an average of seven of the eight interviews, resulting in a total of 7,221 daily interviews.

Table 1 compares characteristics of the NSDE respondents with the MIDUS respondents who did not participate in the NSDE. The two samples had very similar distributions across these demographic characteristics. The NSDE had slightly more female and fewer minority respondents than the MIDUS sample. Respondents for the present analysis were on average 47 years old. Seventy-seven percent of the women and 85% of the men were married at the time of the study. Thirty-eight percent of the households reported having at least one child in the household. The average family income was between \$50,000 and \$55,000. Men were slightly older than women and had similar levels of education.

Measures

Daily negative mood. The telephone diary included an inventory of 10 emotions from the Negative Affect Scale designed specifically for the MIDUS survey (Mroczek & Kolarz, 1998). This scale was developed from the following well-known and valid instruments: the Affect Balance Scale (Bradburn, 1969), the University of Michigan's Composite International Diagnostic Interview (Kessler et al., 1994), the Manifest Anxiety Scale (Taylor, 1953), and the Center for Epidemiological Studies Depression Scale (Radloff, 1977). Examples of items include sad, hopeless, anxious, and restless. Each day, the respondents indicated how much of the time they experienced each emotion over the past 24 hours on a 5-point scale from *none of the time* to *all of the time*. Mean scores across the 10 items were computed. Cronbach's alpha for the scale was .89.

Daily physical symptoms. These were measured using a shortened version of Larsen and Kasimatis's (1991) physical symptom checklist. Items that overlapped with the Psychological Distress Scale (e.g., "urge to cry") were omitted. Our 5-item scale assessed aches (headaches, backaches, and muscle soreness), gastrointestinal symptoms (poor appetite, nausea/upset stomach, constipation/diarrhea), upper respiratory symptoms (sore throat, runny nose), and other physical symptoms or discomforts. Open-ended responses to the other physical symptoms question were subsequently coded and placed into an existing cate-

TABLE 1
Demographic Comparison of
the MIDUS Sample and the NSDE
Subsample (in percentages)

Demographic Variable	MIDUS ^a	NSDE ^b
Age		
Young adults (25-39)	32.4	33.5
Midlife adults (40-59)	45.6	45.0
Older adults (60-74)	22.0	21.5
Gender		
Males	47.6	45.5
Females	52.4	54.5
Education		
12 years or less	38.4	37.7
13 years or more	61.6	62.3
Marital status		
Married	61.2	65.4
All others	38.8	34.6
Children in household ^c		
Yes	39.3	37.8
No	60.7	62.2
Race		
Caucasian	86.9	90.3
African American	7.2	5.9
All other races	5.9	3.8

NOTE: MIDUS = Midlife in the United States Survey; NSDE = National Study of Daily Experiences.

a. Respondents in the MIDUS survey who did not participate in the NSDE daily study ($N = 2,001$).

b. Respondents in the NSDE study, all of whom had previously participated in the MIDUS survey ($N = 1,031$).

c. Whether respondent has at least one child age 18 or younger living in the house.

gory, deleted if symptom was psychological, or left in a miscellaneous category if no other category existed. Each day, the respondents indicated how frequently they experienced each symptom over the past 24 hours on a 5-point scale from *none of the time* to *all of the time*. Mean scores across the five items were computed. Cronbach's alpha for the scale was .71.

Daily stressors. These were assessed through a semi-structured Daily Inventory of Stress Events (DISE) (Almeida, 1998). The inventory consisted of a series of stem questions asking whether certain types of daily stressors had occurred in the past 24 hours, along with a set of interviewer guidelines for probing affirmative responses to rate stressor content, severity, and threat as well as a series of structured questions that measured respondents' primary appraisal of the stressors. The stem questions, examples of the probe questions, and appraisal questions are provided in the appendix. The aim of this interviewing technique was to acquire a short narrative of each stressor that included descriptive information (e.g., topic or content of the stress, who was involved, how long the stressor lasted) as well as what was at stake for the respondent. Open-ended

information for each reported stressor was tape recorded then transcribed and coded for several characteristics. Coders were graduate and advanced undergraduate students who received approximately 10 hours of initial training. Subsequent 2-hour weekly meetings were held to check accuracy and discuss discrepant ratings. As new coders joined the project, they were required to demonstrate interrater reliability similar to other coders. This interview-based approach allowed us to distinguish between a stressful event (e.g., conflict with spouse) and the affective response to the stressor (e.g., crying or feeling sad). Another benefit of this approach was its ability to identify overlapping reports of stressors. In the present study, approximately 5% of the reported stressors were discarded because they were either solely affective responses or they were identical to stressors that were previously described on that day.

Table 2 presents the description and interrater reliability of the DISE measures. For each stressor, expert coders rated (a) content classification of the stressor (e.g., work overload, argument over housework, traffic problem), (b) focus of who was involved in event, (c) dimensions of environmental threat (loss, danger, disappointment, frustration, opportunity), and (d) severity of stress. In addition, respondents provided reports of (e) degree of severity and (f) primary appraisal (i.e., areas of life that were at risk because of the stressor).

The first two measures in Table 2 pertain to the objective nature of the stressor. Each stressor was initially placed into a *content classification*. This taxonomy of daily stressors combined the broad type of stressors (e.g., an argument) with specific content or topic (e.g., housework). A pilot study of a national sample of 1,006 adults was initially conducted to generate the content classification list of daily stressors common to adults in the United States. The initial list included eight broad classifications and 39 specific classifications. This list was then lengthened to incorporate 10 additional specific classifications of arguments and tensions and five other miscellaneous classifications. *Focus of involvement* assessed whether other individuals were involved in the stressor and, if so, what their relations were to the respondent (Brown & Harris, 1978). Codes assigned to content and focus were derived directly from respondent self-reported descriptions. They closely parallel individual items in life event and daily hassles checklists (e.g., Zautra, Guarnaccia, & Dohrenwend, 1986).

The remaining measures in Table 2 assessed the meaning of the stressor for the respondent. *Environmental threat dimensions* were the investigator-rated stressful implications for the respondent. These dimensions were similar to Lazarus's (1999) dimensions of environmental threat, with

the addition of disappointment, an expected positive experience that did not occur (Wheaton, 1999), and frustration (i.e., stressors in which the respondent has little or no control). *Objective severity* ratings were similar to Brown and Harris's (1978) ratings of short-term contextual threat and were based on the degree of disruptiveness and unpleasantness associated with the stressor. The final two DISE measures were obtained from the respondents' own ratings (see the appendix for the items). These included the perceived or *subjective severity* of the stressor and self-reports on seven *domains of primary appraisal*, (i.e., the degree of risk the stressor posed to goals and values at stake in the stressful encounter, including self-esteem, life goals, and other persons' well-being) (Lazarus, 1999). Approximately 20% (800 events) of the stressors were rated by two coders. The interrater reliability for investigator ratings (Kappa) ranged from .66 to .95 across all of the codes. Specific classification codes had the lowest reliability partially because of the high number of possible codes ($n = 54$).

