

Measuring Life Event Stress in the Lives of College Students: The Undergraduate Stress Questionnaire (USQ)

Christian S. Crandall^{1,2} Jeanne J. Preisler,¹ and Julie Aussprung¹

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We describe the development of the Undergraduate Stress Questionnaire (USQ), a life events checklist designed to measure stress among undergraduates. Several studies demonstrate the USQ's validity. The USQ correlates positively with physical symptoms and negatively with mood. Students rated the USQ as the most complete and accurate of four different life events questionnaires. In a panel study, the USQ closely tracked subjective reports of stress, both during the term and finals week. The USQ predicted symptoms more reliably than three other stress measures, controlling for negative affect. Students waiting in the college infirmary score higher on the USQ than students socializing on campus. Finally, we compare the checklist format to subjective scaling, and show the superiority of the checklist version. We discuss the usefulness of the USQ in terms of validity, representativeness, adaptability, brevity, and low confounding with negative affect.

KEY WORDS: college students; life events; mood; physical symptoms; questionnaire; stress.

INTRODUCTION

The experience of stressful life events has been recognized as an important factor in the development of disorders, both physical (Holmes and Rahe, 1967) and mental (Vinokur and Selzer, 1975). Because of its importance in both physical and psychological health, a tremendous amount of

¹Department of Psychology, University of Florida, Gainesville, Florida 32611.

²To whom correspondence should be addressed at Department of Psychology, University of Kansas, 426 Fraser Hall, Lawrence, Kansas 66045.

research has gone into the issues surrounding the concept of stress, and several controversies remain. These controversies suffuse the entire field of stress research, including the definition of stress (Lazarus and Folkman, 1984), the measurement of stress (Baum *et al.*, 1982), the physiology of stress (Mason, 1971), and outcomes of stress (Watson and Pennebaker, 1989).

In trying to resolve these controversies, one lesson that clearly emerges from the research literature is that sound measurement is crucial to understanding the nature of stress (e.g., Watson and Pennebaker, 1989; Zimmerman *et al.*, 1984). This paper describes the development of a stress measure designed specifically for use with college students. Our goal is two-fold. First, we attempt to demonstrate that adapting measures of stress to a specific population of interest enhances our understanding of stress measurement. Second, because college students are a readily available and frequently used population for research, we have designed and validated a measure of life event stress for college students: the Undergraduate Stress Questionnaire (USQ), which is in several ways an improvement over existing scales.

Research on stressful life experiences can be broken into two general traditions. One tradition takes advantage of events in peoples' lives and anticipates that these events will be stressful such as divorce (Bloom *et al.*, 1978), loss of a job (Kasl and Cobb, 1966), or comprehensive exams during medical school (Glaser *et al.*, 1985). The second tradition involves measuring the incidence of stressful life events. Researchers present subjects with a list of life events; subjects indicate which events have happened to them, and their scores are based on a severity-based weighting of those events.

Both of these traditions are part of the stimulus approach to stress measurement (Baum *et al.*, 1982), which emphasizes the role of stressful situations or events on a person. For more than 20 years, researchers have recognized that the simple stimulus approach is an incomplete accounting of the stress process, as it does not account for different resources, appraisals, or coping mechanisms (Lazarus and Folkman, 1984). In the current view, stress is now seen as a process or transaction between a person and the environment, of which the stimulus is only one part. Nonetheless, stimulus measures have persisted for two reasons. The first is the simple empirical reason that stimulus measures predict both physical and mental health (Lazarus and Folkman, 1984). The second is that the stimulus aspect is clearly an important part of the person-environment transaction. Although no longer the sole occupant of attention in psychological stress research, the stimulus aspect of the stress process must be measured as well as possible.

Event Representation on Life Events Scales

The adequacy of stimulus measures of stress rests on the representativeness of the event items. In many cases, item generation for life events inventories has not adequately represented the events experienced by the population for whom the questionnaire was designed (Cochrane and Robertson, 1973). For example, items for some stimulus measures of stress for use in the general population have been generated by psychiatric patients (Cochrane and Robertson, 1973) or relatives of psychiatric patients (Paykel *et al.*, 1971), clinical psychologists and other therapists (Holmes and Rahe, 1967), and rational procedures by the researchers (Sarason *et al.*, 1978).

Even though the sample of stressful events may not be biased, and in most cases appear to be a representative sampling of stressful events, items that might be stressful to the population for which the measure is intended might be overlooked. For this reason, one should access the population for which the life events schedule is intended, and have them generate stressor items.

A few studies have had individuals from the population of interest generate stressful events as items for their scales. For example, in addition to items from previous scales and drawing on the researcher's own experiences, Dohrenwend *et al.* (1978) generated further items for their PERI Life Events Scale based on interviews with residents of Washington Heights in New York City. The PERI Life Events Scale was designed specifically to be used to improve epidemiological research in a New York sample.

In one of the best examples of item generation, Lewinsohn *et al.* (1985; Lewinsohn and Talkington, 1979) elicited items by asking 150 subjects, distributed in age and social class, to list unpleasant events, ranging from mildly to strongly unpleasant. They also had a group of 24 subjects keep a week-long diary of unpleasant occurrences. From these materials, they created a list of over 300 items. From this list, they eliminated nearly 40 items for a variety of psychometric reasons, leaving 283 items in the Unpleasant Events Schedule (Lewinsohn *et al.*, 1985).

Several studies have shown the use of an inadequate sample of events can lead researchers to the wrong conclusions about the stressfulness of the lives of different groups. For example, Dohrenwend (1974) asked several samples of subjects drawn from very different populations (e.g., convicts, community leaders, psychiatric patients) to write down the "last major event in your life that . . . changed your usual activities" (p. 275). He found that very few of the events listed as major life changes appeared on the typical life change questionnaires and that the different samples

listed different kinds of events. Although subjects were able to generate several major life adjustments, the available life change questionnaires would have missed a substantial proportion of the adjustments for these subjects.

In another case, Wershow and Reinhart (1974) reported very low levels of life change among chronically ill, marginally employed men admitted to a VA hospital. This does not mean, however, that their lives were not stressful, for as Rabkin and Struening (1976) suggest, “. . . Before concluding that [subjects in a particular sample] indeed experienced few ordinary life changes, it is necessary to verify the appropriateness and relevance of the checklist items for these particular respondents” (p. 1016).

Different samples may respond differently to the different subscales of a life events questionnaire. Hough *et al.* (1976) found that Mexican-Americans scored higher on financial and educational achievement life change items than Anglos but not differently on work or family items. The stress of different groups may be over- or underestimated, depending on the extent to which a life events questionnaire represents life arenas.

To respond to this problem, several researchers have developed life events questionnaires with particular samples in mind. For example, Hurst *et al.* (1978) devised a schedule for air traffic controllers (all male subjects) from the SRRS, deleting items such as pregnancy and retirement, and adding items related to work. Other questionnaires have been developed for a particular stressful event, such as the loss of a parent (Zilberg *et al.*, 1982) rape (Popiel and Susskind, 1985), or any one specific event in general (e.g., Horowitz *et al.*, 1979).

Undergraduates and Life Events Stress

Even the most carefully created life events schedule may not properly characterize the stressors in the lives of particular samples. For example, in Kanner and co-workers' (1981) extensive compendium of daily hassles (the Hassles Scale), school-related items are very rare. This is due largely to the fact that their instrument was normed on adult members of the community, and not on a college population. While the list may be quite representative of the general population, students are likely to encounter a variety of hassles and stressors that are relatively uncommon to nonstudents.

Other measures of stress may tend to underestimate the relative impact of school in undergraduates lives. For example, Hough *et al.* (1976)

adapted the Social Readjustment Rating Scale scale (SRRS; Holmes and Rahe, 1967) for the purpose of comparing Mexican-American and Anglo students at the University of Texas–El Paso. They had students fill out a 63-item version of the SRRS, of which only 5 (8%) were related to education.

The Life Experiences Survey (LES; Sarason *et al.*, 1978) was largely developed using college students, and has an add-on section for college students (17% of the items measure school-related events). They found that school-related items were, on average, 1.5 times more important in contributing to their student subjects' score on the LES than non-school related items (Sarason *et al.*, 1978), suggesting that school-related items might be particularly important in this sample. Still, the school-related item set is relatively small, consisting of only 10 items.

