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Coping Among Breast Cancer Survivors: A Confirmatory Factor Analysis of the Brief COPE

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Abstract

Background and Purpose: Cancer survivors continue to cope with significant stressors after completing treatment. The Brief COPE (Carver, 1997) is frequently used to measure coping; however, its factor structure remains unclear. The purpose of this study was to determine the best factor conceptualization of the Brief COPE for use among breast cancer survivors.

Methods: Breast cancer survivors (N = 1127) completed the Brief COPE. We conducted confirmatory factor analyses comparing several a priori models based on research in cancer-relevant populations.

Results: Of the eight models examined, the 14-factor model of the Brief COPE showed the best fit.

Conclusions: Despite efforts to simplify the structure of the Brief COPE, our results suggest coping among breast cancer survivors is best assessed using Carver's (1997) original 14-factor conceptualization.

Keywords

breast neoplasms; coping; oncology; confirmatory factor analysis; Brief COPE

Introduction

The population of breast cancer survivors (BCS) is rapidly increasing and most will live many years after their initial diagnosis (Berry et al., 2005; Cronin, Feuer, Clarke, & Plevritis, 2006; Siegel et al., 2012). Although this population is past the active treatment phase, which can be both painful and distressing, they continue to deal with a variety of stressors during their survivorship, including: fatigue (Schmidt et al., 2012), weight gain (Demark-

Wahnefried et al., 2001; Saquib et al., 2001), physical inactivity (Howard-Anderson, Ganz, Bower, & Stanton, 2012), sexual and body image problems (Avis & Crawford, 2004; Ganz et al., 2003; Herbenick et al., 2008), depression (Kim et al., 2008), and cognitive changes (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Deimling et al., 2006; Schagen et al., 2006). Coping strategies, especially in relation to health-related stressors, have been shown to be important predictors of well-being, including quality of life and psychological adjustment in breast cancer populations (Carver et al., 1993; Classen, Koopman, Angell, & Spiegel, 1996; Epping-Jordan et al., 1999; Hack & Degner, 2004; McCaul et al., 1999; Schnoll, Harlow, Stolbach, & Brandt, 1998; Silva, Crespo, & Canavaro, 2012; Stanton et al., 2000). For example, greater use of avoidance coping has been correlated with poorer sleep quality among women being treated for breast cancer (Thomas, Bower, Hoyt, & Sepah, 2010). Additionally, greater use of acceptance, positive reframing, and emotional approach coping predicted fewer depressive symptoms and greater post-traumatic growth 12 months later in a sample of BCS (Low et al., 2006). In order to further understand how various coping strategies differentially affect well-being among BCS, it is important to establish the most appropriate conceptualization of coping as a construct (Siegel et al., 2012).

Background and Conceptual Framework

One of the most commonly-used measures of coping for health-related conditions is the Brief COPE (Carver, 1997), a self-report measure consisting of 28 items assessing coping along 14 theoretically-based subscales. This scale assesses a range of both adaptive and maladaptive coping strategies. Carver (1997) proposed the following 14 factors: 1) Self-Distraction; 2) Active Coping; 3) Denial; 4) Substance Use; 5) Emotional Support; 6) Instrumental Support; 7) Behavioral Disengagement; 8) Venting; 9) Positive Reframing; 10) Planning; 11) Humor; 12) Acceptance; 13) Religion; and 14) Self-Blame. The Brief COPE has been shown to be reasonably reliable, with Cronbach's alphas for each of the subscales ranging from .50 to .90 (Carver, 1997; Dougall et al, 2009). Further, the validity of this measure has been demonstrated within breast cancer populations, although coping dimensions are occasionally dropped due to lack of variability within certain samples (Carver, 1997; Doygall et al, 2009; David, Montgomery, & Bovbjerg, 2006; Luszczynska et al., 2007; Scignaro, Barni, & Magrin, 2011).

In addition to the 14-factor structure proposed in the original validation article of the Brief COPE, Carver (1997) also used an exploratory factor analysis (EFA) to derive a 9-factor solution. This solution included four a priori factors: 1) Humor; 2) Religion; 3) Disengagement; and 4) Substance Use. Additionally, four composite factors were created by combining other factors: 1) Support-Seeking (Emotional Support + Instrumental Support); 2) Active Coping (Active Coping + Planning + Positive Reframing); 3) Emotion-Focused (Self-Distraction + Venting); and 4) Dysfunctional (Denial + Self-Blame). Finally, one of the Acceptance items loaded on its own factor (see Table 1).