The documentation and guidelines for all of these ratings are provided in an interview and coding manual (Almeida, 1998). In addition, all of the transcribed descriptions of daily stressors and their corresponding ratings are contained in an "electronic dictionary" stored on a computer spreadsheet. This dictionary consists of more than 4,000 rated daily stressors and can be searched and cross-referenced by any of the DISE measures.

RESULTS

The initial set of analyses examined how often respondents experienced daily stressors as well as their average level of daily physical health symptoms and daily negative mood. Across the 8 study days, we calculated the percentage of days that respondents reported any daily stressors (i.e., an affirmative response to any of the stressor stem questions) and multiple daily stressors (i.e., an affirmative response to two or more of the stressor stem questions). The daily symptoms and daily distress scores were also averaged across the study days. Table 3 summarizes these results. On average, respondents reported experiencing at least one stressful event on 39.4% of the study days and multiple stressful events on 10.4% of the study days. Women had more frequent days in which they reported one stressful event, $t(1030) = 5.1, p < .01$, but both men and women had similar numbers of days involving multiple stressors. The scores for daily physical symptoms and daily negative mood represent the daily level of these variables averaged across the study days. Women reported higher levels of physical symptoms, $t(1030) = 3.9, p < .01$.

TABLE 2
Description of the Daily Inventory of Stressful Events Measures

<i>Coding Category</i>	<i>Description</i>	<i>Codes</i>
Content classification	Stressful events are categorized into one of seven broad classifications organized by interpersonal tensions, life domains, network events, and miscellaneous events. Next, they are placed in 1 of 54 specific classifications. Broad classifications are listed in the cell to the right, followed by the number of specific classifications associated with each heading.	Interpersonal tensions (21) Work/education (9) Home (9) Finances (3) Health/accident (5) Network (7) Miscellaneous (9)
Focus of involvement	Focus of involvement refers to who was involved in the event.	Respondent Other Joint
Threat dimensions	The threat dimension describes the implications of the event for the respondent. Loss is the occurrence of a deficit. Danger is the risk of a future negative occurrence. Disappointment occurs when something does not turn out as the respondent had expected. Frustration occurs when the respondent has little or no control over the events. Opportunity is a chance for positive outcome.	Loss Danger Disappointment Frustration Opportunity
Objective severity	The objective assessment of the severity of an event refers to the degree and duration of disruption and/or unpleasantness created for the respondent. Ratings range from 1, <i>a minor or trivial annoyance</i> , to 4, <i>a severely disruptive event</i> .	Low severity events Medium severity events High severity events Extreme severity events
Subjective severity	The subjective assessment of severity is the respondent's assessment of the degree of stressfulness involved in the event.	Not at all stressful Not very stressful Somewhat stressful Very stressful
Primary appraisal domains	Primary appraisal domains refer to the respondent's report of how much the following areas were at risk or at stake in the situation: (a) daily routine disruption, (b) finances, (c) how respondent feels about self, (d) how others feel about respondent, (e) health or safety, (f) well-being of one close to respondent, and (g) future plans.	Not at all A little Some A lot

TABLE 3
Description of Daily Stressors, Physical Symptoms, and Negative Mood

	<i>Total</i>		<i>Men</i>		<i>Women</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Any stressors (% days)	39.4	26.8	37.5	27.3	40.9*	26.4
Multiple stressors (% days)	10.4	16.7	9.4	16.6	11.2	16.6
Physical symptoms (level) ^a	1.38	0.27	1.34	0.27	1.41*	0.39
Negative mood (level) ^a	1.19	0.30	1.18	0.29	1.20	0.30

NOTE: *N* = 1,031.a. Range is 0 (*none of the time*) to 5 (*all of the time*).**p* < .05, gender difference.

Content and Focus of Daily Stressors

Using measures from the DISE, the next set of analyses provided a much more detailed taxonomy of daily stressors. Table 4 shows the percentage of study days that respondents reported each type of stressor as well as the relative prevalence (i.e., the proportion of reported stressors that fell into each of the categories). Broad content classifications are shown in bold followed by their corresponding specific classifications. Interpersonal arguments and tensions composed the most common broad class of daily stressors occurring on 22% of the study days (i.e., 1.5 days per week). This class of stressor accounted for approximately one half of all reported daily stressors. The most prevalent types of tensions were unspecified dis-

TABLE 4
Distribution of Stressor Content Classification
and Focus of Involvement (in percentages)

