

Validation of the Integration of Stressful Life Experiences Scale–Short Form in a Bereaved Sample

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The Integration of Stressful Life Experiences Scale (ISLES) is an assessment of meaning made of stress that has been used successfully with bereaved individuals and other vulnerable populations. Drawing upon information from 741 bereaved respondents, the present study tests the validity of the ISLES–Short Form (ISLES-SF), which is a 6-item version of the original 16-item measure. Tests of concurrent and incremental validity yielded highly similar patterns of results for the full ISLES and ISLES-SF, supporting the use of this briefer version of the scale. Results also highlighted the unique association (controlling for demographics, circumstances of the death, and prolonged grief symptoms) between greater meaning made of loss and higher levels of mental and physical health. These findings add to a growing body of literature that supports theoretical models that view meaning-making as a crucial determinant of adjustment to loss among many grievers.

Meaning making is often a key aspect of adjustment following bereavement and other stressful events (for reviews, see Davis, Wortman, Lehman, & Silver, 2000; Gillies & Neimeyer, 2006; Neimeyer & Sands, 2011). According to Neimeyer (2006), losing a loved one can present a problematic “micro-narrative” that is difficult to integrate into one’s life story or overarching self-narrative. Park (2010) similarly suggested that experiences of loss and/or stress in general can violate dimensions of global meaning that allow for a needed sense of cohesiveness and purpose in life (e.g., core beliefs, values). Research has demonstrated that bereavement in particular can precipitate a protracted search for meaning in these instances that are frequently

associated with psychological distress (Coleman & Neimeyer, 2010). Cross-sectional studies with bereaved parents (Keese, Currier, & Neimeyer, 2008) and more diverse samples (Currier, Holland, & Neimeyer, 2006) also found that an inability to make sense of loss was uniquely correlated with the types of grief reactions that have been linked with a range of mental and physical health problems (i.e., now termed *prolonged grief*; see Prigerson & Jacobs, 2001, for a review). When controlling for preloss levels of distress, Davis, Nolen-Hoeksema, and Larson (1998) also found that a possible lack of resolution for meaning violations (i.e., lower sense made of one’s loss) was predictive of greater distress symptomatology at 6 months postloss in another mixed group of grievers.

These results support the recent proliferation of interest in meaning making. However, in many ways theory has outpaced empirical research, and measurement concerns have particularly limited the knowledge base.

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Namely, until recently the meaning made of stress was primarily assessed using in depth qualitative analyses with small groups or with single, face valid items inserted into longer quantitative questionnaires. Drawing on available theory and research, Holland, Currier, Coleman, and Neimeyer (2010) therefore developed the Integration of Stressful Experiences Scale (ISLES) to provide a multidimensional instrument for assessing the degree to which a salient life stressor has been adaptively incorporated into one's global meaning system. Although the full ISLES has shown many psychometric strengths and emerged as a robust predictor of mental and physical health (Currier et al., 2013; Holland, Currier, Coleman, & Neimeyer, 2010; Lichtenthal, Burke & Neimeyer, 2011), there are a number of reasons to support the development of a short form. For example, in situations in which participants' time is limited or when completing the 16-item scale requires too much mental and/or physical effort, a short form could provide a viable alternative. In addition, developing a briefer tool for assessing meaning made of stress will allow researchers to attend to other dimensions of meaning making in their studies. Doing so would address the call for investigators of relevant models to capture multiple aspects of meaning making in their research, rather than just the outcome or product of the process (Park, 2010). We therefore conducted this study to create a short form of the ISLES that might reduce the number of items while still preserving the favorable properties of the full-length instrument and to assess the incremental validity of both versions in predicting deleterious outcomes in bereavement.

METHODS

Participants and Procedure

Following institutional review and approval of the project, 741 bereaved participants who lost a loved one in the past 2 years were recruited from introductory psychology courses at a large southern research university. Participants completed surveys using an online system sponsored by the institution's psychology department, and they provided demographic information, information about their loss, and also completed the ISLES as well as other measures used to establish concurrent validity.

On average, participants were 21.7 years old ($SD = 6.1$), and 79.6% were women. Most had experienced the loss of an extended family member or friend (86.6%) due to natural causes (71.8%). The sample was racially/ethnically diverse, with 54.8% of individuals identifying as a member of a racial/ethnic minority group.

