Assessment
XX(X) 1–4

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DOI: 10.1177/1073191112446656
http://asm.sagepub.com
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A Psychometric Evaluation of the Core Bereavement Items

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Abstract

Despite being a routinely administered assessment of grieving, few studies have empirically examined the psychometric properties of the Core Bereavement Items (CBI). The present study investigated the factor structure, internal reliability, and concurrent validity of the CBI in a large, diverse sample of bereaved young adults (N = 1,366). Exploratory and confirmatory factor analyses (conducted on randomly selected halves of the sample) supported a two-factor structure, with items tapping into grief-related *Thoughts* and *Emotional Response* to loss. These factors showed strong internal consistency and unique associations with demographic variables, circumstantial factors surrounding the loss, and a measure of prolonged/severe grief—highlighting the potential applicability of the identified factor structure.

Keywords

grief, bereavement, measurement, psychological assessment, death and dying

The Core Bereavement Items (CBI) is routinely used and aims to measure "core" grief experiences (Burnett, Middleton, Raphael, & Martinek, 1997). As such, it is often regarded as an assessment of normal grieving, in contrast to measures such as the Inventory of Complicated Grief–Revised (ICG-R; Prigerson & Jacobs, 2001) that tap into more pathological grief reactions (Neimeyer, Hogan, & Laurie, 2008). The CBI has been shown to distinguish between relevant groups in expected directions (i.e., higher scores for unexpected vs. expected losses) and three subscales have been proposed using a theoretical grouping of items into Images and Thoughts (Items 1-7), Acute Separation (Items 8-12), and Grief (Items 13-17; Burnett et al., 1997; Middleton, Raphael, Burnett, & Martinek, 1998). Despite its frequent use, the psychometric properties of the CBI have rarely been examined, and explication of its factor structure could improve clinicians' and researchers' ability to assess grief and predict outcomes. Notably, a recent factor analytic study of a similar grief measure, the Texas Revised Inventory of Grief, revealed a three-factor structure (Futterman, Holland, Brown, Thompson, & Gallagher-Thompson, 2010), and this distinction has been shown to be important in terms of predicting future grief intensity (Holland, Futterman, Thompson, Moran, & Gallagher-Thompson, in press). Given these possibilities, the present study aims to empirically examine the CBI's factor structure, internal reliability, and concurrent validity (with demographic variables, circumstantial factors surrounding the loss, and ICG-R scores).

Method

Participants

The present sample includes 1,366 bereaved young adults, who reported losing a loved one in the past 2 years and were recruited from introductory psychology courses. The average participant was female (74.4%) and 20.84 years old (SD = 4.94). The sample was diverse in terms of ethnicity/race (43.4% ethnic/racial minority), cause of death (31.5% due to violent causes), and relationship to the deceased (with 16.0%, 62.8%, and 21.2% losing immediate family, extended family, or friends, respectively).

Measures

The CBI is a 17-item measure of core bereavement phenomena with the frequency of grief experiences rated on a 4-point Likert-type scale ranging from 0 = *Never* to 3 = *A lot of the time*. The CBI has been shown to discriminate between relevant groups, have high internal reliability (α = .91),

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Table 1. Factor Loadings for the Two-Factor Model Identified in the Exploratory Factor Analysis (N = 683)

	Loadings	
Core Bereavement Items	Thoughts	Emotional Response
4. Do you think about "x"?	**.877**	−.077
8. Do you find yourself missing "x"?	**.760**	.047
9. Are you reminded by familiar objects (photos, possessions, rooms, etc.) of "x"?	**.668**	.087
2. Do thoughts of "x" come into your mind whether you wish it or not?	**.644**	.143
7. Do you find yourself thinking of reunion with "x"?	**.548**	.151
1. Do you experience images of the events surrounding "x's" death?	**.357**	.314
5. Do images of "x" make you feel distressed?	−.015	**.724**
3. Do thoughts of "x" make you feel distressed?	.054	**.708**
12. Do you feel distress/pain if . . . you are confronted with the reality that "x" is . . . not coming back?	.129	**.695**
17. Do reminders of "x" . . . cause you to feel loss of enjoyment?	.107	**.626**
14. Do reminders of "x" . . . cause you to feel loneliness?	.169	**.623**
13. Do reminders of "x" . . . cause you to feel longing for "x"?	.362	**.521**
11. Do you find yourself looking for "x" in familiar places?	.147	**.516**
16. Do reminders of "x" . . . cause you to feel sadness?	.356	**.483**
6. Do you find yourself preoccupied with images or memories of "x"?	.367	**.467**
10. Do you find yourself pining for/yearning for "x"?	.387	**.465**
15. Do reminders of "x" . . . cause you to cry about "x"?	.389	**.413**

