Behavioral Assessment, Vol. 14, pp. 465–482, 1992
Printed in the USA.
0191-5401/92 $5.00 + .00

The Daily Hassles Scale (Revised): Does it Measure Stress or Symptoms?

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This study examined the structure of a revised Daily Hassles Scale (DHS-R) and attempted to clarify its relationship to measures of psychological and somatic symptoms. First, exploratory and confirmatory factor analyses were conducted to identify and cross-validate a factor structure for the DHS-R. A second set of analyses was then used to examine the relationship between the DHS-R factors and psychological and somatic symptoms. Analyses suggested that a hierarchical factor structure comprised of seven primary and two higher-order factors provides a useful framework for conceptualizing the DHS-R. The seven narrow-band, primary factors identified in this study emphasized different life domains (e.g., work, family), while the two broad-band, higher-order factors appeared to distinguish between overt, public events and covert, private experiences. Subsequent analyses suggested that six of the seven DHS-R primary factors do not appear confounded with either psychological or somatic symptoms.

Key Words: stress, measurement of stress, daily hassles.

The Daily Hassles Scale (DHS) was developed as an alternative to stressful major life event inventories. Hassles are irritating, frustrating demands that occur during everyday transactions with the environment (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Kanner, Coyne, Schaefer, & Lazarus, 1981; Lazarus & DeLongis, 1983). Kanner et al. (1981) introduced the DHS, which they claimed could be used for examining a broad spectrum of everyday stresses, and provided initial evidence regarding its reliability, validity, and ability to predict psychological symptoms. Using regression analyses, DeLongis et al. (1982) subsequently reported that self-reported hassles contributed significantly to the prediction of health even when major life events were previously entered in the regression equation. When daily hassles were entered first, however, the addition of

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The authors are grateful for the assistance of the following people: Francis S. Bellezza, Karl G. Hursey, Susan McCann, Donald B. Penzien, Ann V. Siegel, and Mark A. Slater. They would also like to express their appreciation for the helpful comments made by the anonymous reviewers of an earlier version of this manuscript.

major life events failed to improve the prediction significantly. On the basis of this finding, DeLongis et al. (1982) argued that perceived hassles are not only better predictors of somatic health than major life events, but that they also may serve as a mediating variable through which major life events affect somatic health. Lazarus and colleagues have argued that the strategy of measuring hassles is "more useful than that of life events in predicting adaptational outcomes such as morale, psychological symptoms and somatic illness" (Lazarus & DeLongis, 1983, p. 247). At least seven studies provide data supporting Lazarus and DeLongis' assertion (DeLongis, Folkman, & Lazarus, 1988; Holahan, Holahan, & Belk, 1984; Holm, Holroyd, Hursey, & Penzien, 1986; Reich, Parrella, & Filstead, 1988; Rowlison & Felner, 1988; Weinberger, Hiner, & Tierney, 1987; Zarski, 1984).

Serious doubts have been raised, however, about the extent to which the DHS is confounded with self-report symptom inventories (Dohrenwend, Dohrenwend, Dodson, & Shrout, 1984). Dohrenwend and colleagues provided data (ratings from 371 clinical psychologists) suggesting that 37 of the items on the DHS were more likely than not to be a symptom of a psychological disorder. Based on these data, they suggested that correlations between the DHS and measures of symptoms are likely to be artificially inflated.

In response to this assertion, Lazarus, DeLongis, Folkman, and Gruen (1985) computed separate correlations between reports of psychological symptoms and confounded and unconfounded DHS items (as rated in the Dohrenwend et al., 1984, study). Lazarus et al. (1985) reported that the correlations between psychological symptoms and each group of hassles were remarkably similar. Next, Lazarus et al. factor analyzed the DHS, identifying eight factors. Those factors comprised of items rated as confounded were no better predictors of psychological symptoms than were those factors comprised of supposedly unconfounded items. Lazarus et al. argued that these results suggest that the relationship between reported hassles and symptoms is not due to a confounding between the DHS and measures of psychological symptoms.

Three concerns, however, pertain to Lazarus et al.'s (1985) conclusions. Although only 64 of the 117 DHS items were included in this factor analysis, the subject-to-item ratio was still less than 2 to 1, insufficient to ensure a stable factor structure (Comrey, 1978). Thus, it is likely that different factors would emerge if the subject-to-item ratio were increased and all of the DHS items were included in the analysis.