It is particularly important to generate the proper set of life events for a college population. In general, young adults report experiencing more stressful events than older adults (Goldberg and Comstock, 1980; Rabkin and Struening, 1976), and the young adults tend to rate the events they experience in common with older adults as being more stressful (Horowitz *et al.*, 1977). Education is associated with having a greater number of stressful life events (Goldberg and Comstock, 1980), and so college students are more likely to experience stressful life changes than their working peers.

Undergraduates are a special population for many reasons. One critical aspect is their availability to researchers. But there are several other reasons to use undergraduates in life stress research. They are a useful group with which to study problems related to prevention and relapse such as smoking (e.g., Evans *et al.*, 1984; Schachter *et al.*, 1977) or dieting and eating disorders (e.g., Crandall, 1988; Crandall and Lehman, 1991; Herman and Polivy, 1975). They can also be used for studying health-promoting behaviors such as condom use (e.g., Ostrow *et al.*, 1989), health care utilization (e.g., Watson and Pennebaker, 1989), and symptom perception processes (e.g., Pennebaker and Skelton, 1981).

Outline of Studies

Our purpose in this paper is to introduce a new measure of life event stress, designed with a particular population in mind, and demonstrate its usefulness. The project has two main goals. The first is to exemplify a method of creating scales with a particular population in mind, in a way similar to Dohrenwend and associates' (1978) work on the PERI Life

Events Scale. The second is to use the new instrument in a variety of studies, in which we consider several methodological issues in the area of human stress and life events. These two goals intertwine in several studies, simultaneously asking questions about how to measure properly the impact of life events as well as its relation to psychopathology, subjective distress, and physical symptomatology.

In Study 1, we use several different samples of subjects to develop the items that make up the USQ, and determine its psychometric properties. We examine gender differences, the reported occurrence of different classes of events, a variety of different weighting schemes for the different events, and the relation of the USQ to mood and physical symptom reporting.

In Study 2, subjects rated the USQ and three other published life events scales. They rated each of the scales for how accurately they reflected their current perceived stressfulness and how complete the events list was in each of the scales for representing the kinds of stressors that undergraduates might experience. Study 3 compares the life event stress associated with finals week and compares subjects' subjective stress reports with change in their USQ scores.

In Studies 4–6, we consider the USQ's relationship to emotionality and physical symptoms reports. We consider the concerns raised by many (e.g., Dohrenwend *et al.*, 1984; Dohrenwend and Shrout, 1985; Watson and Pennebaker, 1989) that both stress and symptom reports are highly contaminated with negative affectivity. In Study 4, we compare the USQ and several other life events scales for their predictability of symptoms reports independent of negative affect. In Study 5, we compare scores on the USQ of undergraduates currently visiting the campus infirmary with a sample collected in public places around campus.

In Study 6, we consider the value of using a checklist format for the events listed in the USQ as compared to a subjective scale, where the subject rates the stressfulness of the events that occurred. We consider the psychometric properties of the USQ measured both ways, as well as its predictive validity and contamination by psychological distress.

STUDY 1: DEVELOPMENT OF THE UNDERGRADUATE STRESS QUESTIONNAIRE

To develop the items for the Undergraduate Stress Questionnaire (USQ), undergraduates generated a list of stressful life events ranging from major life crises (e.g., death of a parent, victim of a crime) to minor daily hassles (e.g., checkbook didn't balance, sat through a boring class). This

created a list of stressor events that represented both major life events and minor life stressors in a single questionnaire.³

To ensure an adequate sampling of life events that are meaningful and common to college undergraduates, we had a panel of undergraduates nominate life events which could be considered stressful. These items were rated by the nominators and other undergraduates for commonness and severity. The events schedule, a physical symptoms checklist, and a mood questionnaire were then given to another sample of students.

Method

Generating Events

To generate the items for the USQ, 30 undergraduates in an upper-division health psychology class spent an hour's class period discussing and listing events or concerns in their lives which they found "stressful." The majority of subjects had by that time read a chapter on stress from Gatchel and co-workers' (1989) health psychology textbook, and had heard two lectures on stress. The subjects had also been encouraged to bring a paper listing some of the things they found stressful, to provide an opportunity to list potentially embarrassing stressors anonymously. These papers were turned in to the researchers. Many of the items on the lists overlapped with each other and with the items culled from class discussion, and so we condensed the hundreds of items to the 83 items found in Table 1.

Students' 83 nominations were largely negative, although a portion of the items can be construed as both positive and negative. The negativity of the items is fortuitous, as several studies have shown that the most reliable predictors of stress outcomes are negative life events (e.g., Gersten *et al.*, 1974; Ross and Mirowsky, 1979; Vinokur and Selzer, 1975). This has been shown with anxiety, tension, and psychiatric symptomatology (Ross and Mirowsky, 1979), depression and suicidal thoughts (Vinokur and Selzer, 1975), and exercise and physical health (Plante and Karpowitz, 1987).

³A healthy debate exists on the relative merits of defining life events as relatively major stressors or relatively minor hassles (e.g., Dohrenwend, *et al.*, 1984; Dohrenwend and ShROUT, 1985; Kanner *et al.*, 1981; Watson and Pennebaker, 1989). Rather than engage the nominators in this debate, we allowed them to list both major and minor events. Issues related to this debate are considered below.

Table I. Description of Items: Severity, Prevalence, and Frequency

Item	Severe	Common	Frequency	College
Death (family member or friend)	3.97	1.89	0.02	N
Had a lot of tests	3.62	4.39	0.57	Y
It's finals week	3.62	3.64	0.01	Y
Applying to graduate school	3.59	1.68	0.01	Y
Victim of a crime	3.59	1.32	0.07	N
Assignments in all classes due the same day	3.57	3.36	0.15	Y
Breaking up with boy-/girlfriend	3.45	2.21	0.07	N
Found out boy-/girlfriend cheated on you	3.45	1.50	0.04	N
Lots of deadlines to meet	3.41	4.14	0.56	N
Property stolen	3.41	1.96	0.04	N
You have a hard upcoming week	3.31	3.82	0.35	B
Went into a test unprepared	3.31	3.04	0.29	Y
Lost something (especially wallet)	3.21	2.30	0.11	N
Death of a pet	3.21	1.89	0.01	N
Did worse than expected on test	3.17	3.21	0.34	Y
Had an interview	3.17	2.50	0.06	N
Had projects, research papers due	3.14	3.54	0.27	Y
Did badly on a test	3.14	3.04	0.36	Y
Parents getting divorce	3.10	1.59	0.05	N
Dependent on other people	3.10	2.93	0.20	N
Having roommate conflicts	3.10	2.68	0.26	B
Car/bike broke down, flat tire, etc.	3.10	2.46	0.08	N
Got a traffic ticket	3.10	2.32	0.05	N
Missed your period and waiting	3.08	1.82	0.04	N
Coping with addictions	3.07	1.36	0.05	N
Thoughts about future	3.07	4.22	0.74	N

Lack of money	3.07	3.36	0.40	N
Dealt with incompetence at the Registrar's office	3.07	3.11	0.13	N
Thought about unfinished work	3.03	3.79	0.51	B
No sleep	3.00	3.19	0.41	B
Sick, injury	3.00	2.64	0.14	N
Had a class presentation	3.00	2.54	0.11	Y
Applying for a job	3.00	2.50	0.11	N
Fought with boy-/girlfriend	3.00	2.46	0.19	N
Working while in school	2.97	2.82	0.36	Y
Arguments, conflict of values with friends	2.97	2.43	0.26	N
Bothered by having no social support of family	2.96	2.00	0.08	N
Performed poorly at a task	2.93	2.68	0.13	N
Can't finish everything you needed to do	2.90	3.82	0.38	N
Heard bad news	2.90	2.71	0.21	N
Had confrontation with an authority figure	2.90	2.36	0.06	N
Maintaining a long-distance boy-/girlfriend	2.86	2.50	0.23	N
Crammed for a test	2.83	3.75	0.51	Y
Feel unorganized	2.83	3.43	0.38	N
Trying to decide on major	2.79	3.25	0.29	Y
Feel isolated	2.79	2.57	0.11	N
Parents controlling with money	2.79	2.50	0.20	B
Couldn't find a parking space	2.72	3.54	0.26	B
Noise disturbed you while trying to study	2.69	3.64	0.45	Y
Someone borrowed something without permission	2.69	2.75	0.16	N
Had to ask for money	2.69	2.61	0.23	B
Ran out of typewriter ribbon while typing	2.66	2.14	0.05	B
Erratic schedule	2.62	3.37	0.22	N
Can't understand your professor	2.62	3.32	0.30	Y
Trying to get into your major or college	2.57	2.21	0.24	Y
Registration for classes	2.55	3.82	0.54	Y
Stayed up late writing a paper	2.55	3.68	0.20	Y
Someone you expected to call did not	2.55	2.85	0.29	N