Note. The higher of the two factor loadings for each item is highlighted in bold.

and decrease over time (Burnett et al., 1997; Middleton et al., 1998).

The 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). Only a subset of 757 individuals was given both the CBI and ICG-R.

Plan of Analysis

All factor analyses were performed in MPlus, Version 6.1 (Muthén & Muthén, 1998-2010) using MLR, which is robust even for nonnormal data. Missing data were handled using full information maximum likelihood. To arrive at a reasonable model that could be tested further, a randomly selected subsample of half of the participants (Subsample 1, n = 683) was examined using exploratory factor analysis (EFA) with CF-VARIMAX rotation. In choosing the number of factors to retain, we considered the revised minimum average partial test (MAP; Velicer, Eaton, & Fava, 2000), the Guttman–Kaiser criterion (i.e., eigenvalues > 1), indices of model fit, and model interpretability.

Subsequent confirmatory factor analysis (CFA) with the remaining participants (Subsample 2, n = 683) was informed by findings from the EFA. In evaluating CFA models, we relied on a variety of fit indices, including the chi-square goodness-of-fit test, the comparative fit index (CFI; Bentler, 1990), the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993), and Akaike/Bayesian Information Criterion (AIC and BIC). CFI values > .90 are generally regarded as favorable (Hu & Bentler, 1999; Kline, 2005). Likewise, RMSEA values ≤.05 are considered close approximate fit, values between .05 and .08 suggest reasonable fit, and values ≥.10 are indicative of poor model fit (Browne & Cudeck, 1993). Following the CFA analyses, we examined the internal reliability of CBI items as well as their correlations with demographic and loss-related variables in the entire sample.

Results

Exploratory Factor Analysis

The revised MAP test supported a two-factor solution. The EFA with Subsample 1 also supported a two-factor model, with eigenvalues of 8.94 and 1.17. Notably, a two-factor solution—$\chi^2(103) = 421.63$, $p < .001$; CFI = .94; RMSEA = .067; AIC = 21480.05; BIC = 21783.32—fit the data better than a one-factor solution—$\chi^2(119) = 674.30$, $p < .001$; CFI = .89; RMSEA = .083; AIC = 21811.09; BIC = 22041.95. Although a few items showed evidence of cross-loading, the two identified factors made sense theoretically. In particular, the first factor appeared to tap into *Thoughts* about the loss, and the second factor seemed to gauge the *Emotional Response* to the loss. Factor loadings are presented in Table 1.

Confirmatory Factor Analysis

Three models were tested using CFA in Subsample 2: (a) a one-factor model; (b) a two-factor model based on the EFA, with CBI Items 1, 2, 4, 7, 8, and 9 loading on one factor and Items 3, 5, 6, 10, 11, 12, 13, 14, 15, 16, and 17 loading on a second correlated factor; and (c) the three-factor model proposed by Burnett et al. (1997) with Items 1 to 7, Items 8 to 12, and Items 13 to 17 loading on three correlated factors.

The one-factor model did not fit the data well—$\chi^2(119) = 778.22$, $p < .001$; CFI = .89; RMSEA = .090, 90% confidence interval (CI) = .084, .096; AIC = 21027.78; BIC = 21258.635. The two-factor model provided a significantly stronger fit—$\chi^2(118) = 640.18$, $p < .001$; CFI = .91; RMSEA = .080, 90% CI = .074, .087; AIC = 20842.07; BIC = 21077.45; Satorra-Bentler scaled $\Delta\chi^2(1) = 92.01$, $p < .001$. In this two-factor model, the correlation between the Thoughts and Emotional Response factors was .90.