Measures

Participants completed the ISLES, which is an assessment of meaning made of stress, and were instructed to respond to this measure with regard to the loss of their loved one. The ISLES yields two subscales: Comprehensibility gauges one's ability to make sense of a stressor (e.g., "I have made sense of this event"), and Footing in the World assesses the extent to which one's worldviews (e.g., goals, sense of purpose/direction, values, belongingness) have (or have not) been disturbed (e.g., "My beliefs and values are less clear since this event"). Higher scores indicate more adaptive meaning made of a loss. The overall measure and both subscales have good internal consistency, test-retest reliability, and convergent validity with scales of psychiatric and bereavement distress. Additional psychometric details on the ISLES have been provided elsewhere (Holland et al., 2010).

Two measures were used to gauge concurrent and incremental validity in the current study. The Inventory of Complicated Grief-Revised (ICG-R) is a 30-item measure rated on a 5-point scale, ranging from 1 (*never*) to 5 (*always*), that gauges severe and prolonged grief reactions (Prigerson & Jacobs, 2001). The ICG-R has displayed high internal consistency ($\alpha = .94$), concurrent validity with another grief measure ($r = .71$), and good test-retest reliability across about a 2-week interval ($r = .92$; Boelen, van den Bout, de Keijser, & Hoijtink, 2003).

The Short Form-36 (SF-36) Health Survey is a well-validated questionnaire with eight subscales of physical and mental health (Ware, Kosinski, & Gandek, 2000). The SF-36 scales have been shown to have strong internal consistency in a number of past studies (with α s generally hovering around .8). Furthermore, predictive studies of validity have linked the SF-36 scales to important outcomes such as use of health care services, depression, loss of employment, and mortality (see Ware, 2004, for a review). These scales include four indices of physical health, including physical functioning (i.e., ability to carry out specific tasks), physical role functioning (i.e., ability to play important roles considering one's physical health), bodily pain (i.e., pain in the body and its impact on daily activities), and general health (i.e., overall subjective sense of health). The four mental health indices include mental health (e.g., general sense of psychological well-being; lack of depression/anxiety), emotional role functioning (i.e., ability to play important roles considering one's emotional state), social functioning (i.e., ability to engage in social activities and meaningful relationships), and vitality (i.e., subjective energy level). Higher scores on all eight scales are indicative of better health.

Plan of Analysis

Confirmatory factor analysis (CFA) was performed to test the extent to which the previously supported two-factor model for the ISLES (Holland et al., 2010) fit the data in the present sample. The three items with the highest factor loadings on the Comprehensibility and Footing in the World factors were retained to create the six-item ISLES-SF. In evaluating the overall fit of the CFA model, we relied upon a variety of fit indices, including the χ^2 goodness-of-fit test, comparative fit index (CFI; Bentler, 1990), standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993). CFI values $>.90$ and SRMR values $<.10$ are generally regarded as favorable (Hu & Bentler, 1999; Kline, 2005). Likewise, RMSEA values $\leq .05$ are considered close approximate fit, values between $.05$ and $.08$ suggest reasonable fit, and values $\geq .10$ are indicative of poor model fit (Browne & Cudeck, 1993). Parameters were estimated using a maximum likelihood robust procedure, which is robust even in the face of nonnormality.

A series of univariate analyses were performed as a way of initially assessing the concurrent validity of ISLES, ISLES-SF, and its subscale scores (as full versions and short forms). In particular, we examined correlations with demographic factors, including age, gender (coded as 0 = men, 1 = women), race/ethnicity (coded as 0 = Caucasian, 1 = racial/ethnic minority), and the highest level of education attained in one's family of origin. Other variables included cause of death (coded as 0 = natural/other causes, 1 = violent causes), relationship to the deceased (coded as 0 = extended family/friends, 1 = immediate family), prolonged grief symptoms, and mental and physical health (as assessed by the SF-36 scales). These associations were tested with Pearson correlations. Beyond testing these bivariate associations, the unique effects of meaning made were then assessed by examining multivariate associations between participants' meaning made of their loss and the SF-36 scales, after accounting for demographic factors, relationship to the deceased, cause of death, and prolonged grief symptoms. In the first step of each analysis, these control variables were entered in the statistical model. We then entered scores on the ISLES in a second step. These analyses were also repeated with the ISLES-SF to examine the congruence between results obtained with the full scale versus the short form. All analyses were performed in MPlus, Version 6.1 (Muthén & Muthén, 1998–2010), and missing data were handled using multiple imputation.