Table I. (Continued)

Item	Severe	Common	Frequency	College
Someone broke a promise	2.55	2.50	0.08	N
Can't concentrate	2.52	3.54	0.50	N
Someone did a "pet peeve" of yours	2.52	3.00	0.29	N
Living with boy-/girlfriend	2.50	1.57	0.05	N
Felt need for transportation	2.48	2.86	0.29	N
Bad haircut today	2.45	2.07	0.02	N
Job requirements changed	2.45	2.07	0.01	N
No time to eat	2.38	2.89	0.27	B
Felt some peer pressure	2.35	2.61	0.13	N
You have a hangover	2.29	2.46	0.22	N
Problems with your computer	2.28	1.68	0.12	B
Problem getting home from bar when drunk	2.24	1.96	0.08	N
Used a fake ID	2.21	1.86	0.15	N
No sex in a while	2.21	2.82	0.24	N
Someone cut ahead of you in line	2.21	2.50	0.02	N
Checkbook didn't balance	2.10	2.68	0.09	N
Visit from a relative and entertaining them	2.10	2.18	0.09	N
Decision to have sex on your mind	2.07	3.22	0.19	N
Talked with a professor	2.07	2.68	0.36	Y
Change of environment (new doctor, dentist, etc.)	2.00	2.64	0.04	N
Exposed to upsetting TV show, book, or movie	1.97	2.25	0.08	N
Got to class late	1.86	3.21	0.43	Y
Holiday	1.76	2.64	0.04	N
Sat through a boring class	1.66	4.07	0.83	Y
Favorite sporting team lost	1.48	2.18	0.13	B

Note. School-related items marked with a Y, nonschool items marked with an N, and between items marked with a B.

Event Severity

The following week, the respondents who had generated the items were presented with the condensed list of items and rated each of the items in answer to the question "How stressful would this be to you, if it occurred to you?" Items were rated on a 4-point scale of "none/a little/some/a lot"; the results are displayed in Table I, in the column labeled "Severe." The items are listed in order of their mean severity rating.

One concern that might be raised is the extent to which severity ratings are reliable, if made by people not experiencing the stressful life event. In general, the severity rankings of people experiencing and people not experiencing a particular event are highly correlated (Hurst *et al.*, 1978). For example, wives and husbands agree on the stressfulness of events that occur at the husband's workplace (Long and Voges, 1987). Furthermore, there is reasonable agreement on the stressfulness of life events across nationalities as well (Rahe, 1969). Although some of the raters may not have actually experienced any particular event on the USQ, their severity ratings are likely to be very similar to those of raters who have.

Event Commonness

The same week, the researchers recruited 30 different undergraduate subjects from libraries, dormitories, and classrooms, to rate the same 83 items for the frequency with which the events or concerns occur. Subjects rated the items on a 5-point scale, labeled "never/infrequently/ sometimes/ often/always." These responses were coded on a 1-5 scale. The results are displayed in Table I, in the column labeled "Common."

Event Frequency, Severity Weighting, Mood, and Physical Symptoms

Event Frequency. To test the actual event frequency of the items, we administered the USQ to 86 undergraduates (45 females and 41 males) enrolled in an introductory psychology class. They checked off items on the USQ with the following instructions: "Has this stressful event happened to you at any time during the last week? If it has, please check the space next to it. If it has not, then please leave it blank." An individual's score on the USQ is the number of items checked off. Item frequency, the proportion of people checking off each particular item, is displayed in Table I, in the column labeled "Frequency."

Severity Weighting. A number of methods of weighting the items in terms of rated severity were tried, in the manner of the SRRS (Holmes and Rahe, 1967; Ross and Mirowsky, 1979). For example, a "1" was given to all items scoring below 3.0 in severity (representing "minor" life events), and a "2" for those items 3.0 or above (representing "major" life events). This weighted scale correlated $r = .99$ with the unweighted version. In addition, a second weighted scale, with all of the items weighted by their severity score, was created. This scale correlated $r = .998$ with the unweighted scale. These results are consistent with previous research comparing weighting schemes. For example, Rahe (1974) compared weighted and unweighted versions of the SRRS and found them to be correlated at $r = .89$; other researchers have found similar results (e.g., Crandall, 1992; Lei and Skinner, 1980).

Criterion-Related Validity. Also at this time, subjects filled out Mayer and Gaschke's (1988) Brief Mood Introspection Scale (BMIS), a brief, validated measure of state mood, scored in the positive mood direction, and Pennebaker's (1980) symptom checklist, the "PILL." Since the perception of stress has been shown to be related to both negative affect (Watson and Pennebaker, 1989) and physical symptoms (Jemmott and Locke, 1984), the USQ was expected to correlate negatively with the BMIS and positively with the PILL.

Results and Discussion

The mean and standard deviation of the USQ are reported in Table II, along with the correlations between the USQ and the PILL and BMIS. Subjects reported experiencing, on average, more than 17 of the 83 items (21%), ranging from 4 to 46 (5–55%). The USQ was symmetrically normally distributed (skewness, $\tau_1 = .65$; kurtosis, $\tau_2 = .65$), both across gender and for men and women individually. Although the average inter-item correlation was relatively small ($r_{ij} = .05$), because of the large number of items, the internal consistency was satisfactory (KR-21 = .80). The split-half reliability was .71; the Spearman–Brown prophecy formula brings the estimated reliability up to .83.

As predicted, the USQ was negatively correlated with mood and positively correlated with physical symptoms. Table II indicates that the association between the USQ-measured stress and the PILL is similar across gender. However, the negative correlation between mood and the USQ occurred only among females; this correlation was not significant for males ($z = -2.61, p < .01$).

Table II. Means, Standard Deviations, and Correlations with the USQ

	Mean	SD	All subjects	Males only	Females only
USQ	17.63	7.93			
BMIS	4.57	3.71	-.26*	.11	-.44**
PILL	8.07	4.49	.53***	.53***	.49***

* $p \leq .05$

** $p \leq .005$

*** $p \leq .001$.

Women scored higher on the USQ than men [19.3 vs. 15.8; $t(84) = 2.10, p < .05$]. Women were somewhat lower in mood (3.80 vs. 5.39; $p < .06$). There was no difference in symptom reporting ($t < 1$).

The distinctiveness of the USQ is the number of items pertaining directly to the daily stressors of undergraduates. To examine the differential severity and frequency of stressors related to school, and stressors independent of being in school, we coded items as either school-related, school-unrelated, or "in between."

The majority of items (51; 61%) are not related to the college experience (Nonschool), 21 items are related to college (25%; School), and 11 items are in between (13%; Between). The coding of each item is displayed in Table I, in the column labeled "School." The different subscales were substantially correlated; $r(\text{School-Nonschool}) = .70$, $r(\text{School-Between}) = .47$, and $r(\text{Nonschool-Between}) = .51$ (all p 's $< .005$).

Event Commonness and Severity by school-relatedness are displayed in Fig. 1. As school-relatedness increased, so did ratings of Commonness [$F(2,80) = 3.66, p < .05$] but not Severity ($F < 1$). The frequency with which items were checked off was a function of school-relatedness; on average, 18.2% of the Nonschool items were checked off, while 18.3% of the Between items and 30.3% of the School items were checked off [$F(2,80) = 4.00, p < .05$]. These results echo Sarason and co-workers' (1978) findings that the school-related stressors provide the lion's share of the stress ratings of undergraduates. In our study, the School items accounted for 25% of the items and 36.0% of the total USQ score.

However, there were few differences among the correlations between subscales and the criterion variables of mood and symptoms. As shown in Table III, the correlations between the USQ subscales and the PILL symptom checklist reflect the same degree of association as the overall USQ-PILL correlation found in Table II. The same pattern is also found among the subscales and the BMIS.