	<i>Total</i>		<i>Men</i>		<i>Women</i>	
	<i>Days</i>	<i>Events</i>	<i>Days</i>	<i>Events</i>	<i>Days</i>	<i>Events</i>
Arguments/tensions	22.6	50.0	21.4	49.1	23.6	50.3
General						
disagreement ^a	3.8	8.6	3.6	8.7	4.0	8.5
Job procedures	3.7	7.8	4.5	9.6	3.1	6.3*
Financial issues	2.4	4.6	2.2	4.7	2.5	4.6
Discipline/correct						
child	1.9	3.5	1.4	2.8	2.3	4.1
Timing/schedules	1.6	3.1	1.4	2.7	1.7	3.4
Value differences	1.4	2.7	1.8	3.2	1.2	2.3
Household chores ^b	1.4	2.6	0.9	1.8	1.9*	3.3*
Family issues	1.5	3.1	1.2	2.6	1.7	3.4
Respect/disrespect ^b	1.1	1.9	0.7	1.2	1.5*	2.5*
Personal tastes ^b	1.0	1.8	0.7	1.4	1.2	2.1
Miscommunication	0.7	1.8	1.0	2.6	0.5	1.2
Transportation	0.6	1.4	0.5	1.6	0.6	1.1
Disciplining						
employee ^b	0.7	1.1	1.1	1.6	0.4	0.7*
Safety/health ^b	0.6	1.1	0.6	1.2	0.7	0.9
Interaction with boss	0.7	1.0	0.6	0.8	0.8	1.2
Substance use ^b	0.3	0.8	0.3	0.5	0.4	0.9
Recreational						
activities ^b	0.3	0.7	0.2	0.4	0.4	1.0
Possessions ^b	0.3	0.7	0.2	0.4	0.4	0.9
Schoolwork ^b	0.3	0.6	0.1	0.3	0.5	0.8
Receiving bad news ^b	0.3	0.5	0.3	0.4	0.3	0.6
Sex ^b	0.2	0.3	0.3	0.5	0.1	0.1
Work/school	8.5	13.2	9.1	15.7	8.0	11.2
Work overload/						
demand	3.8	6.7	3.6	6.9	3.9	6.6
Technical breakdown	0.6	1.4	1.1	2.3	0.3*	0.6*
Mistakes	0.6	1.2	1.0	2.0	0.4*	0.6*
Job security	0.5	0.8	0.7	1.2	0.3	0.5
Time/schedules	0.5	0.7	0.4	0.5	0.6	0.9
Job structure ^b	0.4	0.7	0.5	1.2	0.3	0.3
Other work events	0.5	0.7	0.4	0.6	0.3	0.7
School overload/						
demand	0.3	0.6	0.3	0.7	0.3	0.6
Starting job	0.2	0.4	0.2	0.3	0.2	0.4
Home	5.6	8.2	5.3	8.0	5.9	8.3
Overload/demand	1.7	2.7	1.1	2.2	2.2*	3.0
Household/car repairs	1.4	2.6	1.5	2.9	1.4	2.3
Financial problems	0.9	1.3	1.3	1.7	0.6	0.9*
Pet event	0.4	0.9	0.2	0.6	0.6	1.1
Mistakes	0.4	0.8	0.3	0.7	0.4	0.8
Moving	0.2	0.4	0.1	0.4	0.2	0.4
Other home events	0.2	0.4	0.2	0.5	0.1	0.2
Neighborhood						
concerns	0.2	0.3	0.3	0.3	0.2	0.3
Time/schedules ^b	0.2	0.2	0.2	0.2	0.2	0.2
Purchase/sale	0.2	0.6	0.4	1.0	0.1	0.2
Health care	1.0	2.2	0.9	1.6	1.2	2.7
Accident/illness	0.7	1.3	0.6	1.1	0.7	1.6
Visit/contact	0.4	0.8	0.2	0.5	0.6	1.1
Network (events that						
 happen to others)	8.0	15.4	6.1	12.5	9.6*	17.8
Health	3.8	7.0	3.0	5.9	4.5*	8.0

TABLE 4 Continued

	<i>Total</i>		<i>Men</i>		<i>Women</i>	
	<i>Days</i>	<i>Events</i>	<i>Days</i>	<i>Events</i>	<i>Days</i>	<i>Events</i>
Social concerns	3.5	6.4	2.7	5.0	4.2*	7.5*
Death/bereavement	0.7	1.7	0.5	1.3	0.9	2.0
Finances ^b	0.2	0.3	0.1	0.2	0.2	0.3
Miscellaneous	1.7	3.5	1.8	4.4	1.5	2.7
Traffic/transportation	0.8	1.7	1.7	2.1	0.8	1.3
Weather	0.4	0.9	0.5	1.1	0.4	0.7
Mistakes	0.2	0.4	0.2	0.4	0.1	0.4
News	0.1	0.3	0.1	0.4	0.1	0.2
Public speaking ^b	0.2	0.2	0.2	0.4	0.1	0.1
Focus categories						
Respondent	12.7	25.7	13.1	29.4	12.3	22.8*
Other	5.3	10.8	4.3	9.2	6.1	12.2*
Joint	26.5	63.3	24.4	61.5	28.2	64.8

NOTE: $N = 1,031$. Distribution of broad classifications are shown in bold.

a. Tense moments with others, topic not specified.

b. Event not identified in pilot study.

* $p < .01$, significant gender difference.

agreements, job procedures, financial issues, and disciplining children.

A series of independent t tests assessed gender differences in the stressor content classifications. Because of the large number of comparisons, a more stringent alpha level was used ($p < .01$) to reduce the risk of chance findings. Men reported a higher proportion of tensions involving job procedures and disciplining employees, whereas women reported more tensions regarding household work and being respected. For men, the second most common broad class of stressors was that associated with paid work such as technical breakdowns and mistakes. These work stressors did not involve interpersonal tensions. The second most common class of stressors for women was network stressors—stressors that happened to a network of relatives and close friends. Women reported these network stressors on 50% more of the study days than did men. Home-related stressors composed the third most prevalent class of stressors for both men and women. However, within this broad classification, women were more likely to report overloads and men were more likely to report financial stressors.

The final category in Table 4 presents the daily frequency and proportion for the focus of involvement of daily stressors. More than 60% of the daily stressors were joint focused, involving the respondent and another person. The next most common focus of stressors was self-focused, involving the respondent only, followed by other focused, involving only someone else. When stressors included other individuals (i.e., joint- or other- focused stressors), they most likely involved a spouse or partner. The gender differences in the content classification are

mirrored in the measure of focus of involvement. Men were more likely to experience self-focused stressors, whereas women's stressors were more focused on other people.

Environmental Threat, Severity, and Primary Appraisal of Stressors

As part of the DISE interview, respondents answered a series of structured and semistructured questions that pertained to the dimension and degree of environmental threat as well as their own appraisals of the stressors. These included investigator-rated dimensions of threat, the investigator-rated (objective) and self-reported (subjective) degree of stressor severity, and primary appraisal domains (i.e., goals and values that were at risk because of the stressor). Table 5 provides a summary of these ratings of daily stressors broken down by gender. The figures for the threat dimensions reflect the percentage of stressors that fell into each of five threat categories. Of the stressors that the total sample experienced, roughly 30% involved some sort of loss, nearly 37% posed danger, and 27% were frustrating or out of the control of the respondent. Table 5 also presents the level of severity ratings averaged across all of the daily stressors. On average, the respondents subjectively rated stressors as having medium severity, whereas objective coders rated the stressors as posing low severity. Figures for the domains of primary appraisal represent the amount of risk stressors imposed on seven goals and values. Daily stressors posed the most risk to disrupting the respondent's daily routine.

Gender differences were observed in subjective ratings of stressor severity in two of the domains of primary appraisal. On average, women subjectively rated stressors as more severe than did men, $t(1030) = 5.4, p < .01$. Interestingly, there were no significant gender differences in the objective investigator ratings of stressor severity. This suggests that one's gender does not necessarily expose one to stressors that are inherently more severe, at least according to our trained coders. Compared to women, men reported that stressors posed more risk to their financial situations, $t(1030) = 3.4, p < .01$, and less risk to how other individuals felt about them, $t(1030) = 3.9, p < .01$.