Next, the eight factors identified by Lazarus et al. (1985) were rotated to an oblique solution. Although oblique rotation often provides a meaningful factor structure, it can create difficulty interpreting individual factors. For example, Dohrenwend and Shrout (1985) claimed that the high correlations between the eight DHS factors (ranging from .38 to .71) accounted for Lazarus et al.'s (1985) finding that the eight factors were uniformly related to psychological symptoms. They supported this claim by reporting that a factor analysis of the eight DHS factors and the total score from the Hopkins Symptom Checklist (SCL-90) yielded only one higher-order factor. Dohrenwend and Shrout (1985) interpret these findings as suggesting that all eight factors identified by Lazarus et al. (1985) measure the same underlying construct as an accepted measure of psychological symptoms (Hopkins Symptom Checklist, Derogatis, 1977).

Finally, Dohrenwend and Shrout (1985) argue that because the format of the DHS does not acknowledge that subjects may experience an item (hassle) but not find it distressing, the scale implicitly directs subjects to report only those events they found distressing or disturbing. They contend that because of this format all DHS items are contaminated by general distress variance. To reduce this confounding, Dohrenwend and Shrout suggest that the reported occurrence of an event be separated from an individual's reaction to it.

To address these issues, the present study examined the structure of a revised Daily Hassles Scale (DHS-R) and its relationship to measures of psychological and somatic symptoms. The structure of the DHS-R was examined through the use of both exploratory and confirmatory factor analyses. Once a seemingly stable factor structure had been identified, a second set of exploratory and confirmatory factor analyses was conducted to obtain information about possible confounding between the DHS-R factors and self-report measures of symptoms.

METHOD

Participants

Undergraduates (N = 923; 58% female and 42% male; mean age = 19.6) at Ohio University comprised the sample used in the initial exploratory factor analysis of the DHS-R, while 823 undergraduates (54% female and 46% male; mean age = 19.8) and 259 recurrent headache sufferers (71% female and 29% male; mean age = 30.0) comprised the two cross-validation samples. The recurrent headache sample was comprised of individuals seeking assistance from a university treatment clinic. This sample included adults from the surrounding community. All headache subjects were diagnosed with tension, migraine, or mixed (tension and migraine) headache. Diagnostic criteria are reported by Holroyd et al. (1984, 1988). This sample was included to determine the extent to which the identified factor structure could be cross-validated in a population of symptomatic community adults.

A subset of the above two college student samples was used to examine relationships between the DHS-R and measures of psychological and somatic symptoms (only subjects completing all three inventories used in these analyses were included). This subset was further divided into two samples. The first sample consisted of subjects participating during fall and winter quarters of the academic year ($n = 512$; 64% female and 36% male), while the second sample was comprised of those subjects participating during the spring quarter ($n = 409$; 61% female and 39% male).

Measures

Daily Hassles Scale-Revised (DHS-R). The original Daily Hassles Scale (DHS) is a 117-item self-report inventory developed by Lazarus and his colleagues to measure everyday sources of stress and annoyance over the past month (DeLongis et al., 1982; Kanner et al., 1981). In its original format the DHS does not permit subjects to endorse the occurrence of an event without also indicating that it was at least somewhat severe. The present study revised the DHS to allow subjects to rate each hassle on the following 6-point scale: 0 = "did not occur"; 1 = "occurred, not severe"; 2 = "occurred, somewhat severe"; 3 = "occurred, moderately severe"; 4 = "occurred, very severe"; 5 = occurred, extremely severe." This revision was made to separate the reported occurrence of a hassle from the individual's appraisal of its severity (Dohrenwend & Shrout, 1985).

Beck Depression Inventory (BDI). The Beck Depression Inventory (BDI) is a 21-item inventory developed to measure the extent of an individual's depressive thoughts and symptomatology (Beck, Rush, Shaw, & Emery, 1979). A recent comprehensive review has supported the BDI's validity and reliability (Beck, Steer, & Garbin, 1988).

Wahler Physical Symptom Checklist (WPSCL). The Wahler Physical Symptom Checklist (WPSCL) is a 42-item inventory designed to assess the level or intensity of somatic complaining. It is intended primarily as a measure of an individual's present status with regard to somatic complaints (Wahler, 1983). Wahler (1983) reports that the WPSCL exhibits good internal consistency and adequate to very good test–retest reliability for periods of up to 3 months. Evidence is also available supporting the concurrent and discriminant validity of the WPSCL (Wahler, 1983).

Procedure

All undergraduates were recruited from psychology courses and received course extra credit for their participation. After providing informed consent, subjects completed the DHS-R in medium-size groups (25–50 subjects). In addition, approximately half of the subjects (those participating in the second year of data collection) also completed the BDI and WPSCL.