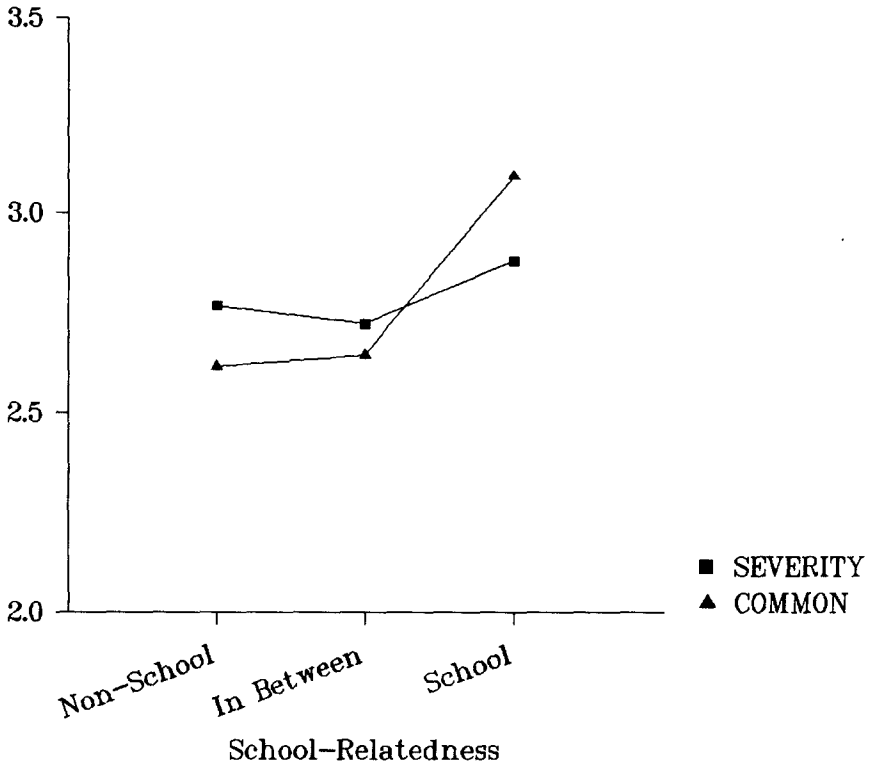


Fig. 1. Commonness and severity of items grouped by school-relatedness.

In general, these results were consistent for both men and women. Figure 2 displays the proportion of items endorsed by gender and school-relatedness. School items were most frequently endorsed by a substantial margin for both males and females [$F(2,168) = 55.53, p < .0001$]. However, the higher scores on the USQ that women received appear to be due to the fact that females reported more school-related stress [Gender \times Scale interaction, $F(2,168) = 3.41, p < .04$]. Subsequent planned t tests showed that the difference between the genders was significant only for School items [$t(84) = 3.07, p < .01$].

Although the subscales were correlated, they should not be considered interchangeable. The unique aspect of the USQ is its emphasis on school-related items, and so we tested, in a hierarchical multiple regression,

Table III. Physical Symptoms By Stress Component

	Total Sample	Males	Females
School	.52***	.55***	.48**
Between	.31***	.21	.35*
Nonschool	.45***	.51***	.40***

* $p < .05$
 ** $p < .01$
 *** $p < .005$.

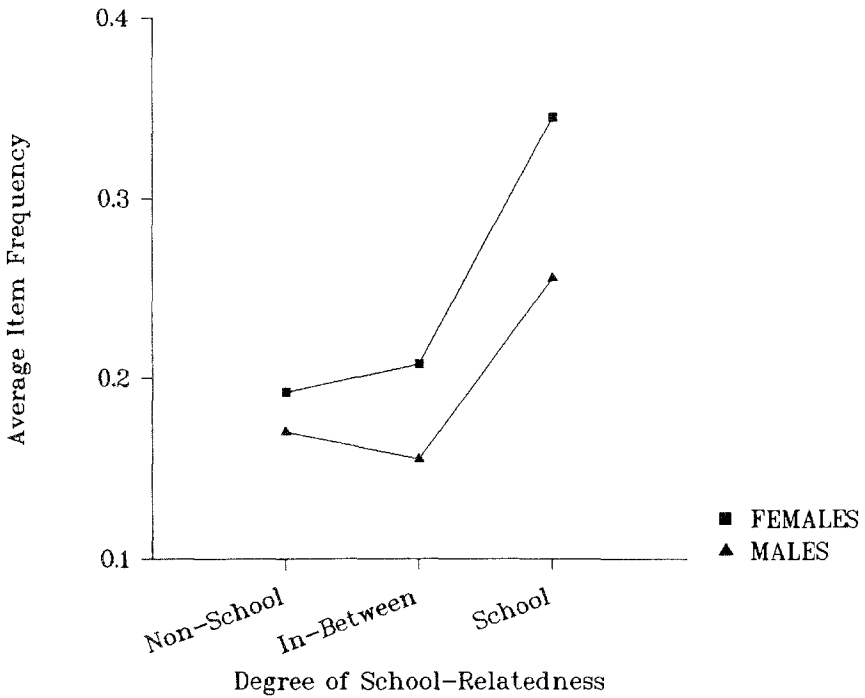


Fig. 2. Average frequency of endorsement of items grouped by school-relatedness.

the unique contribution of the School and the Nonschool items. In a regression predicting scores on the symptom checklist from the Nonschool items, the multiple- R^2 was .21; adding the School items raised the multiple- R^2 to .31 [with $F(1,83) = 11.96, p < .01$], for the improvement in predictability. This indicates that the inclusion of a substantial number of

school-related stressful events on the checklist is an essential aspect of the USQ's ability to predict symptom reports.

To investigate further the relationship between the severity of the items and their impact on psychological and physical functioning, we created a "Major Events USQ" by including only those events with a severity weighting of three or greater and a "Minor Events USQ" by including only those events weighted below three. These two versions of the USQ were highly correlated with each other ($r = .89, n = 86, p < .0001$), and both were highly correlated with the overall USQ ($r = .89, n = 86, p < .0001$ for the Major USQ and $r = .99, n = 86, p < .0001$ for the Minor USQ). Both correlated approximately the same with the BMIS mood scale ($r = -.27, n = 86, p < .015$ for the Major USQ and $r = -.29, n = 86, p < .01$ for the Minor USQ) and the PILL symptom checklist ($r = .47, n = 86, p < .0001$ for the Major USQ and $r = .53, n = 86, p < .0001$ for the Minor USQ). On the basis of these data, we recommend using the unweighted USQ [see Ross and Mirowsky (1979) and Wainer (1976) for further statistical evidence of the simple superiority of unweighted scales].

The fact that differential weighting schemes had little effect on the USQ suggests that the debate over which better describes perceived stress, major life events or daily hassles, may be resolved in favor of both sides. That the weighted and unweighted scales are so highly correlated suggests that the distinction between major and minor life events may be relatively arbitrary. This is not to say that "major" life events do not have a greater impact on people's lives, but simply that major and minor life events in the USQ behave in the same manner statistically and contribute equivalently to overall stress scores.

Figure 1 underscores the importance of including school-related items in any questionnaire designed to measure the experience of stress in undergraduate samples. In this sample, the commonness of the stressor was a function of its school-relatedness; school-related stress items were more frequently endorsed and had a significant added value in predicting measures of stress outcomes. The extent to which these results may be taken to indicate that school-related stressors occur more often depends on the quality of the sampling of stressors in our list.

To the extent that the list of stressors is representative, then it appears that the most common source of stress in undergraduates lives is, in short, college. This is not surprising, although there is a variety of other sources of stress that undergraduates face, such as sex, love and romance, identity negotiation, and health issues such as mononucleosis, sexually transmitted diseases, etc. The most common stressors in this group appear to be related to college, and yet they are no less stressful than stressors unrelated to

education. This underlies the importance of directly measuring stressors particular to a sample. To fail to do so would ignore the most common sources of stress.

The finding that women report more stressful life events than men is not new (Barnett *et al.*, 1987). Women may report feeling more stressed in similar circumstances, or their roles may lead them into more stressful circumstances (Aneshensel and Pearlin, 1987). In these data, it appears that women report more stressful events related to attending college. Recent data suggest that women are more concerned than men about their performance at home and on the job. Furthermore, they are less satisfied with how they are doing, even when they are objectively performing up to standard or better (Biernat and Wortman, 1991). Abundant evidence exists that women appraise their achievements more negatively than men (Eccles and Hoffman, 1984). The current data suggest that women may appraise their experiences more negatively and be more willing to report experiencing stressful college-related events.