Table 6 shows the relationships among the DISE threat, severity, and primary appraisal measures. The first five columns list the average levels of the severity and primary appraisal broken down by the dimensions of threat. Results of a series of one-way ANOVAs with Tukey multiple comparison tests revealed that stressors that involved danger and loss were subjectively and objectively rated as more severe than stressors associated with other threat dimensions, $F(5, 1025) = 4.2, p < .01$, and $F(5, 1025) = 3.8, p < .01$, respectively. Stressors associated with danger and

TABLE 5
Description of Daily Inventory of Stressful
Events Measures of Stressor Threat,
Severity, and Primary Appraisal

	Total	Men	Women
Threat dimensions (% events)			
Loss	29.7	29.9	29.5
Danger	36.2	35.7	36.6
Disappointment	4.2	4.0	4.4
Frustration	27.4	28.3	26.6
Opportunity	2.3	2.1	2.4
Stressor severity (M) ^a			
Objective assessment	1.8	1.7	1.9
Subjective assessment	2.7	2.5	2.9*
Primary appraisal domains (M) ^b			
Disrupting daily routine	2.3	2.3	2.3
Financial situation	1.3	1.4	1.2*
Way feel about self	1.5	1.4	1.5
Way others feel about you	1.4	1.3	1.4*
Physical health or safety	1.3	1.3	1.3
Health/well-being of someone you care about	1.5	1.5	1.5
Plans for the future	1.4	1.4	1.3

NOTE: $N = 1,031$.

a. Range is from 1 (*not at all stressful*) to 4 (*very stressful*).

b. Range is from 1 (*no risk*) to 4 (*a lot of risk*).

* $p < .01$, significant gender difference.

loss were also more likely to pose the greatest risk to respondent's physical health and safety, $F(5, 1025) = 6.8, p < .01$.

Table 6 also shows the intercorrelations between the severity and the primary appraisal measures. If these measures tap different aspects of daily stressors, we would expect a low degree of correlation between them. The overall pattern of correlations did indicate a modest degree of independence between the severity and appraisal domains as well as within the appraisal domains. Only 3 of the 36 correlations were above .30. Not surprisingly, coders' objective ratings of severity were associated with the respondents' subjective ratings of severity. Within the primary appraisal domains, stressors that risked the way respondents felt about themselves tended also to involve risk for the way others felt about them. Stressors that posed risk to respondents' financial plans were related to respondents' plans for the future.

Daily Stressors, Physical Symptoms, and Negative Mood

In the final set of analyses, zero-order correlations and hierarchical multiple regressions assessed the associations of the daily stressor variables with measures of physical symptoms and negative mood. Although physical symptoms and mood were moderately correlated, $r = .34, p <$

TABLE 6
Interrelations Among the Daily Inventory of Stressful Events
Measures of Stressor Threat, Severity, and Primary Appraisal

	Threat Dimension					Intercorrelation							
	Loss	Danger	Disappoint- ment	Frustration	Challenge	1	2	3	4	5	6	7	8
Stressor severity													
1. Objective severity	2.04	2.03	1.79	1.36	1.84*								
2. Subjective severity	2.96	2.95	2.59	2.53	2.37*	.36*							
Primary appraisal domains													
3. Disrupting daily routine	2.58	2.31	2.27	2.13	2.31	.16*	.27*						
4. Financial situation	1.39	1.42	1.32	1.19	1.31	.21*	.17*	.20*					
5. Way feel about self	1.52	1.52	1.54	1.51	1.50	-.02	.14*	.21*	.12*				
6. Way others feel about you	1.46	1.44	1.53	1.48	1.47	-.04	.22*	.22*	.15*	.36*			
7. Physical health or safety	1.37	1.39	1.21	1.26	1.29*	.13*	.23*	.27*	.24*	.12*	.24*		
8. Health/well-being of someone you care about	1.38	1.74	1.36	1.35	1.34	.21*	.07	.05	.01	.01	.06	.15*	
9. Plans for the future	1.42	1.49	1.36	1.29	1.40	.23*	.22*	.21*	.47*	.14*	.24*	.15*	.14*

NOTE: $N = 1,031$.

* $p < .01$.

.01, we wanted to examine if the DISE measures demonstrated differential prediction to symptoms versus mood. The order of entry of the hierarchical regression was as follows: On the first two steps, the objective measures of daily stressors were entered. On Steps 3 to 5, the severity, threat, and appraisal measures of daily stressors were entered. This strategy allowed us to examine the unique prediction of each daily stressor variable holding the other variables within each class of measure constant. In addition, we were able to test whether the severity, threat, and appraisal measures accounted for variance in physical symptoms and negative mood beyond the content and focus measures of stressors.

Table 7 shows the results from these analyses. Seventeen of the daily stressor variables were significantly correlated with physical health symptoms, and 16 daily stressor variables were significantly correlated with negative mood. Results from the regression analyses indicate that 10 of these variables made unique predictions to both daily symptoms and negative mood. The largest coefficients suggested that higher levels of daily physical symptoms and negative mood were associated with more frequent interpersonal, network, and respondent-focused stressors as well as with stressors that were rated as severe and appraised as posing risk to physical health and safety. The R^2 change coefficients indicated that each type of threat and appraisal measure accounted for variance above the content and focus measures. The entire set of stressor variables accounted for 17% of the variance in daily physical symptoms and 31% of the variance in daily negative mood.

Significant gender differences in the associations of the daily stressor measures with daily symptoms and negative mood were assessed by computing correlations for men

and women separately and calculating the Fisher's R to z transformation. The association between daily physical health symptoms and frequency of network stressors was greater for women ($r = .20$) than for men ($r = .05$, $z = 2.50$). The association of daily negative mood with interpersonal tensions was also greater for women ($r = .35$) than for men ($r = .22$, $z = 2.00$). However, the association between daily negative mood and work stressors was greater for men ($r = .19$) than for women ($r = .04$, $z = 2.00$). There were no significant gender differences in the association of daily symptoms and negative mood with the measures of stressor threat and appraisal.