All headache subjects were recruited from individuals seeking assistance from the Ohio University Stress and Health Clinic, a university-based headache treatment center. These subjects completed the DHS-R individually, as part of a preassessment psychometric battery. Some of these subjects were enrolled in university classes, while others were from the local community. However, no recurrent headache subject received course extra credit for their participation.

Analytical Procedure

Exploratory hierarchical factor analysis was used to identify a factor structure for the DHS-R. The hierarchical factoring process used in this study allows one to obtain a factor solution with orthogonal factors within and between factor levels (Wherry & Wherry, 1969). Wherry and Wherry's procedure for hierarchical factor analysis has several advantages over other techniques (Blaha, Wallbrown, & Wherry, 1974). First, the solution obtained with this method provides an objective procedure for determining relations among subscales of the DHS-R. Second, Wherry and Wherry's solution maintains orthogonality among factors at all hierarchical levels. Therefore, the proportion of item variance attributable to each factor is readily obtainable. Third, the solution not only shows how the factors are arranged hierarchically but demonstrates the relative importance of factors at the various hierarchical levels. Fourth, the orthogonal solution obtained by this method eliminates the interpretational difficulties one encounters with higher-order factors obtained from oblique solutions.

Confirmatory factor analyses were then performed using the LISREL-VI computer program (Joreskog & Sorbom, 1983) to cross-validate the identified factor structure in two separate samples. Multiple indices were used to evaluate the adequacy of the factor model, as several authors have pointed out potential problems with relying on any one criterion (e.g., Cliff, 1983; Fornell, 1983; Joreskog & Sorbom, 1983; Marsh, Balla, & McDonald, 1988; Marsh & Hocevar, 1985). Assessing the goodness-of-fit of a hierarchical model, however, is especially difficult. At the crux of the problem is the argument that a higher-order factor model can, at best, only explain the interfactor correlations in a more parsimonious way; it can never provide a better fit than the primary factor model on which it is based (Marsh & Hocevar, 1985). Therefore, Marsh and Hocevar (1985) have suggested using an index called the "target coefficient," which is the ratio of the chi-square value of the primary factor model to the chi-square value of the higher-order factor model. This ratio allows the investigator to separate lack of fit in the higher-order structure from that present in the definition of the primary factors. The closer this ratio is to 1.0 the better the fit of the higher-order structure.

Finally, subjects' scores on the DHS-R's primary factors and their scores on the BDI and the WPSCL were used to examine the relationship between hassles and symptoms.[1] First, confirmatory factor analysis was used to compare the fit of a unidimensional model of hassles and symptoms (postulated by Dohrenwend & Shrout, 1985) to that of a bidimensional model (postulated by Lazarus et al., 1985). Second, an exploratory factor analysis of the DHS-R factors, the BDI, and the WPSCL was conducted. Third, the fit of the model identified in this exploratory factor analysis was compared to that of the two models derived from the theoretical work of Dohrenwend and Shrout (1985) and Lazarus and his colleagues (1985).

RESULTS

Preliminary Descriptive Statistics

We examined the range of subjects' scores on each item of the DHS-R to ensure that sufficient variability existed in subjects' responses to the DHS-R for a representative factor structure to emerge. In each sample, over 90% of the items had at least 5% of the subjects indicating they had experienced them. Furthermore, for every item at least some subjects endorsed each of the possible responses (i.e., all items had ranges from 0 to 5). These findings suggested to us that sufficient variability existed to identify a representative factor structure.

We also examined the range of scores for the BDI and WPSCL to determine whether our subjects were sufficiently symptomatic to provide an adequate test of whether the DHS-R was confounded with symptomatology. We found that 10% of our sample could be described as at least moderately depressed (BDI > 20), while 20% also scored at or above the 90th percentile on the WPSCL. Thus, we believe that this sample has an adequate representation of moderately to severely distressed individuals and can therefore be used to address the issue of confounding between the DHS-R and the symptom measures.

Factor Structure of Daily Hassles Scale-Revised

A principal components analysis was conducted on the DHS-R using data from the initial sample (N = 923) of college students. The Kaiser-Guttman latent root procedure (Kaiser's criterion) and Cattell's scree test indicated the presence of seven interpretable factors (Gorsuch, 1983).