In some ways, the USQ behaves differently from other published measures of stress. For example, unlike most schedules of life change, the psychometric properties are at least acceptable. Because of the large number of items, plus some degree of overlap among them, there is a fairly good degree of internal consistency, an acceptable split-half reliability, and a good test-retest reliability.

It is not clear exactly what kind of psychometric properties are necessary for life events questionnaire. Some have argued that life events questionnaires have not demonstrated adequate psychometric properties (Rabkin and Struening, 1976), and test-retest reliabilities have tended to be rather low (e.g., Billings and Moos, 1982; Horowitz *et al.*, 1977), especially for positive life events (Sarason *et al.*, 1978).

At the same time, others have argued that because one need not posit a central causal factor (e.g., a single factor models), and because life events questionnaires are *indicator variables* designed to be tallies of events, such questionnaires do not need to demonstrate psychometric properties typically found in personality or attitudinal research (Billings and Moos, 1982). For example, Tausig (1982) has shown that the SRRS shows no internal structure, the individual items are not correlated, and he argues, internal consistency coefficients should not be calculated, and factor analyses should not be performed. Nonetheless, the psychometric qualities of the USQ, while perhaps not necessary, are in no way a drawback.

In Study 1, we used several independent samples to generate life event stressors, determined their commonness and severity, and demonstrated their relationship to physical symptom report and mood. We have shown that different methods of scaling the events, and the different classes of

events, are equally predictive of mood and symptoms. We now turn to the issue of how representative the USQ items are, in terms of how completely and accurately they reflect undergraduates' subjective sense of stress.

STUDY 2: RATED COMPLETENESS AND ACCURACY

To ascertain the degree to which the sample of items in the USQ was an adequate representation of the stress in undergraduates' lives, we had subjects rate the representativeness of the USQ, along with three other measures of stress that have been used with college populations.

Method

Twenty-three subjects from the introductory psychology subject pool filled out the USQ, as well as the SRRS (Holmes and Rahe, 1967), the Student version of the SRRS (S-SRRS; Marx *et al.*, 1975), the Daily Stress Inventory (Brantley *et al.*, 1987), and the USQ, presented in a single booklet in random order. The SRRS and S-SRRS are filled out in the familiar check-off format. The DSI is filled out by answering each question on an 8-point scale, ranging from X (did not occur) to 1 (occurred but was not stressful) through 4 (caused some stress) to 7 (caused me to panic).

After filling out all four questionnaires, subjects rated the scales for completeness and accuracy, on scales ranging from 0–100. Completeness was defined as follows: "By complete, we mean how many of the different kinds of stresses that you or your friends experience are represented in the questionnaire?" Accuracy was defined as "By accurate, we mean how well do you think that the scores you would get on each of the questionnaires would accurately reflect how much stress you are feeling."

Results

The results of these ratings are displayed in Fig. 3. A 2×4 (Rating \times Stress Measure) two-factor repeated measures ANOVA revealed that the stress measures were rated differentially [$F(3,66) = 13.19, p < .0005$]. Subsequent repeated measures ANOVAs showed that the stress measures were rated differently for both accuracy [$F(3,66) = 13.99, p < .001$] and completeness [$F(3,66) = 9.616, p < .001$], with the USQ scoring highest in both. The USQ was significantly more highly rated than the SRRS and the S-SRRS on both accuracy and completeness (all p 's $< .01$) but was not significantly higher than the DSI.

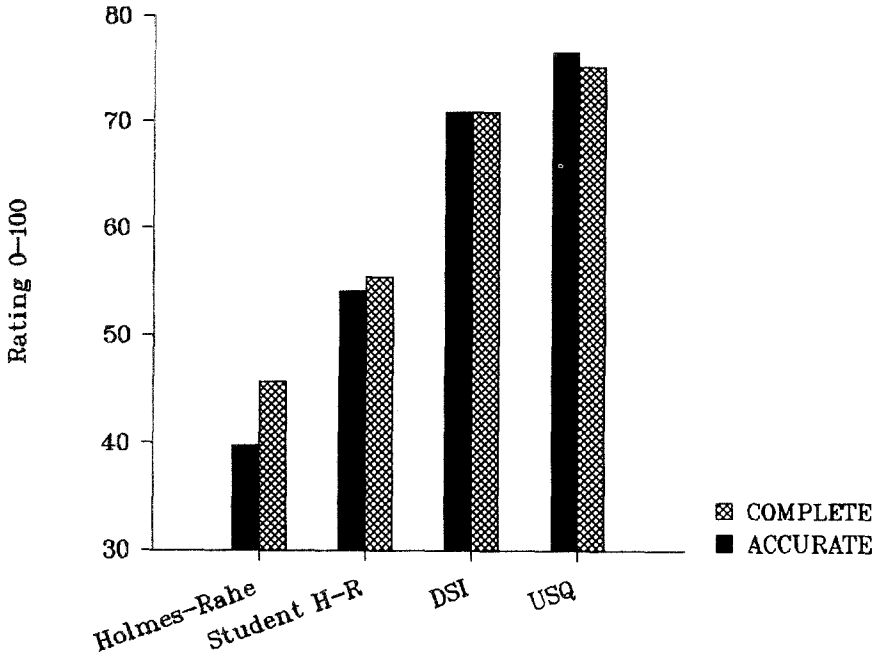


Fig. 3. Rated completeness and accuracy of four life stress measures.

In debriefing, we asked subjects after completing the rating to tell us what they liked and disliked about the different questionnaires. Because they showed a preference for the USQ and the DSI, we asked them about the strengths and weaknesses of both. Subjects liked the DSI for the opportunity to rate the subjective stressfulness of each event. The USQ was rated highly, they claimed, for the good representation of stressful events.

This report from subjects raises the issue of whether or not the events listed in the USQ should be responded to with a subjective stressfulness rating scale or the check-off format we used in the first two studies. Study 6 addresses this issue.

STUDY 3: THE STRESS OF FINALS WEEK

In Study 2, we found that the USQ is rated highly by undergraduates for the degree to which it reflects the stress they subjectively feel. In Study

3, we directly assessed the USQ's relationship to perceived stress. We gave the USQ to students twice in a 6-week concentrated social psychology class, during the summer session. Subjects filled out the USQ at the beginning of the class and at the end of the class.

For some, finals week represents an extremely stressful time, full of deadlines, evaluations, and threats to self-esteem. To others, it represents a time when most of the work for the term is over, with the exams ahead signaling the end of the term, vacation, and a respite from studying. To examine the degree to which the USQ tracks a subjective sense of stress during finals week, we gave out the USQ in the middle of the second week and again during the last week of class, just before finals. We asked subjects whether or not they were experiencing more stress because of finals, less stress, or no difference compared to when they filled out the USQ at the beginning of the term.

Method

Subjects were 59 students (24 males, 35 females) in a summer session social psychology class at the University of Florida. Instructors typically attempt to teach a regular course in this time; many students report feeling quite rushed. In the final week of this course, students are required to hand in a paper and take the final exam.

During the second week of the course, subjects filled out the USQ during class time. The same subjects again filled out the USQ in the final week of the class, 3 days before the final exam. (Each student was given a unique and anonymous code, to facilitate matching of questionnaires from both times.)

To separate out those who felt more stress at the end of the term from those who felt relief, subjects were asked to rate how much stress they felt during finals week compared to the second week of the term, with the options "more stressed now," "no difference in stress between now and then," or "less stressed now."

Results

USQ scores were moderately stable, with a 4-week test-retest reliability of $r = .59$ ($p < .0001$), and roughly equal for males ($r = .68$) and females ($r = .53$). Thirty subjects (50.8%) reported feeling more stress during finals week, 18 (30.5%) felt no difference, and 11 (18.6%) reported feeling less stressed. Men and women were equally likely to report an increase or decrease in stress during the finals week [$\chi^2(2) = .28$, ns].

Separating out subjects by rated changes in stress, we computed a three-way (Time of Testing \times Self-Described Stress \times Gender) mixed-model ANOVA. No significant effects or interaction emerged for gender; the results are displayed by time and self-description in Fig. 4.

The USQ clearly reflects subjects reports of the changes in stress levels over the course of the term. Subjects' USQ's increased in the group feeling greater stress, remained constant in the "no-change" group, and decreased in those reporting less stress [$F(2,53) = 8.68, p < .005$]. Overall, the mean USQ increase (15.2 vs. 15.9) was not significant, and there was no main effect on the USQ for Self-Described stress (both F 's < 1) or any other significant interactions.