DISCUSSION

The Benefits of the Investigator-Based Approach

This study introduces an investigator-based approach to the measurement of multiple aspects of daily stressors through daily telephone interviews that utilize a series of structured and semistructured questions. A relatively small number of stem questions were designed to cover a wide range of stressor content domains such as family, work, and interpersonal tension. Affirmative answers to the stem questions were then probed by trained interviewers, who sought to establish if an objective stressful occurrence had actually happened and to collect specific details that could be used to classify the stressor by content, severity, and dimensions of threat. Trained coders then classified the stressors, producing detailed documentation for their ratings. These rating "dictionaries" allowed this study to pro-

TABLE 7
Correlations and Hierarchical Multiple Regressions of Daily Inventory of Stressful Events Measures With Daily Physical Symptoms and Daily Negative Mood

	Physical Symptoms				Negative Mood			
	r	β	R ² Change	R ²	r	β	R ² Change	R ²
<i>Step 1: Broad content classification</i>								
Interpersonal tensions	.23*	.20*			.31*	.29*		
Work stressors	.07*	-.01			.06	-.02		
Home stressors	.11*	.06			.12*	.06*		
Network stressors	.16*	.11*			.14*	.08*		
Miscellaneous stressors	.06	.05	.07*		.02	.01	.10*	
<i>Step 2: Focus of involvement</i>								
Respondent	.15*	.23*			.14*	.24*		
Other	.14*	.04			.06	-.13		
Joint	.22*	.03	.01	.08*	.30*	.03	.02*	.12*
<i>Step 3: Threat dimensions</i>								
Loss	.21*	.08*			.24*	.11*		
Danger	.23*	.08*			.27*	.13*		
Disappointment	.04	-.01			.03	-.03		
Frustration	.08*	.04			.07*	-.07		
Opportunity	.03	-.03	.02*	.10*	-.01	-.08*	.03*	.15*
<i>Step 4: Stressor severity</i>								
Objective assessment	.18*	.09*			.20*	.09*		
Subjective assessment	.23*	.15*	.03*	.13*	.32*	.22*	.08*	.23*
<i>Step 5: Primary appraisal domains</i>								
Disrupting daily routine	.16*	.02			.25*	.03		
Financial situation	.10*	.02			.16*	.02		
Way feel about self	.20*	.09*			.29*	.08*		
Way others feel about you	.05	-.06*			.22*	.07		
Physical health or safety	.28*	.20*			.32*	.15*		
Health/well-being of someone you care about	.00	-.06			.02	-.06		
Plans for the future	.24*	.04	.04*	.17*	.22*	.09*	.08*	.31*

N = 1,031 respondents.

**p* < .01.

duce ratings of sufficient detail and consistency, enabling future researchers to replicate our findings.

The interview-based approach provided us several advantages in the present study. The first was that the instrument produced a comprehensive accounting of daily stressors with a minimal number of questions. Such a strategy reduces the burden on study participants, who for the most part need to devote only about 15 minutes a day to the interview. In contrast, comprehensive daily stressor checklists (e.g., Brantley & Jones, 1993; Zautra et al., 1986) involve checking off a much larger number of questions, which requires more time.

The second advantage of the investigator-based approach was that the open-ended narratives allowed us to classify stressors with more precision than a conventional checklist. The narratives made it possible to classify stressors by the area of life affected (i.e., content) and by who was involved (i.e., participant focused, other focused, or both). Both content and focus are known to be related to the health impact of the stressor (Kessler & McLeod,

1984; Stone, 1987). Inter-coder reliability estimates suggest that coders were able to make such distinctions.

The third advantage of the investigator-based approach was the reduction of some types of response bias to particular stressor questions. By having content classification of the stressor performed by the coding team rather than participants, it was possible to classify responses more reliably and validly. The coders were able to detect and eliminate incidents reported by participants that did not meet criteria set for objective stressors. This strategy prevents investigators from inadvertently classifying an episode of mood disturbance or ill health as a putative "cause" of bad mood or ill health that day.

A fourth advantage was the investigator-based system of rating severity. Self-report methods of assessing stressor severity are likely confounded with mood at the time of recall, usually the end of the day. The investigator system of probing for objective details makes it possible to rate severity by objective criteria. It is important to note that investigator-rated severity tended to be lower than severity

estimated by participants, suggesting that self-rated severity does indeed tend to misspecify the relationship between stressor exposure and health or mood.

Finally, the investigator-based approach allowed us to clarify and disentangle the classification of stressors and dimensions of threat from the self-reported appraisal of the stressor. Investigator ratings of severity and self-reported domains of primary appraisal were only modestly correlated. The differentiation of severity, investigator-rated dimensions of threat, and self-reported primary appraisal of the stressful encounter could promote useful advances in testing the components of the revised transactional model of stress (Lazarus, 1999).

Daily Stressors in the United States

This study was the first of its kind to conduct daily telephone interviews on a national sample of adults. Response and retention rates were above 80%, both of which are substantially higher than other diary studies that rely on self-report questionnaires (cf. Almeida & Kessler, 1998). In addition, the demographic distribution of the current sample is almost identical to the national sample from which it was drawn. The telephone interviews also allowed much more control over when interviews were completed as well as clarification of potentially ambiguous questions. For these reasons, the current study limits sources of sampling error that could bias estimates of the prevalence of daily stressors. Respondents had at least one daily stressor on 40% of the study days and multiple stressors on 11% of the study days. These findings indicate that adults experience some form of daily stressor on 12 days within an average month.

It is important to note that these estimates are somewhat lower than checklist studies (e.g., Bolger, DeLongis, Kessler, & Schilling, 1989; Stone & Neale, 1984). Three potential reasons help explain this discrepancy. First, the DISE measure has objective criteria for what constitutes a stressor. Affective states such as feeling sad or crying do not meet these criteria. In addition, each stressor must be independent from other stressors. In checklist measures, the researcher has little control over how respondents interpret questions, which may contribute to overestimates of stressor prevalence. Second, checklist measures often include more than 20 and can have more than 100 items (for a review, see Eckenrode & Bolger, 1995). Although the large number of stressor items expands the comprehensiveness of the list of stressors, more items increase opportunities to double report the same stressor (Schwarz, 1999). On the other hand, the DISE measure has only seven stem questions that may limit the opportunity for a respondent to report a stressor. The DISE addresses this issue of comprehensiveness by including a final stem ques-

tion that allows respondents to report any stressors not previously indicated. Respondents rarely reported these miscellaneous stressors when they reported other stressors (1.7% of days). Third, a possible explanation of lower prevalence is falloff in reporting over the week. Because the DISE relies on follow-up probes, it is possible that respondents "learned" to under-report stressors on subsequent daily interviews to avoid answering open-ended questions. We examined this explanation by testing if respondents reported fewer stressors on later study days using linear and quadratic forms of a variable defining the number of days that had elapsed since the respondent first began filling out the diary. Although there was some evidence for falloff of reporting, it was not as great as that found in self-report checklist studies.

A major benefit of the investigator-based measurement of daily stressors is its ability to obtain detailed information regarding both objective characteristics of daily stressors as well as the multiple aspects of appraised meaning of stressors. These characteristics include level of severity and dimensions of environmental threat, as well as self-reported appraisals of the goals and values at stake. Such data provide a more complete picture of the types of stressors individuals experience as well as the implications of the stressors for individuals than are typically measured by more standard designs. In our U.S. sample of adults, the most common class of stressors was interpersonal tension followed by work-related stressors for men and network stressors for women. Such gender differences are consistent with prior research on life events and daily stressors (Almeida & Kessler, 1998; Bolger, DeLongis, Kessler, & Wethington, 1989). In terms of the investigator ratings of environmental threat, it appears that stressors that involve danger of loss are actually more prevalent than stressors in which loss actually occurs. In addition, stressors were most frequently appraised as disrupting daily routines, according to respondent self-report. This may indicate that adults anticipate future stressors arising out of daily life and actively strive to prevent them.