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[1]Factor-based scores were obtained by summing the subject's score for each item on a factor. A 0 indicated that the subject had not experienced the hassle, while responses 1 through 5 indicated that the subject had experienced the hassle; a 1 indicated that the subject considered the hassle "not severe at all," a 2 "somewhat severe," a 3 "moderately severe," a 4 "very severe," and a 5 "extremely severe."

Common factor analysis was then performed, and the structure was rotated to an oblique solution as it best approximated simple structure.

Examination of the rotated factors showed that 63 of the original 117 DHS-R items were represented (items not loading at or above .30 on at least one factor were eliminated). Table 1 shows the seven factors, the items that load on each factor, and each factor's internal reliability.

Because oblique rotation was used to arrive at the above structure, correlations existed between pairs of our seven factors (interfactor correlations ranged from .05 to .37). We explored the possibility that these interfactor correlations might be explained by a higher-order factor(s). Wherry and Wherry's (1969) hierarchical factor analytic program indicated that there were two second-order factors with eigenvalues greater than 1.0. Moreover, these two factors appeared conceptually meaningful. Examination of this hierarchical structure suggested that the DHS-R items clustered around two higher-order dimensions: covert, private experiences, and overt, public events.[2]

The covert hassles factor included all 42 DHS-R items that had loaded on the following primary factors: inner concerns, time pressures, and health hassles. This higher-order dimension contained mostly those items that pertained to internal events or experiences (e.g., "regrets over past decisions" and "being lonely"). This higher-order factor demonstrated good internal reliability (Cronbach's alpha = .88).

The overt hassles factor included all but one of the 21 DHS-R items that had loaded on the following primary factors: environmental hassles, financial concerns, work hassles, and family hassles. This second higher-order dimension consisted of those items that seem to assess public experiences — events that often can be verified by observers. This higher-order factor also had satisfactory internal consistency (coefficient alpha = .80).

Cross-Validation of the DHS-R Factor Structure

To cross-validate the primary and hierarchical factor models, confirmatory factor analyses were conducted with two additional subject samples: (a) a college student sample ($N = 823$) and (b) a sample of recurrent headache sufferers that included community adults ($N = 259$).

College Student Sample. Confirmatory factor analysis was first used in an attempt to cross-validate the seven-factor model (i.e., only the primary factors). The chi-square goodness-of-fit statistic suggested that there was variance in this data set that could not be accounted for by the model

[2]It is important to note that the hierarchical factor-analytic procedure used in this study results in a final solution that establishes orthogonality among all factors at all factor levels (Blaha, et al., 1974; Wherry, 1984). Therefore, the final hierarchical solution contains both uncorrelated primary and higher-order factors and hence facilitates interpretation of the DHS-R's structure.

TABLE 1
The Daily Hassles Scale: Factor Pattern Loadings and Internal Reliabilities

First-Order Factors	Factor Loadings	Alpha
Inner concerns		.83
Concerns about inner conflicts	.58	
Feels conflicted over what to do	.54	
Regrets over past decisions	.51	
Concerned about the meaning of life	.50	
Being lonely	.50	
Inability to express oneself	.49	
Fear of rejection	.47	
Trouble making decisions	.43	
Physical appearance	.40	
Not seeing enough people	.38	
Troubling thoughts about one's future	.36	
Not enough personal energy	.36	
Concerns about getting ahead	.33	
Fear of confrontation	.32	
Wasting time	.31	
Financial concerns		.81
Not enough money for basic necessities	.75	
Not enough money for clothing	.65	
Not enough money for housing	.61	
Not enough money for entertainment and recreation	.59	
Concerns about owing money	.59	
Not enough money for food	.56	
Not enough money for transportation	.55	
Concerns about money for emergencies	.53	
Financial security	.49	
Not enough money for health care	.44	
Concerns about getting credit	.39	
Time pressures		.81
Too many things to do	.75	
Not enough time to do the things one needs to do	.68	
Too many responsibilities	.59	
Not getting enough sleep	.53	
Not getting enough rest	.52	
Too many interruptions	.46	
Not enough time for entertainment and recreation	.37	
Too many meetings	.35	
Social obligations	.32	
Concerns about meeting high standards	.32	
Noise	.30	
Work hassles		.65
Job dissatisfaction	.78	
Hassles from boss or supervisor	.68	
Don't like current work duties	.57	
Don't like fellow workers	.52	
Worries about decisions to change jobs	.52	
Customers or clients giving you a hard time	.51	
Problems getting along with fellow workers	.44	
Problems on job due to being a man or woman	.41	
Problems with employees	.40	

(Table 1 continued on next page)