The USQ is sensitive to the different amounts of stressfulness students report at the close of the term. Some subjects feel burdened by the end of the term, and these subjects' USQ's are significantly heightened [$t(29) = 3.51, p < .005$]. Some subjects feel relief at the end of the term, and their USQ's are significantly lowered [$t(10) = 3.12, p < .01$]. The USQ's of those who reported feeling no change in stress levels did not change [$t(14) < 1$].

This study shows that the USQ is sensitive to changes in perceived stress. While it is difficult to ascertain changes in objective stress, the USQ successfully tracks the subjective reports of undergraduates' increased, decreased, or stable levels of stress.

STUDY 4: LIFE EVENT STRESS, NEGATIVE AFFECTIVITY, AND SYMPTOM REPORTS

Although the USQ is designed to be a measure of life events, to some extent it may be contaminated by other factors. Several authors (e.g., Dohrenwald *et al.*, 1984; Dohrenwend and Shrout, 1985; Watson and Pennebaker, 1989) have recently argued that measures of stress are pervasively contaminated by negative affectivity; this is especially true of measures of life events which focus on "daily hassles." The USQ is certainly open to this criticism, as the probability of marking several of the items may be affected by trait-related anger (e.g., Fought with boy/girlfriend).

In an initial test of this contamination, we calculated the partial correlation between the USQ and physical symptoms, factoring out mood as measured by the BMIS, using data from the first study reported here. While the USQ correlated with symptoms at $r(84) = .53$, partialing out mood reduced the partial r to .50—not a meaningful drop. Still, the BMIS was designed to measure state mood, rather than trait-related mood, and so

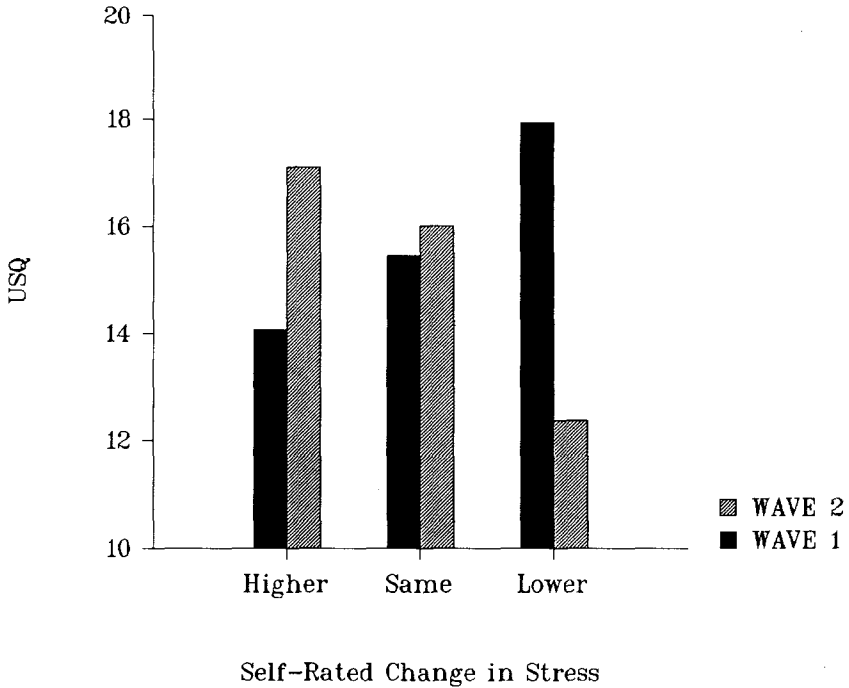


Fig. 4. Scores on the USQ by time of testing and self-described subjective changes in stress.

we designed a study directly to test the ability of the USQ to predict physical symptoms over and above negative affect.

We had subjects fill out one of four different stress measures, a measure of trait-related negative affect, and a physical symptoms checklist. We compared the predictive power of the USQ against the other three measures, both in predicting symptoms and in predicting symptoms after the contamination of negative affect is statistically removed.

Method

Subject were 444 undergraduates who filled out one of the four stress measures used in the "completeness and accuracy" study above. Students from four different psychology or sociology classes filled out either the

Table IV. Predictive Validity of Four Stress Questionnaires

Stress scale	Pearson <i>r</i>	Partial <i>r</i>
Undergraduate Stress Questionnaire	.44**	.36**
Daily Stress Inventory	.35**	.22*
Holmes–Rahe SRRS	.23*	.16
Student SRRS	.24*	.17*

p* < .05.*p* < .001.

USQ ($N = 115$), the Daily Stress Inventory ($N = 97$), the Holmes–Rahe SRRS ($N = 115$), or the Student version of the SRRS ($N = 117$). (Each of the different stress measures was given in approximately equal numbers in all four classes.)

Subjects also filled out the Negative Emotionality scale of the Differential Personality Questionnaire (NEM; Tellegen, 1982; Watson and Tellegen, 1985), the measure of negative affect used by Watson and Pennebaker (1989), and a symptom checklist (PILL; Pennebaker, 1980).

Results and Discussion

The different stress measures were correlated with physical symptoms with varying levels of association, ranging from .23 to .44 [test of equal slopes, $F(3,436) = 9.49$, $p < .0001$; see Snedecor and Cochran (1967, p. 432) for a description of this test]; the results are displayed in Table IV. The USQ had the highest correlation with physical symptoms, significantly higher than each of the other three, with its nearest neighbor, the DSI, differing at $z = 2.96$ ($p < .01$).

To test for the predictive validity of the different stress measures with the effects of negative affect removed, we calculated the partial correlations between physical symptom reports and stress, factoring out negative affect. The results of this calculation are found in the rightmost column in Table IV. The measures had differing levels of predictability [test of equal slopes, $F(6,428) = 4.26$, $p < .0005$], and the USQ was significantly superior to its nearest neighbor, the DSI [$F(1,206) = 4.24$, $p < .02$].

The USQ has a significant advantage in predicting scores on a physical symptoms checklist. Furthermore, the degree of contamination from

negative affect appears to be rather small, such that the reduction in predictive power when negative affect is factored out is relatively small.

A Further Test of the Negative Affect Contamination Effect

The data from this comparison study allow another intriguing test of the “negative affect contamination” problem. In Study 1, we considered the finding that the USQ has fairly good psychometric properties; this is an unusual characteristic in an event checklist. Since there is no a priori requirement that stressful events be correlated in experience, it is possible that the modest correlation among the items (mean $r_{ij} = .056$) is due to some individual difference variable. One possible source of interitem correlation is response bias, such as social desirability (Edwards, 1970, 1991), a variable with broad effects in questionnaire measurement (Hogan and Nicholson, 1988) and known to have strong links to personality variables related to negative affectivity (Block, 1965, 1990).

To test this notion, we regressed negative affectivity on each of the 83 items in the USQ and saved the residuals. From these residualized variables, we recalculated internal consistency. To the extent that negative affectivity or a response bias (such as social desirability) that may be correlated with negative affect is responsible for the internal consistency, the reliability coefficient should drop considerably. Whereas the r_{ij} prior to removing negative affect was .056 (KR-21 = .83), the r_{ij} of the residualized items was .044 (KR-21 = .79). Although negative affect (or any response set associated with endorsing negative affect items) appears to play a small role in the interitem correlations, it does not appear to be a particularly significant one.

This leads us to an alternative formulation for why the stressful event items are correlated. It is quite possible that stressors *are* correlated in the real world. Several items on the USQ are likely to be correlated in practice, such as “You have a hard upcoming week,” “Lots of deadlines to meet,” and “Can’t finish everything you need to do.” Furthermore, stressful events are equally likely to compound upon each other—one stressor can lead to another. Consider these items from the USQ: “Found out boy/girlfriend cheated on you,” “Fought with boy/girlfriend,” and “Breaking up with boy/girlfriend.”

Thus, the psychometric properties of the USQ may reflect the correlation of stressful events in undergraduates’ lives. The observed correlations are quite low, averaging about .05, suggesting only a modest interrelation. This modest relationship does not appear to be due to negative affect, or any response set associated with it.

Subjective Distress and Objective Stressor Items

Most of the events listed on the USQ are clearly objectively stressful (e.g., "Victim of a crime," "Death of a pet," "Problems with your computer"). However, several of the items may be considered "subjective" stressors—where individual differences and subjective evaluations may be more important than the objective aspects of the environment (e.g., "Thought about unfinished work").