Daily Stressors, Mood, and Physical Symptoms

The final aim of the study was to demonstrate the concurrent validity of the DISE measures by examining their relationship to health symptoms and mood. Some life event researchers (e.g., Brown, 1989) have argued that interview measures are more valid than checklist measures of life events. Their assertions suggest that the use of personal interview techniques should introduce major improvements to the measurement of daily stressors through more valid assessment of severity and content and more valid differentiation among severity, content, and stressor

appraisal. Whereas most other studies have found consistent links between the frequency of daily stressors with negative mood and physical symptoms (Almeida & Kessler, 1998; Bolger, DeLongis, Kessler, & Schilling, 1989; Larson & Kasimatis, 1991; Stone, Reed, & Neale, 1987), the current multidimensional measure helps address under what conditions and how daily stressors are associated with these health outcomes.

Of the 22 stressor variables we examined, 17 were associated with health symptoms and 16 were associated with negative mood. The stressor content and focus variables alone accounted for 8% of the variance in physical symptoms and 12% of the variance in negative mood. These effect sizes are consistent with previous self-report checklist studies on the frequency of daily stressors (Almeida & Kessler, 1998; Rehm, 1978; Stone, 1987). The regression analyses also showed that specific types of daily stressors such as interpersonal and network stressors (events that occur to close others) were unique predictors of both health symptoms and mood. This pattern of findings is similar to previous research assessing the content of daily stressors (Bolger, DeLongis, Kessler, & Schilling, 1989; Stone, 1987).

Our analyses highlighted the importance of both investigator-rated threat and self-rated primary appraisal measures in predicting health symptoms and mood. Each type of measure (i.e., investigator-rated dimension of threat, objective and subjective level of severity, and self-rated domain of primary appraisal) contributed to the explained variance in these outcomes above and beyond content classification and focus. Individuals who had a greater proportion of stressors that pose high severity, loss, or danger reported more symptoms and higher negative mood. In addition, stressors appraised as disrupting daily routines or posing risk to physical health and safety were also shown to be unique predictors of symptoms and mood.

Gender Differences

The present study also observed gender differences in several aspects of daily stressors. Consistent with other studies, women reported more frequent daily stressors and higher levels of negative mood than did men (Almeida & Kessler, 1998; Bolger, DeLongis, Kessler, & Wethington, 1990). In terms of the objective characteristics of daily stressors, men had more arguments with coworkers about job procedures, miscommunication, and discipline, whereas women reported more arguments over household chores and getting respect. Similarly, men reported proportionally more self-focused stressors involving financial and work-related problems, whereas women's stressors were more likely to be focused on concerns for their network of close friends and relatives. These findings are consistent

with previous studies of stress spillover and crossover. Women's roles may expose them to more stressors experienced by significant others (Kessler & McLeod, 1984). Traditional family roles, moreover, obligate women to provide more services to family members, which may increase demands from others (Wethington, McLeod, & Kessler, 1987). A previous daily diary study found wives more likely than husbands to react to the stressors of their partners (Bolger, DeLongis, Kessler, & Wethington, 1989).

Gender differences were also observed in subjective ratings of stressor severity. Women subjectively rated stressors as more severe than did men. Interestingly, there were no significant gender differences in the objective investigator ratings of stressor severity. This suggests that one's gender does not necessarily increase exposure to stressors that are inherently more severe, at least according to our trained coders. However, the *perception* of stressor severity may be gender graded. This may be due to the possibility either that men downplay the significance of stressors or that women perceive events as relatively more dramatic than do men. Recall that women reported higher levels of negative mood than did men. It is possible that women are more likely to report stressors as more severe because of their average higher negative affect at the time of recall (Fiedler & Stroehm, 1986).

The final set of analyses addressed whether there were differences in reactivity to the content of the stressors, their threat, and their appraised meanings. Although there was some evidence for differential reactivity to the content of daily stressors, there was no evidence for differential reactivity to threat or stressor appraisal. Some research suggests that women may be more reactive to stressors that occur to their network of friends and relatives (Kessler & McLeod, 1984). We found that women were more reactive to daily stressors that included others (interpersonal tensions and network events). They also reported more "joint-focused" and "other-focused" events, implying that they may also be more behaviorally reactive to others' problems (Bolger, DeLongis, Kessler, & Wethington, 1989).

Limitations and Future Directions

Of course, findings from this study should be considered in light of its limitations. First, although the sample represents a broad cross-section of adults in the United States, the respondents are predominately Caucasian. Our findings regarding the prevalence of stressors await future replication in more ethnically diverse samples. Second, because all of the respondents previously participated in a larger, complex study, involving a lengthy telephone interview followed by two self-administered questionnaires, the diary study participants are likely to be a highly compliant sample of people. A diary study attempted in a new

sample might not yield such a high rate of response and might result in a higher proportion of missing days. Third, compared to many other diary studies, the present study sampled a relatively modest number of days per participant. The large sample size and the use of telephone interviews required a reduction in the number of study days of interviews. Although missing days were not a major problem, the limited number of days per respondent places more weight on the remaining ones. Fourth, there was modest falloff in reporting stressful events as the study week progressed. Although the falloff was not as steep as that reported in self-administered diary studies, it should be noted for future studies that using the more personal method of telephone interviewing does not by itself eliminate falloff. Fifth, this study represents the first use of the DISE measure, and all findings should be considered preliminary, pending replication. Sixth, a complication for replication is that use of the DISE is more expensive and burdensome for the investigator than the use of conventional self-administered diary questionnaires. The DISE requires interviewers who need more intense training and supervision than interviewers in studies that do not demand quick but accurate judgments about probing and question sequencing. Coders must also classify the narrative descriptions of events immediately after the interviews, so that this information can be used to improve interview quality.

Another limitation is that the DISE may reduce, but does not eliminate, all potential confounding between individual appraisal of stressors and the propensity to report them. The DISE technique is dependent on self-report and assumes that most people will respond to the questions honestly and report the content of daily stressors with accuracy. Although the DISE attempts to provide objective ratings of stressors, this method still relies on subjective accounts of stressful events. In the final analysis, all naturalistic stress research must assume that the people who experience stressful experiences are the best judges of what constitutes them.