Table 1 continued

Environmental hassles		.57
Pollution	.59	
Crime	.59	
Traffic	.56	
Concerns about news events	.42	
Rising prices of common goods	.37	
Concerns about accidents	.35	
Family hassles		.59
Problems with one's children	.50	
Yardwork or outside home maintenance	.43	
Financing children's education	.41	
Property, investments, or taxes	.36	
Overloaded with family responsibilities	.33	
Home maintenance (inside)	.31	
Health hassles		.64
Concerns about medical treatment	.71	
Physical illness	.61	
Side effects of medication	.52	
Concerns about health in general	.47	
Concerns about bodily functions	.34	

[χ^2 (1748) = 4552, $p < .01$]. It is widely acknowledged, however, that significant chi-square values can be obtained even when the discrepancy between the model and the data is trivial (Marsh & Hocevar, 1985). Therefore, additional indicators of overall fit were examined.

Although interpreting the χ^2/df ratio is complicated by its unknown statistical distribution, the value obtained in this analysis (χ^2/df = 2.6) was within the range of acceptable values suggested in the literature. Marsh and Hocevar (1985) report that investigators have set acceptable χ^2/df upper limits as low as 2.0 and as high as 5.0. In general, the lower the χ^2/df value the better. However, the range in acceptable values is due, in part, to the fact that the χ^2/df ratio can vary with sample size (Marsh et al., 1988); larger χ^2/df values become more acceptable in larger samples. In this sample ($N = 826$), a χ^2/df of 2.6 seems acceptable.

The statistical distribution of the Goodness-of-fit index (GFI) is also unknown, but it does provide an index of the relative amount of variances and covariances jointly accounted for by the model. The GFI of .85 for this analysis indicated that approximately 85% of the variances and covariances were accounted for by this seven-factor model. Given the large number of variances and covariances the model must attempt to replicate, the GFI of .85 seems adequate. Further evidence in support of the seven-factor model was obtained by examining the factor loadings and standard errors of the model's parameters. The factor loadings were generally moderate to high (lowest was 0.25) and all were significantly different from zero (t-values ranged from 4.47 to 15.56). In addition, the standard error estimates were generally quite low (range, .003–.211, $M = .08$). The above indices suggest that, although the hypothesized model does not reproduce the observed relationships in this data set perfectly, it does appear to provide an adequate explanation of the relationships among the items.

We next tested the fit of the hierarchical factor model. In this model the seven primary factors were not permitted to correlate as the higher-order factors were hypothesized to account for their intercorrelations. The two higher-order factors were also not allowed to correlate in accordance with the hierarchical model's orthogonal rotation.

The chi-square goodness-of-fit measure suggested that the hierarchical model did not sufficiently explain the observed covariances [χ^2 (1762) = 4833, $p < .05$]. The χ^2/df ratio, however, again appeared to be acceptable given the large sample (χ^2/df ratio = 2.74). The GFI indicated that the hierarchical model accounted for a substantial proportion of the variances and covariances (GFI = .84). Moreover, examination of the target coefficient (T), suggested by Marsh and Hocevar (1985) as the most appropriate index of the adequacy of hierarchical models, revealed that this model appears to provide a parsimonious explanation of the relationships among the seven primary DHS-R factors ($T = .94$). Further evidence of the adequacy of the hierarchical model was provided by the estimated factor loadings and standard errors obtained from the LISREL-VI program. The factor loadings were generally moderate to high (lowest estimated factor loading was .31) and all were statistically significant (t-values ranged from 2.86 to 19.86). Furthermore, the standard errors of the model parameters were generally low (range, .019–.28, mean = .08).

Recurrent Headache Sample. The chi-square goodness-of-fit statistic suggested that there was variance in this data set that was not accounted for by the 7-factor model [χ^2 (1748) = 3078, $p < .01$]. In addition, the GFI indicated that this model only accounted for approximately 73% of the variances and covariances (GFI = .73), suggesting a worse fit in this sample of headache patients than the previous college student sample. The χ^2/df ratio, however, was well within acceptable limits (χ^2/df ratio = 1.76). However, the smaller number obtained in this analysis is difficult to compare to that obtained with the college student sample because of differences in sample size.

Examination of the model's estimated factor loadings and standard errors generally supported the model's fit. All factor loadings were statistically significant (t-values ranged from 5.44 to 11.67) and were generally moderate to high (all loadings were .39 or higher except three items from the work factor, which were between .20 and .30). The standard errors were also generally low to moderate (range, .036–.28, mean = .08) with the exception of those for the unique variances (range, .031–.236, mean = .14).