To determine if the "subjective" items behaved differently than the "objective" items, we had six judges (three psychology faculty members and three psychology graduate students) determine which items on the USQ appear to be markers of subjective distress, as opposed to objective stressors. We chose an extremely conservative method of determining whether an item might be an indicator of "subjective distress"; any item with two or more votes was considered subjective, and the others were considered objective. Fifteen of the 83 items (18.1%) were labelled as potential indicators of subjective distress and were combined to make a Subjective Distress scale; the remaining 68 items (81.9%) were used to create an Objective Stressor scale. Examples of the Subjective Distress items are "Thoughts about future," "Can't concentrate," and "Bothered by having no social support of family."

Using the data from the same comparative study above, we found that the Subjective Distress scale correlated at $r = .79$ with the USQ, and the Objective Stressor scale correlated at $r = .97$ with the USQ. Both the Subjective Distress and the Objective Stressor scales also correlated substantially with symptom reports (r 's = $.48$ and $.37$, respectively, both p 's $< .001$). Furthermore, both the Subjective and the Objective scales correlated with symptom reports after negative affect had been statistically removed (partial r 's = $.42$, $p < .001$, and $.29$, $p < .005$, respectively). In every case, these two scales behave approximately the same as the overall USQ. For a variety of research purposes or other theoretical goals, one may wish to remove these apparently subjective event items. However, it appears to make very little difference empirically exactly which items are used.

STUDY 5: STRESS, ILLNESS, AND THE CAMPUS INFIRMARY

Watson and Pennebaker (1989) have shown that reports of daily hassles are highly correlated with negative affectivity among undergraduates but that neither daily hassles nor negative affect are correlated with actual

visits to the infirmary. They interpret this finding to mean that much of the association between stress reports and symptom reports is based on their mutual association with negative affect and that the relationship between stress and objective measures of health has been substantially overestimated. This study directly tests the association between reported stress and infirmary use.

In this study, we gave the USQ to two different groups of students who should be experiencing different levels of stress: (1) students walking about or sitting down in an open square on campus and (2) students waiting for an appointment at the university infirmary. To the extent that the experience of stressful life events is predictive of illness (Holmes and Rahe, 1967; DeLongis *et al.*, 1982), students reporting to the campus infirmary should score higher on the USQ, as compared to a sample chosen irrespective of illness.

Method

Subjects were 30 males and 30 females, the data were collected mid-term over a 9-day period in one of two ways. Fifteen each of the males and females filled out the USQ while in the waiting room at the campus infirmary. Subjects were selected as they came in for their appointments, the only stipulation was that 15 subjects of each gender be selected. As a control group, 15 subjects of each gender were selected from around campus, sitting in one of the plazas or in the student union.

Results and Discussion

Figure 5 displays the means on the USQ by group and gender. Again women scored higher on the USQ than men [$F(1,56) = 9.66, p < .01$]. And most importantly, subjects in the infirmary reported more stress than did subjects collected around campus [$F(1,56) = 4.88, p < .05$]. There was no Gender \times Group interaction ($F < 1$). Here, the USQ differentiated people reporting to the infirmary from an unselected campus population. It also provided a third replication of the finding that women report experiencing more stressful events than men.

In the past, life events schedules have been criticized for confounding illness and illness-related events as both stressor and an outcome (e.g., Zimmerman *et al.*, 1984). However, the USQ has only one item which directly taps illness ("Sick, injury"). When removing this item from consideration, the difference between the groups remains significant.

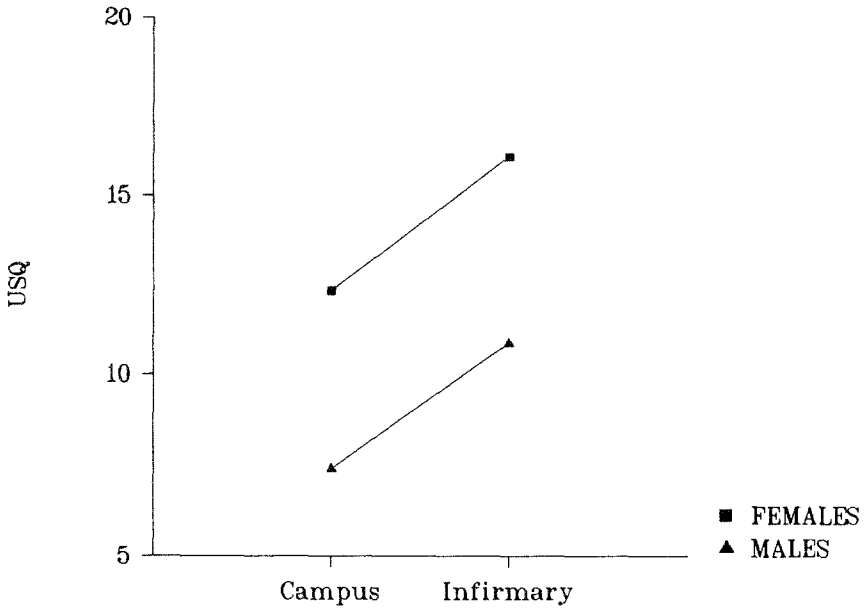


Fig. 5. Scores on the USQ by gender and location.

People who are physically ill tend to have experienced greater life stress in the recent past (e.g., Antonovsky, 1979; Cassel, 1976). To the extent that visits to the infirmary are indicators of poor health, these data suggest that the USQ may be able to determine undergraduates at risk for illness. The USQ reliably distinguishes between people in the infirmary and those selected without respect to physical illness. This supports the notion that reports of stressful life events are associated with *objective* health indicators.

STUDY 6: SUBJECTIVE SCALING VS. OBJECTIVE OCCURRENCE OF EVENTS

Lazarus and Folkman (1984), among others, argue that stressors need to be conceptualized in terms of the context in which they appear. They argue that stressful events must be understood in terms of the *demands* of the stressful situation and the *capabilities* of the person to meet those demands. This theoretical orientation to stress suggests that it is preferable to measure the stressfulness of an individual experience by including a subjective rating scale for each stressful event (Lazarus *et al.*, 1985).

On the other hand, Dohrenwend and ShROUT (1985) have argued that subjective scaling is a primary source of negative affect contamination of life event scales. They argue that one major problem with the Daily Hassles Scale (Kanner *et al.*, 1981) is its use of a subjective scale. They performed a factor analysis of the Hassles Scales and a physical symptom scale of the Hopkins Symptoms Checklist (HSCL; Derogatis *et al.*, 1974) and show that all of the scales and the HSCL symptoms scale load on a single factor. Dohrenwend and ShROUT (1985) interpret this as a method factor, demonstrating the confounding of the subjectively scaled Daily Hassles scale with negative affectivity and symptom report.

In the preceding pages we have argued that an unweighted USQ is simpler than the USQ formed by a variety of weighting techniques but with equivalent validity and predictive power. Here we consider a different but related issue — whether the items on the USQ are best assessed by weights ascribed by the individual experiencing them. To test this notion, we created a version of the USQ that had rating scales instead of the simple check-off box and compared it to an unweighted USQ in terms of predicting physical symptoms.

Method

Subjects were 216 undergraduates enrolled in a human adjustment class who received class credit for participating. They were given a questionnaire that contained the PILL symptom checklist, a negative affect scale (NEM; Tellegen, 1982; Watson and Tellegen, 1985), and an 80-item version of the USQ. [Because the computer form we used had only 80 spaces for the USQ, we deleted three items (3.6% of the scale): “Problem getting home from bar when drunk,” “Sick, injury,” and “Can’t concentrate”.]

The USQ was filled out with instructions to use a rating scale, with a score of 0 corresponding to “did not happen,” a score of 1 corresponding to “happened, but was not at all stressful,” a 2 corresponding to “happened, and was slightly stressful,” a 3 corresponding to “happened, and was moderately stressful,” a 4 corresponding to “happened, and was fairly stressful,” and a 5 corresponding to “happened, and was extremely stressful.”