The DISE contains several innovations that provide a new way to examine the role of daily stressors in promoting health and mood. One potential new area of research is greater specification of the health consequences of different types of daily stressors based on the type of threat they pose. Interview-based measures of major life events have provided evidence that the dimensions of threat involved in a major life event produce different types of emotional and physical disturbance. Life events posing the threat of loss or disappointment may be more likely to produce depression (Brown, 1989; Brown, Harris, & Hepworth, 1995). Life events characterized by danger may be more likely to produce physical and psychological symptoms of anxiety (Finlay-Jones, 1989; Harris, 1991). Repetitive, persistent

interpersonal difficulties are related to chronic depression (Brown, Harris, Hepworth, & Robinson, 1994). Events resolving stressful conditions may in some cases end episodes of anxiety and depression (e.g., Brown & Moran, 1994). Thus, it is likely that daily stressors posing loss and danger as threats may be more likely to result in sad or anxious mood, respectively (Lazarus, 1999). Daily interpersonal stressors that persist over several days without resolution may lead to increasing mood disturbance over time. More generally, daily stressors involving frustration (stressors out of the control of respondents) may be more likely to produce physical or psychological fatigue. Finally, daily stressors that pose the possibility for positive outcomes (opportunity) may be more likely to produce hopeful or optimistic mood or physical energy at the end of the day.

APPENDIX

Daily Inventory of Stressful Events (DISE)

The DISE is a semistructured instrument consisting of four components: (a) a list of seven "stem" questions that pertain to occurrences of stressful events in various life domains, (b) a series of open-ended "probe" questions that ascertain a description of the stressful event, (c) a question regarding the perceived severity of the stressor, and (d) a list of structured primary appraisal questions, inquiring about goals and values that were "at risk" because of the event. An affirmative response to the stem questions prompts the interviewer to probe for a detailed description of the event, which is followed by questions pertaining to "what was at risk" for the respondent as a result of the event.

Stem Questions

- | | | |
|---|----|-----|
| 1. Did you have an <i>argument or disagreement</i> with anyone since this time yesterday? | No | Yes |
| 2. Since (this time/we spoke) yesterday, did anything happen that you <i>could have argued</i> about but you decided to let pass in order to avoid a disagreement? | No | Yes |
| 3. Since (this time/we spoke) yesterday, did anything happen at <i>work or school</i> (other than what you have already mentioned) that most people would consider stressful? | No | Yes |
| 4. Since (this time/we spoke) yesterday, did anything happen at <i>home</i> (other than what you have already mentioned) that most people would consider stressful? | No | Yes |
| 5. Many people experience <i>discrimination</i> on the basis of such things as race, sex, or age. Did anything like this happen to you since (this time/we spoke) yesterday? | No | Yes |
| 6. Since (this time/we spoke) yesterday, did anything happen to a <i>close friend or relative</i> | | |

- (other than what you have already mentioned)
that turned out to be stressful for you? No Yes
7. Did *anything else* happen to you since (this
time/we spoke) yesterday that most people
would consider stressful? No Yes

Examples of Probes for Description

Ask only if "yes" for following stem questions:

1. Think of the most stressful disagreement or
argument you had since (this time/we spoke)
yesterday. Who was that with? 1
2. Think of the most stressful incident of this sort.
Who was the person you decided not to argue with? 2
3. What happened and why did you decide not to
get into an argument about it? 2
4. Think of the most stressful incident of this sort.
What was the basis for the discrimination you
experienced—your race, sex, age, or something else? 5
5. Think of the most stressful incident of this sort.
Who did this happen to? 6
6. How does this affect your job? 3
7. What kinds of things were said? 1, 2
8. When did that happen? Was that some time
yesterday or today? All
9. What happened and what about it would most
people consider stressful? All
10. Have you had any problems with this in the past? All
11. How long has this been going on? All
12. Does this happen often? All
13. Was there anything out of the ordinary in this? All

Subjective Severity Question

1. How stressful was this for you—very, somewhat, not very, or
not at all?
 1. Not at all→go to next stem question
 2. Not very→go to primary appraisal questions
 3. Somewhat→go to primary appraisal questions
 4. Very→go to primary appraisal questions

Primary Appraisal Questions	not at all	a little	some	a lot
1. How much were the following things at risk in this situation: First, how much did it risk disrupting your daily routine— a lot, some, a little, or not at all?	1	2	3	4
2. How much did it risk your financial situation?	1	2	3	4
3. How much did it risk the way you feel about yourself?	1	2	3	4

4. How much did it risk the way other people feel about you?	1	2	3	4
5. How much did it risk your physical health or safety?	1	2	3	4
6. How much did it risk the health or well-being of someone you care about?	1	2	3	4
7. How much did it risk your plans for the future?	1	2	3	4

NOTE

1. We conducted analyses to determine whether respondents were less likely to report daily stressors on later study days. To this end, correlations between the number of daily stressors and the study day (ranging from 1 to 8) were computed. A similar analysis was performed on the initial 8 days of a 42-day diary study using a self-report checklist of 22 stressors. The correlation between study day and number of reported stressors was $-.17$ for the present Daily Inventory of Stressful Events study and $-.22$ for the checklist study.

REFERENCES

- Almeida, D. M. (1998). *Daily Inventory of Stressful Events (DISE) expert coding manual*. Tucson: Division of Family Studies and Human Development, University of Arizona.
- Almeida, D. M., & Kessler, R. C. (1998). Everyday stressors and gender differences in daily distress. *Journal of Personality and Social Psychology*, 75, 670-680.
- Bebbington, P. E. (1986). Depression: Distress or disease? *British Journal of Psychiatry*, 148, 479.
- Bolger, N., DeLongis, A., Kessler, R. C., & Schilling, E. (1989). Effects of daily stress on negative mood. *Journal of Personality and Social Psychology*, 57, 808-818.
- Bolger, N., DeLongis, A., Kessler, R. C., & Wethington, E. (1989). The contagion of stress across multiple roles. *Journal of Marriage and the Family*, 51, 175-183.
- Bolger, N., DeLongis, A., Kessler, R. C., & Wethington, E. (1990). The micro-structure of role-related stress. In J. Eckenrode & S. Gore (Eds.), *Stress between work and family* (pp. 95-115). New York: Plenum.
- Bradburn, N. M. (1969). *The structure of psychological well-being*. Chicago: Aldine.
- Brantley P. J., & Jones, G. N. (1993). Daily stress and stress-related disorders. *Annals of behavioral medicine*, 15, 17-25.
- Brown, G. W. (1989). Life events and measurement. In G. W. Brown & T. O. Harris (Eds.), *Life events and illness* (pp. 3-45). New York: Guilford.
- Brown, G. W., & Harris, T. O. (1978). *Social origins of depression: A study of depressive disorder in women*. New York: Free Press.
- Brown, G. W., Harris, T. O., & Hepworth, C. (1995). Loss, humiliation and entrapment among women developing depression: A patient and non-patient comparison. *Psychological Medicine*, 25, 7-21.
- Brown, G. W., Harris, T. O., Hepworth, C., & Robinson, R. (1994). Clinical and psychosocial origins of chronic depressive episodes: II. A patient inquiry. *British Journal of Psychiatry*, 165, 457-465.
- Brown, G. W., & Moran, P. (1994). Clinical and psychosocial origins of chronic depressive episodes: I. A community survey. *British Journal of Psychiatry*, 165, 447-456.