These latter estimates suggest that the model may not adequately explain the unique item variance in the headache sample.

We next examined the fit of the hierarchical factor model in this data set. The chi-square goodness-of-fit measure indicated that the hierarchical model did not completely account for the observed variances/covariances [χ^2 (1762) = 3219, $p < .05$]. However, the χ^2/df ratio (1.26) was again acceptable. The GFI for the hierarchical factor model was only slightly lower than for the primary factor model (GFI = .72). The t-values of the estimated model parameters were all significant (2.17 to 11.86), the standard errors were relatively low to moderate (range, .038–.24, mean = .10), and the factor loadings were all quite high (lowest estimated factor loading = .42). Finally, as with the college student sample, the target coefficient (T = .97) indicated that the higher-order factors provided a parsimonious explanation for the interrelationships among the seven primary factors. In sum, these indices suggested that the hierarchical model fit the data virtually as well as the primary model.

The DHS-R and Measures of Symptomatology

LISREL was used to test models specifying different relationships between the DHS-R and reported psychological and somatic symptoms. First, data obtained from one subsample (n = 512) were used to compare two models. One was derived from Dohrenwend and Shrout's (1985) argument that the DHS is confounded with self-report symptom inventories. Another reflected Lazarus et al.'s (1985) contention that the DHS does not confound the assessment of hassles with that of psychological or somatic symptoms. After comparing these two models, we conducted an exploratory factor analysis to obtain an empirical description of the relationships between the DHS-R, the BDI, and the WPSCL. Finally, a second subsample (n = 409) was obtained to compare this empirically-derived model to the two models described above.

Hassles and Symptoms: Comparing Two Models. The model derived from Dohrenwend and Shrout's (1985) position specified that the seven hassles factors, the BDI, and the WPSCL assess similar things and thus would load on the same factor. The chi-square goodness-of-fit statistic suggested that there was variance in this data set that could not be accounted for by the model [χ^2 (27) = 121.6, $p < .05$]. The χ^2/df ratio was relatively high given the sample size (χ^2/df = 4.50), and thus also suggested that the model was

[3]Comparing the GFI in this and the following analyses to those in the preceding analyses can be misleading because of differences in the number of parameters being estimated. In the previous cross-validation analyses the models were attempting to reproduce the variance/covariance matrix for the 63 DHS-R items (i.e., 2,016 parameters), while in this and the following analyses the models only have to reproduce the variance/covariance matrix for nine variables (i.e., 45 parameters).

inadequate. The GFI, however, suggested that the model is not grossly misdefined (GFI = .94).[3] It appears that although this unidimensional model accounts for a large proportion of the observed variances and covariances, it still has significant specification errors. In addition, the coefficient of determination (.76) indicates that the hassles factors, BDI, and WPSCL may not be uniformly reliable instruments of a single construct.

The model derived from Lazarus et al.'s (1985) claims specified that the seven hassles factors assess something different from the two symptom measures. The chi-square goodness-of-fit statistic indicated that there was variance in the data set that could not be accounted for by the model [χ^2 (26) = 91.3, $p < .05$]. However, the significant reduction in the chi-square statistic suggests that this bidimensional model provided a significantly better fit than the unidimensional model [χ^2 difference test (1) = 30, $p <$ 0.001]. The GFI also suggested that this model provided a comparable fit to the unidimensional model (GFI = .95). However, the χ^2/df ratio (3.51) remained relatively high, suggesting the continued presence of parameter definition problems. It appears that neither this model nor the unidimensional model perfectly reproduces the observed variance/covariance matrix; this model does, however, seem to provide the better explanation of the relationships between the hassles factors and the symptom measures. The coefficient of determination for this model (.87) supports this contention by revealing that the observed variables are relatively reliable indicators of their respective factors.

Hassles and Symptoms: Identifying a New Model. A principal components analysis was conducted, and Kaiser's criterion and Cattell's scree test indicated the presence of two interpretable factors. Common factor analysis was then performed, and the factor structure was rotated to an oblique solution (the correlation between the two factors was .53). Variables (DHS-R factor scores and symptom scores) were placed on the factor on which they loaded at or above the .30 level. Using this criterion, all but one variable (the DHS-R factor: inner concerns) fell on a single factor.

The first factor, labeled Daily Stress, included all seven of the DHS-R factors. This dimension appeared to represent the DHS-R, relatively free from the variance associated with the two symptom inventories (BDI and WPSCL). The seven hassles factors had factor pattern loadings ranging from .37 to .69.