RESULTS

We first tested the previously validated two-factor model of the ISLES, with five items loading on a Comprehensibility

factor and 11 items loading on a Footing in the World Factor (Holland et al., 2010). This model was found to fit the data well— $\chi^2(103) = 384.564$, $p < .001$; CFI = .935; .935; SRMR = .059; RMSEA = .061—and all factor loadings were statistically significant at the $p < .001$ level. In constructing the ISLES-SF, the three highest loading items on each of the two factors were selected, which included Items 4, 6, and 8 for Comprehensibility and Items 9, 12, and 14 for Footing in the World (as numbered in the original ISLES; Holland et al., 2010). Notably, these items have also displayed particularly high factor loadings in previous factor analytic investigations of the ISLES as well (Currier et al., in press; Holland et al., 2010).

Total scores for the ISLES, ISLES-SF, and its subscales (as full and short forms) were created by summing the corresponding items for each, and the full and short forms correlated highly for Comprehensibility ($r = .932$, $p < .001$), Footing in the World ($r = .925$, $p < .001$), and the total ISLES ($r = .951$, $p < .001$). As shown in Table 1, bivariate correlations revealed that higher scores on the ISLES, ISLES-SF, and ISLES subscales (including full and short forms) were all significantly associated with older age, loss of an extended family member or friend, loss of a loved one due to natural causes, fewer prolonged grief symptoms, and greater mental/physical health (as assessed by the SF-36 scales). All results that were found to be statistically significant for the full ISLES and its subscales were also significant for the short forms of these scales, indicating that little information was lost when using the briefer version of the scale. Though not a central focus of the present investigation, it should also be noted that women tended to score significantly lower on the Comprehensibility subscale, even when examined in a shorter form.

Incremental validity was tested for the ISLES and ISLES-SF in several multiple regression analyses that controlled for age, gender, ethnicity, highest level of education in one's family, relationship to the deceased, cause of death, and prolonged grief symptoms. SF-36 scales served as the dependent variables. These analyses showed that after controlling for these variables, ISLES and ISLES-SF scores significantly predicted bodily pain (ISLES: $\Delta R^2 = .007$, $\beta = .122$, $p = .024$; ISLES-SF: $\Delta R^2 = .008$, $\beta = .125$, $p = .017$), general health (ISLES: $\Delta R^2 = .019$, $\beta = .212$, $p < .001$; ISLES-SF: $\Delta R^2 = .018$, $\beta = .197$, $p < .001$), mental health (ISLES: $\Delta R^2 = .042$, $\beta = .307$, $p < .001$; ISLES-SF: $\Delta R^2 = .037$, $\beta = .279$, $p < .001$), emotional role functioning (ISLES: $\Delta R^2 = .019$, $\beta = .205$, $p < .001$; ISLES-SF: $\Delta R^2 = .017$, $\beta = .183$, $p < .001$), social role functioning (ISLES: $\Delta R^2 = .013$, $\beta = .174$, $p = .001$; ISLES-SF: $\Delta R^2 = .015$, $\beta = .179$, $p < .001$), and vitality (ISLES: $\Delta R^2 = .022$, $\beta = .222$, $p < .001$; ISLES-SF: $\Delta R^2 = .017$, $\beta = .188$, $p < .001$). However, neither ISLES nor ISLES-SF scores

TABLE 1
Bivariate Correlations With ISLES, ISLES-SF, and ISLES Subscales (N = 741)

Variable	ISLES	ISLES-SF	C	C-SF	FW	FW-SF
Age	.148***	.158***	.185***	.175***	.117**	.100**
Gender	-.042	-.081*	-.133***	-.174***	.004	.030
Race/ethnicity	-.026	-.023	.000	.008	-.036	-.051
Family education	.058	.038	.039	.030	.062	.038
Relationship to the deceased	-.249***	-.212***	-.180***	-.157***	-.257***	-.215***
Cause of death	-.238***	-.261***	-.328***	-.331***	-.174***	-.124***
Prolonged grief symptoms	-.733***	-.704***	-.617***	-.584***	-.715***	-.652***
SF-36: Physical Functioning	.156***	.158***	.150***	.135***	.144***	.142***
SF-36: Physical Role Functioning	.225***	.228***	.175***	.174***	.227***	.227***
SF-36: Bodily Pain	.184***	.183***	.139***	.125***	.187***	.199***
SF-36: General Health	.264***	.263***	.256***	.230***	.243***	.230***
SF-36: Mental Health	.415***	.402***	.360***	.330***	.400***	.376***
SF-36: Emotional Role Functioning	.319***	.310***	.282***	.263***	.306***	.282***
SF-36: Social Role Functioning	.315***	.311***	.267***	.264***	.306***	.283***
SF-36: Vitality	.283***	.276***	.286***	.270***	.255***	.216***