- Dillman, D. A. (1991). The design and administration of mail surveys. *Annual Review of Sociology*, 17, 225-249.
- Eckenrode, J., & Bolger, N. (1995). Daily and within-day event measurement. In S. Cohen, R. C. Kessler, & L. U. Gordon (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 80-101). New York: Oxford University Press.
- Fiedler, K., & Stroebe, W. (1986). What kind of mood influences what kind of memory: The role of arousal and information structure. *Memory and Cognition*, 14, 181-188.
- Finlay-Jones, R. (1989). Anxiety. In G. W. Brown & T. O. Harris (Eds.), *Life events and illness* (pp. 95-112). New York: Guilford.
- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Stressor appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology*, 59, 992-1003.
- Harris, T. O. (1991). Life stress and illness: The question of specificity. *Annals of Behavioral Medicine*, 13, 211-219.
- Herbert, T. B., & Cohen, S. (1996). Measurement issues in research on psychosocial stress. In H. B. Kaplan (Ed.), *Psychosocial stress: Perspectives on structure, theory, life-course, and methods* (pp. 295-332). New York: Academic Press.
- Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H. U., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. *Archives of General Psychiatry*, 51, 8-19.
- Kessler, R. C., & McLeod, J. M. (1984). Sex differences in vulnerability to undesirable life events. *American Sociological Review*, 49, 620-631.
- Keyes, C. L. M., & Ryff, C. D. (1998). Generativity in adult lives: Social structural contours and quality of life consequences. In D. P. McAdams, & E. de St. Aubin (Eds.), *Generativity and adult development: How and why we care for the next generation* (pp. 227-263). Washington, DC: American Psychological Association.
- Lachman, M., & Weaver, S. L. (1998). Sociodemographic variations in the sense of control by domain: Findings from the MacArthur studies of midlife. *Psychology & Aging*, 13, 553-562.
- Larsen, R. J., & Kasimatis, M. (1991). Day-to-day physical symptoms: Individual differences in the occurrence, duration, and emotional concomitants of minor daily illnesses. *Journal of Personality*, 59, 387-423.
- Lazarus, R. S. (1999). *Stress and emotion*. New York: Springer.
- McQuaid, J., Monroe, S. M., Roberts, J. R., Johnson, S. L., Garamoni, G. L., Kupfer, D. J., et al. (1992). Toward the standardization of life stress assessment: Definitional discrepancies and inconsistencies in methods. *Stress Medicine*, 8, 47-56.
- Monroe, S. M., & Kelley, J. M. (1995). Measurement of stress appraisal. In S. Cohen, R. C. Kessler, & L. Gordon (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 122-147). New York: Oxford University Press.
- Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology*, 75, 1333-1349.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.
- Raphael, K. G., Cloitre, M., & Dohrenwend, B. P. (1991). Problems with recall and misclassification with checklist methods of measuring stressful life events. *Health Psychology*, 10, 62-74.
- Rehm, L. P. (1978). Mood, pleasant events, and unpleasant events: Two pilot studies. *Journal of Consulting and Clinical Psychology*, 46, 337-356.
- Stone, A. A. (1987). Event content in a daily survey is differentially associated with concurrent mood. *Journal of Personal and Social Psychology*, 52, 56-58.
- Stone, A. A., Kessler, R. C., & Haythornthwaite, J. A. (1991). Measuring daily events and experiences: Methodological considerations. *Journal of Personality*, 59, 575-607.
- Stone, A. A., & Neale, J. M. (1984). New measure of daily coping: Development and preliminary results. *Journal of Personality and Social Psychology*, 46, 892-906.
- Stone, A. A., Reed, B. R., & Neale, J. M. (1987). Changes in daily event frequency precede episodes of physical symptoms. *Journal of Human Stress*, 13, 70-74.
- Taylor, J. A. (1953). A personality scale of manifest anxiety. *Journal of Abnormal & Social Psychology*, 48, 285-290.
- Turner, R. J., & Wheaton, B. (1995). Checklist measurement of stressful life events. In S. Cohen, R. C. Kessler, & L. Gordon (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 29-58). New York: Oxford University Press.
- Wethington, E. (1997). The structured life event inventory. In C. Zalaquett & R. Wood (Eds.), *Evaluating stress: A book of resources* (pp. 391-403). Lanham, MD: Scarecrow/University Press.
- Wethington, E., Brown, G. W., & Kessler, R. C. (1995). Interview measurement of stressful life events. In S. Cohen, R. C. Kessler, & L. Gordon (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 59-79). New York: Oxford University Press.
- Wethington, E., McLeod, J. D., & Kessler, R. C. (1987). The importance of life events for explaining the gender difference in psychological distress. In G. Baruch & R. Barnett (Eds.), *Gender and stress* (pp. 144-156). New York: Free Press.
- Wheaton, B. (1999). Social stress. In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the sociology of mental health* (pp. 277-300). New York: Kluwer Academic/Plenum.
- Zautra, A. J., Guarnaccia, C. A., & Dohrenwend, B. P. (1986). Measuring small events. *American Journal of Community Psychology*, 14, 629-655.

David M. Almeida received his Ph.D. in developmental psychology from the University of Victoria and is currently an associate professor in the Division of Family Studies and Human Development at the University of Arizona in Tucson. The topics of his recent publications include sources of gender differences in psychological distress and emotional transmission in the daily lives of families. His current research interests focus on environmental and genetic components of daily stress processes during adulthood.

Elaine Wethington received her Ph.D. in medical sociology from the University of Michigan. She currently holds a joint appointment in human development and sociology at Cornell University. Her research interests are in the areas of situational determinants of exposure to stress, access to social support, and successful coping.

Ronald C. Kessler received his Ph.D. in sociology from New York University and is currently a professor of health care policy at the Harvard Medical School. He is the recipient of a Research Scientist Award and a Merit Award from the National Institute of Mental Health. His research deals with the psychosocial determinants and consequences of mental illness.