The second factor appeared to reflect a symptoms/distress dimension. It had significant correlations with the BDI and the WPSCL as well as the inner concerns factor from the DHS-R. The highest loading variable was the BDI at .75 and the lowest was the inner concerns factor at .34.

Hassles and Symptoms: Comparing Three Models. The second subject subsample (n = 409) was then used to compare the model identified in the above exploratory analysis to the unidimensional and bidimensional models tested previously.

Unidimensional Model (Dohrenwend & Shrout, 1985). The chi-square goodness- of-fit statistic suggested there is a significant discrepancy between the model and the observed covariance matrix [χ^2 (27) = 78.2, $p < .05$]. Given the sample size ($n = 409$), the χ^2/df ratio appeared a little high ($\chi^2/df = 2.90$), also suggesting some inadequacies in this model. The coefficient of determination was relatively low at .79, raising questions concerning the homogeneity of the observed variables. The GFI, however, indicated that the model does account for a large proportion of the observed variances and covariances (GFI = .97)

Bidimensional Model (Lazarus et al., 1985). The chi-square goodness-of-fit statistic suggested problems with this model's fit [χ^2 (26) = 67.4, $p < .05$]. The GFI (.97), however, indicated that this model does account for a large proportion of the observed variances and covariances. Further, the coefficient of determination revealed that the observed variables were relatively reliable indicators of the two factors (coefficient of determination = .85). In addition, the χ^2/df ratio (2.59), though not exceptional given the sample size, did indicate that this model fits the data better than the unidimensional model. Finally, the chi-square difference test indicated that this bidimensional model provided a better fit than the unidimensional model [χ^2 (1) = 10.8 $p < .05$].

Modified Bidimensional Model (exploratory analysis). The chi-square goodness-of-fit statistic indicated a significant discrepancy between the postulated model and the observed covariance matrix [χ^2 (25) = 56.2, $p < .05$]. However, the other three indices of overall fit were somewhat more favorable. Given the sample size, the χ^2/df ratio of 2.25 appeared to be within or approaching the acceptable range. The GFI indicated that this model accounted for a large proportion of the observed variances and covariances (GFI = .98), and the coefficient of determination (.87) revealed that the observed variables were homogeneous and reliable measures of the two factors. Moreover, the significant chi-square difference test indicated that this model did provide a significantly better fit than the bidimensional model [χ^2 (1) = 11.2, $p < .05$].

Despite structural similarities among the three models, the evidence suggests that the modified bidimensional model, identified initially in the exploratory factor analysis, provided the most accurate specification of the relationship between the DHS-R, the BDI, and the WPSCL.

DISCUSSION

The hierarchical factor structure identified and cross-validated in this study indicates that the DHS-R may be usefully conceptualized on two levels: (a) one level in which hassles from specific life domains such as work or family occur together, possibly as a result of being associated with the same or similar antecedents, and (b) a second, broad-band level transcending more narrow life domains in which hassles appear to cohere as either covert, personal experiences or overt, public events. Effective use of these two complimentary methods of grouping daily hassles may help improve our understanding of the stress–distress relationship.

The seven narrow-band factors appear to represent hassles that share a particular topography and possibly similar antecedents.[4] For example, a high score on the factor comprised of work-related hassles suggests that not only is our subject or client experiencing a large number of hassles at work, but that these work-related hassles may be a function of the same or similar antecedents; a functional analysis of stress-creating antecedents in the workplace may be in order. Thus, a narrow-band approach to the DHS-R, such as suggested by our seven primary factors, seems to assist the fine-grained description necessary in behavioral assessment.

This narrow-band grouping of hassles may also be useful in furthering our understanding of the relationship between stress and symptoms. By facilitating the assessment of specific stressors both within and across life domains, these narrow-band groupings may assist in identifying particular stimuli serving as antecedents to the development or exacerbation of specific disorders. For example, it has been suggested (e.g., Barrett, 1979; Brown & Harris, 1978; Lloyd, 1980) that our understanding of the relationship between stressful events and symptoms might be improved if we could identify specific events that were likely to be associated with different types of problems. Narrow-band factors grouping hassles by topography and possibly by the same or similar antecedents should permit the formulation of more precise hypotheses about the relationship between perceived stress and specific disorders.