Note: ISLES = Integration of Stressful Life Experiences Scale; SF = Short Form; C = Comprehensibility; FW = Footing in the World. Gender, race/ethnicity, relationship to the deceased, and cause of death were dichotomous variables, coded as 0 = men and 1 = women, 0 = Caucasian and 1 = racial/ethnic minority, 0 = extended family/friend and 1 = immediate family, and 0 = natural/other causes and 1 = violent causes, respectively.

* $p < .05$. ** $p < .01$. *** $p < .001$.

reached statistical significance when predicting physical functioning on the SF-36 (ISLES: $\Delta R^2 = .002$, $\beta = .070$, $p = .197$; ISLES-SF: $\Delta R^2 = .003$, $\beta = .081$, $p = .119$) or physical role functioning (ISLES: $\Delta R^2 = .003$, $\beta = .076$, $p = .168$; ISLES-SF: $\Delta R^2 = .005$, $\beta = .097$, $p = .057$).

DISCUSSION

Overall, these results provide support for the use of the ISLES-SF, and it appears that similar patterns of results can be obtained when using this shorter version, compared to the full version of the measure. These findings also add to a growing body of literature showing that the ISLES is uniquely associated with important outcomes even after controlling for potential confounds. In particular, higher scores on the ISLES and ISLES-SF were found to be uniquely associated with mental and physical health outcomes, including bodily pain, general health, mental health, emotional role functioning, social functioning, and vitality. However, after controlling for demographic factors, relationship to the deceased, cause of death, and prolonged grief symptoms, the unique associations between the ISLES and physical functioning, as well as between the ISLES and physical role functioning, did not reach statistical significance.

Of course, different patterns of results may be obtained with older individuals who are experiencing greater health problems, as this study was limited by its reliance on primarily young adult participants. In addition, these results indicate that older individuals in the sample may tend to report higher levels of meaning

made of loss, which also points to the possibility that developmental considerations and life experience may play an important role in these processes. Other notable limitations of this study include its cross-sectional design and inability to establish causality or temporal relations, inclusion of a relatively small proportion of individuals who experienced the loss of an immediate family member, and exclusive reliance on self-report measures.

Notwithstanding these limitations, these results offer initial psychometric support for the ISLES-SF as well as providing evidence for the unique link between meaning made of loss and physical/mental health functioning. If replicated in longitudinal research with more diverse samples, these findings could have implications for theoretical models that view meaning made of stress as a crucial determinant of adjustment following difficult life events among many persons.

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APPENDIX: INTEGRATION OF STRESSFUL LIFE EXPERIENCES SCALE–SHORT FORM

Please indicate the extent to which you agree or disagree with the following statements with regard to (the loss of your loved one). Read each statement carefully and please note that for these statements, a response of 1 indicates that you “strongly agree” and a response of 5 indicates that you “strongly disagree.”

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. I have difficulty integrating this event into my understanding about the world.	1	2	3	4	5
2. This event is incomprehensible to me.	1	2	3	4	5
3. I am perplexed by what happened.	1	2	3	4	5
4. Since this event happened, I don't know where to go next in my life.	1	2	3	4	5
5. I don't understand myself anymore since this event.	1	2	3	4	5
6. This event has made me feel less purposeful.	1	2	3	4	5

Note: A sum of all items can be taken to compute a total Integration of Stressful Life Experiences Scale–Short Form (ISLES-SF) score. Likewise, Items 1, 2, and 3 can be summed to compute the Comprehensibility-SF subscale, and Items 4, 5, and 6 can be summed to compute the Footing in the World-SF subscale. The portion of the instructions in parentheses may be altered to make the measure applicable to different groups of interest. The numbering of items here does not correspond to the numbering used for the full version of the ISLES (Holland et al., 2010).