Results and Discussion

Each subject’s USQ was scored by two methods. To create a “subjective” version of the USQ, the ratings of all items were summed, creating a scale which can range from 0 to 400. To create the “objective” version

Table V. Subjective and Objective USQ Scales, Symptoms, and Negative Affect ($N = 216$)

Stress scale	Negative affect	Physical symptoms	Symptoms with affect removed
Subjective USQ	.17*	.38**	.34**
Objective USQ	.09	.33**	.31**

* $p < .015$.** $p < .001$.

of the USQ, any item rated 1–5 was recorded as a one, creating a scale with a possible range of 0–80.⁴

The Subjective and Objective scales were highly correlated ($r = .92$, $p < .0001$), suggesting that the contribution of the subjective rating scale makes very little difference in the rank ordering of subjects. Since the two versions of the USQ are so highly correlated, one can reasonably expect that both versions predict negative affect and physical symptoms to the same extent. Table V shows the correlations between the two scaled versions of the USQ, the PILL and the negative affect scale.

Clearly the two versions of the scales behave similarly, although some small differences emerge. As Dohrenwend and Shrout (1985) would predict, the Subjective USQ correlates significantly with the measure of negative affect ($r = .17$, $p < .015$), whereas the Objective USQ does not ($r = .09$, $.20 > p > .15$). However, both predict symptoms at about the same level. When the effects of negative affectivity are statistically removed, both versions of the USQ predict about the same, with a slightly higher partial correlation for the Subjective USQ. The correlations associated with both the Subjective and the Objective versions of the USQ correspond well with the results for the objective version of the USQ displayed in Table IV. There is no added predictive value to using the cumbersome subjective scale over the simple checklist.

To study further the value of the subjective scaling approach to life event inventories, we rescaled the data collected on the Daily Stress Inventory (Brantley *et al.*, 1987) for Study 4. We recoded the DSI in the same fashion as the USQ and computed the same set of correlations for both. In this analysis, we found that the subjectively scaled DSI was highly correlated with the objectively scaled DSI ($r = .89$, $n = 97$,

⁴The average interitem correlations were very similar, with $r_{ij} = .0832$ for the Objective USQ and $r_{ij} = .0897$ for the Subjective USQ. The KR-21's were also very similar (.89 for Subjective USQ; .88 for Objective USQ).

$p < .001$). Furthermore, the subjective DSI was more correlated with negative affectivity than the objective DSI (subjective $r = .37, p < .001$; objective $r = .21, p < .05$). The subjective version of the DSI was somewhat more correlated with physical symptoms than the objective version (subjective $r = .35, p < .001$; objective $r = .30, p < .005$), but partialing out for negative affectivity removed this difference (both partial r 's = $.22, p < .05$).

These results suggest that the subjective scaling of the USQ is not necessary, although it may improve predictability a very small amount. Furthermore, although the DSI was designed to be used with subjective scaling, there appears to be little additional value of using it. Rather it appears to introduce greater contamination of negative affectivity.

Subjective scaling lengthens the amount of time needed to fill out the questionnaire. It appears to introduce greater contamination of negative affectivity. It does not improve the predictive validity of the instruments. Because of these concerns, subjective scaling cannot be recommended.

GENERAL DISCUSSION

On the basis of these studies, the USQ appears to be a valid, reliable, and well-behaved measure of life events stress of college students. The USQ is a simple and easy-to-administer measure of the degree to which an undergraduate has experienced stressful life events in the past week.

Perhaps the most important reason for the success of the USQ is the wide representation of the kinds of stressful life events that college students typically experience. At virtually every administration of the USQ, several of the subjects came up to the experimenter and commented on how many of the event items they had experienced recently and how well they thought the USQ represented the stress in their lives. As Lewinsohn *et al.* (1985) argue, it is critical to go directly to the target population for nomination of stressful life events.

Differing from other measures of stress (Rabkin and Struening, 1976), the USQ has adequate psychometric properties, with an acceptable internal consistency, split-half reliability, and test-retest reliability. These properties are not likely to be caused by the personality variable of trait negative affectivity, a response bias that would be associated with the response biases of acquiescence or social desirability, or any close correlate of these. Rather, these properties are most likely due to the large number of items used.

Aside from its psychometric properties, another advantage of the instrument is its brevity. In several administrations of the USQ, under quite different conditions (classroom, laboratories, campus plazas), the median amount of time to fill it out ranged from 3 to 5 min. Other available measures may take as much as an hour (e.g., Lewinsohn and Talkington, 1979)

Subjects rate both the USQ and the DSI as accurate and complete. During the administration of Study 2, subjects reported that the USQ's strength came from its representative items, the DSI strengths from their being allowed to rate the subjective stressfulness of the event. However, the subjective rating had no discernible positive effect empirically and appeared to introduce greater contamination of negative affectivity. Although subjects may feel comfortable with it, it has no apparent useful empirical advantage.

These findings are in conflict with the persuasive arguments of Lazarus and Folkman (1984) and Lazarus *et al.* (1985) that stress need to be conceptualized as a process, as an interaction between the demands of a situation and the resources a person has to cope with them. Certainly their argument is correct. However, the subjective scaling of event items introduces a confounding that undermines the enterprise (Dohrenwend and Shrout, 1985). Lazarus and Folkman (1984) define psychological stress as the *appraisal* that the requirements of a situation are overwhelming one's ability to meet those needs. We agree, but suggest that environmental stressors and psychological resources are two separate constructs that must be measured separately. Appraisal must be compared to the discrepancy between resources and demands.

We doubt that researchers can simultaneously measure life event stress and the extent to which they tax a subject's ability to meet the needs of the situation. Any scale that sets out to conflate these two constructs is highly likely to introduce confounds in the measurement. Life events, and the extent to which resources are inadequate to meet them, must be measured independently of each other. This provides a possible method for comparing "objective" stressors with "subjective" stress.

The studies reported in this paper support the notion that simplicity in choosing scaling weights is nearly always better. In a recent paper, Birnbaum and Sotoodeh (1991) used sophisticated psychophysical techniques to generate severity weightings for the stressful life events in the SRRS. They had subjects make a total of 309 judgments using ratios, subtractions, and estimates based on several possible combinations of life events. However, their weightings did not improve upon the original weightings published in Holme and Rahe (1967). In fact, neither the original weightings nor Birnbaum and Sotoodeh's (1991) are appreciably better

than unit weighting (1 if occurred, 0 if not). In the context of severity weighting, it appears that one should take William of Ockham's advice — all other things being equal, what is best is what is simplest (Crandall, 1992).

We have expressed pessimism about the possibility of simultaneously measuring the potentially stressful demands of the situation with an appraisal that one does not have the needed resources to cope effectively. However, we are quite optimistic about solving the problem of confounding psychological distress with the experience of stressful life events. Several procedures can minimize this entanglement. First, the item generation phase should focus on events which are least likely to be the result of psychopathology or physical disease (e.g., excluding such items as feeling lethargic, negative thoughts, etc.). Second, we recommend a checklist format, rather than a Likert-type subjective rating scale. Finally, collecting validity data, such as in Studies 4–6, can demonstrate the lack of confounding.

From these studies, we have found that the USQ is less open to criticism of contamination by negative affect, and it is significantly more predictive of physical symptom reports than three other widely used schedules of stressful life events. In contrast to Watson and Pennebaker (1989), we find that reports of life event stress in undergraduates are associated with at least one objective health indicator — visits to the campus infirmary. Watson and Pennebaker (1989) are certainly right that prior estimates of the association between stress and illness may be inflated due to their mutual association with negative affectivity. However, there is an underlying fundamental association between them, over and above negative affect (Jemmott and Locke, 1984).

Although previous research has suggested that women may feel more life event-related stress (Hobfoll, 1991) and that they may experience these results more powerfully than men (Cleary, 1987; Wethington *et al.*, 1987), the USQ was able to demonstrate that these effects are not indiscriminate across the entire spectrum of female undergraduate's lives. Rather, it appears that women report more frequent stressful events related to their education, highlighting a difficulty that female undergraduates may be experiencing. The fact that women report more school-related stress, but not nonschool stress, is a topic worthy of further investigation.

On the basis of these data, the USQ appears to be a brief, valid, and reliable schedule of the negative and stressful life events of undergraduates. It may be a useful instrument for examining the role of stress in physical and psychological distress among undergraduates. Although undergraduates are not an ideal population for studying many chronic disease states, they are a large and available population for studying many factors related

to behavioral health. Undergraduates are a well-suited sample for studying processes such as health promoting behaviors, symptom perception, patterns of health care seeking, substance abuse, and the role of stress in the exacerbation of existing chronic illnesses such as multiple sclerosis or contagious diseases such as upper respiratory tract infections or *Herpes virii*. The availability of the USQ can improve such research efforts.

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