Alternatively, the broad-band approach to the DHS-R seems to cut across life domains, topography, and even similar antecedents appearing instead to distinguish between overt, public events and covert, private

[4]It might be argued that the likert response scaling used with the DHS-R (see Method) represents a hybrid scale that combines occurrence/nonoccurrence with severity and makes it difficult to interpret the factors because they may reflect items that covary by occurrence or by severity/intensity. Nonetheless, we believe that examining the content of our factors clarifies this issue by showing that the seven primary factors are most easily and accurately interpreted as reflecting occurrence/nonoccurrence rather than severity. Additional support for this opinion is provided by the results of an alternate factor analysis that, after recoding the DHS-R items into "not occurred" and "occurred," arrived at essentially the same factor structure as the one described in this article. Of the 63 items included in the factor structure described in this article, 59 were also present in the factor structure of the alternate analysis. Therefore, the factor structure described in this article included only five unique items, while the alternate analysis had only seven unique items.

experiences. One interpretation of these factors is that the overt higher-order factor represents those hassles that, as external stimuli, can serve as environmental antecedents of the human stress response, while the covert higher-order factor represents those hassles that, as private experiences, may in fact be consequences of the above-mentioned antecedents. However, an interpretation consistent with the transactional definition of stress underlying the development of the original DHS would make little distinction between overt and covert hassles, instead viewing both as possible antecedents of the stress response.

These two interpretations of the broad-band factor structure highlight a major controversy surrounding the original Daily Hassles Scale: whether overt, public events should be separated from covert, private experiences (Dohrenwend & Shrout; 1985; Lazarus et al., 1985). Although both Dohrenwend and Lazarus have presented well-developed theoretical arguments for their respective positions, few data pertain to this issue. Clearly, the two broad-based factors identified in this study could facilitate the resolution of this controversy by providing an empirical means of measuring these two types of stimuli: external, overt events and internal, covert experiences.

Our findings also indicate that, in general, the DHS-R is not confounded with the measurement of symptoms, as assessed by the BDI and WPSCL. Two factors were identified: one reflecting the DHS-R and another reflecting somatic and psychological symptoms. Two conspicuous instances of overlap merit attention, however.

First, although two separate factors were identified, an oblique rotation was used resulting in an interfactor correlation of .53. It is feasible to suggest that because of this interfactor correlation the two factors reflect confounded constructs; however, by no means is this the only interpretation for the presence of a strong intercorrelation between the two factors. For example, most investigators in the stress field would likely consider a significant correlation between stress and symptoms to be theoretically reasonable and, in fact, desirable. If we are to examine models postulating bidirectional relationships between stress and disease we must develop methodologies for dealing with the fact that any measures accurately assessing this relationship are likely to be interrelated.

Second, one of the DHS-R's primary factors (inner concerns) loads on both the factor reflecting other DHS-R subscales and the factor reflecting the symptom inventories. Closer scrutiny reveals that many of this factor's items focus on covert states, reactions, and/or experiences, and as such are similar to items comprising many measures of psychopathology. This item overlap may, at least partially, account for the inner concerns factor's relationship to the factor reflecting the symptom inventories. Although this hassles factor also loaded on the same factor as the other DHS-R subscales, its loading on the symptom factor clearly indicates that, for the time being, using the inner concerns factor to predict the development and/or exacerbation of symptoms can only lead to confusing and ambiguous results.

Our findings concerning the structure of the DHS-R must be considered with some caution because of limitations of our subject sample. Subjects were primarily young, single, college students and the extent to which our findings generalize to other populations is largely undetermined. It should be noted, however, that: (a) the identified factor structure appeared to explain relationships among the DHS-R items adequately within a community headache patient sample, and (b) the primary hassles factors were quite similar to those factors reported in two other studies (DeLongis, 1985; Lazarus et al., 1985) using community adults and different versions of the Daily Hassles Scale. Our findings regarding the relationship between hassles and symptoms must also be considered tentative because of the use of only two self-report symptom inventories. Recent evidence, however, suggests that self-report symptom measures may assess a unitary construct that might be described as psychological distress (Depue & Monroe, 1986; Gotlib, 1984). Hence, this concern may not greatly limit our conclusions.

In summary, this study's findings suggest that a hierarchical factor structure consisting of seven primary and two higher-order factors provides a unique and useful framework for conceptualizing the DHS-R. This framework permits two potentially useful approaches to grouping and, therefore, studying hassles (broad-band and narrow-band factors). We believe that these two approaches are complimentary; each approach has the potential for addressing different questions in the study of stress and symptoms. It seems that these two approaches to grouping hassles represent a step toward the precision necessary to improve our understanding of the complex relationships between stress and symptom development.

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RECEIVED: 24 JANUARY 1991 FINAL ACCEPTANCE: 9 SEPTEMBER 1992