As suggested by the modification indices, model fit was further improved for this two-factor model when the error terms for Items 3 and 5 (which inquired about thoughts/images that "make you feel distressed") were allowed to correlate—$\chi^2(117) = 493.56$, $p < .001$; CFI = .94; RMSEA = .069, 90% CI = .062, .075; AIC = 20647.55; BIC = 20887.45. These correlated errors likely represented overlap in item wording. Because many of the participants in this study did not lose an immediate family member, we tested the fit of the two-factor model when relationship to the deceased (0 = *Extended family/friends*, 1= *Immediate family*) and months since loss were included as covariates, and model fit was relatively unaffected—$\chi^2(148) = 669.28$, $p < .001$; CFI = .91; RMSEA = .073, 90% CI = .068, .079; AIC = 19727.53; BIC = 19978.50.

The more complex three-factor model proposed by Burnett et al. (1997) did not fit the data as well as the two-factor model—$\chi^2(116) = 652.57$, $p < .001$; CFI = .91; RMSEA = .082, 90% CI = .076, .089; AIC = 20862.54; BIC = 21106.97.

Internal Reliability and Concurrent Validity

Using data from the entire sample, internal reliability was found to be strong for Thoughts ($\alpha = .87$), Emotional Response ($\alpha = .93$), and all 17 CBI items ($\alpha = .95$).

The 6 Thoughts items and 11 Emotional Response items were summed to examine correlations with demographic and loss-related variables. Participants' age was not found to be significantly related to either scale, and overall women tended to report stronger Thoughts, $t(1,330) = 4.36$, $p < .001$, and Emotional Response, $t(1,358) = 4.31$, $p < .001$. Ethnic/racial minority individuals tended to report more Thoughts compared with Caucasians, $t(1,328) = 2.10$, $p = .04$, but showed more similar levels of Emotional Response, $t(1,356) = 1.82$, $p = .07$.

Relationship to the deceased was associated with varying levels of Thoughts, $F(2, 1,273) = 23.26$, $p < .001$, and Emotional Response, $F(2, 1,298) = 18.01$, $p < .001$. LSD post hoc analyses revealed that Thoughts tended to be strongest for those who lost an immediate family member, compared with the loss of other relationships. In contrast, significant differences were observed between all three types of relationships for Emotional Response, with the loss of immediate family ($M = 10.35$), friends ($M = 8.18$), and extended family ($M = 7.18$) all showing differences. In addition, participants who experienced a loss by violent means (vs. natural causes) tended to have higher scores for both Thoughts, $t(1,250) = 4.16$, $p < .001$, and Emotional Response, $t(1,270) = 5.77$, $p < .001$.

Scores on the ICG-R were found to be significantly associated with Thoughts, $r(755) = .66$, $p < .001$, and Emotional Response, $r(755) = .80$, $p < .001$. However, Williams's t test (used with nonindependent correlations) revealed that the strength of the correlation was stronger for Emotional Response, $t_W(754) = 9.74$, $p < .001$.

Discussion

These findings support a two-factor model of the CBI, which includes items relating to Thoughts and Emotional Response to loss. Notably, the item content of these two factors is similar to that of factors recently identified for the Texas Revised Inventory of Grief (Futterman et al., 2010). Taken together, these studies suggest that one empirically informed way of representing core bereavement phenomena is to make distinctions between grief-related thoughts and emotional experiences. This investigation indicates that making this distinction could have practical applications, with Emotional Response perhaps being a more sensitive measure of grief-related distress, as evidenced by its stronger association with the ICG-R and ability to differentiate between losses of three different types of relationships. That being said, Thoughts of loss may have particular cultural relevance, as these experiences were especially pronounced among ethnic/racial minority individuals. Future researchers should examine the psychometric properties of the CBI longitudinally with older and more diverse samples.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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