Despite Carver's original theory of coping, researchers have used simplified factor conceptualizations of the Brief COPE to study coping behaviors in cancer based populations (see Table 1 for a summary). For example, researchers have justified reducing the 14-factor

structure to two dimensions, positing that coping generally reflects efforts to either move toward goals (i.e., Approach or Active) or to disengage from goal pursuits (i.e., Avoidance; Dougall et al., 2009; Chen et al., 1996; Kershaw, Northouse, Kritpracha, & Schafenacker, 2004; Green, Wells, & Laakso, 2011). Three-factor theoretical conceptualizations of the Brief COPE have also been suggested for use in cancer-relevant populations. Delgado-Guay and colleagues (2011) used the Brief COPE to assess Emotion-Focused, Problem-Focused, and Dysfunctional Coping factors in a sample of patients with advanced cancer. Similarly, in a sample of cancer patients and their partners, Luszczynska and colleagues (2007) used cluster analysis to examine responses to a German translation of the Brief COPE and identified three different coping patterns: Accommodative, Assimilative, and Disengaging Coping.

More complex factor conceptualizations have also been proposed. An early version of the Brief COPE was used in a sample of French-Canadian breast cancer patients (Fillion, Kovacs, Gagnon, & Endler, 2002). The investigators conducted an exploratory factor analysis (EFA) to derive an 8-factor solution (see Table 1 for factor labels). The Disengagement factor was a combination of items from Disengagement, Denial, Acceptance, and Positive Reframing. Self-Distraction was a combination of items Self-Distraction and Active Coping. Active Coping was combination of items from Active Coping, Planning, and Positive Reframing. Emotional Support from Friends included an item from Venting.

Coping styles have been shown to be highly variable across groups, meaning that it is necessary to investigate the patterns of coping styles specifically within cancer-related populations. However, the variegated conceptualizations of the Brief COPE in cancer-relevant research make it difficult to develop a coherent understanding of the nature and function of different coping strategies within this population. Determining an appropriate factor structure for the Brief COPE is critical due to the potential confusion that could result from research based on inaccurate factor conceptualizations. In addition, overlooking important connections between facets of coping and well-being may lead to unhelpful or even harmful interventions. In order to enhance research on coping among BCS, there is a need to determine which factor models are appropriate for use within this population. To date, most research has relied on theoretical conceptualizations of the Brief COPE, but these studies have not explicitly tested how well these factor models fit the data. Of the few studies that attempted to empirically examine the factor structure of the Brief COPE, most relied on exploratory, data-driven analyses, which capitalize on chance (Ford, MacCallum, & Tait, 1986). Thus, it is unclear if these factor structures will replicate across other samples. In addition, the ordered-categorical data generated by the Brief COPE necessitates the use of appropriate analyses to evaluate its structure (e.g., polychoric correlations, weighted least squares estimation) (Joreskog, 2005). Hence, there is a need for a systematic examination of a set of *a priori* factor models of the Brief COPE using appropriate analytic procedures. The goal of this study was to use CFA to determine the appropriateness of different factor conceptualizations of the Brief COPE in a large sample of BCS. If several factor models were found to be acceptable, we also sought to determine which factor model best fit the data. We hypothesized that Carver's original 14-factor model would best fit the data from a BCS sample.

Methods

Sample

Eligible BCS were identified from the Eastern Cooperative Oncology Group (ECOG) data base and included participants from 97 sites in the United States. To be eligible for the current study, women with a previous diagnosis of breast cancer had to be at least 18 years of age, have been Stage I-III at diagnosis, have no history of other cancers, be fluent in English, be 3–8 years past their initial treatment without a recurrence of breast cancer, and have a chemotherapy regimen based on Adriamycin, Paclitaxel, and Cyclophosphamide to reduce variance related to treatment regimen.

The statistical office at ECOG identified the ECOG sites with potentially eligible survivors. Sites who wished to participate were asked to first gain local IRB approval prior to forwarding patient names. After IRB approval, the lists of eligible women for each participating site were sent to the treating oncologists. The oncologist or their designee initiated first contact with the BCS. If BCS gave permission, the identifying information for each survivor was sent to researchers at Indiana University, who mailed a brochure explaining the study. Research assistants called each BCS approximately one week following this initial mailing to answer any questions and determine interest in study participation. Research assistants were trained for consistency in telephone contact and all calls were recorded for quality assurance review.

If BCS agreed to be enrolled, an informed consent form was mailed with a postage paid return envelope. Once the consent was obtained, participants were mailed the initial survey packet. A total of 1681 female BCS were contacted, 76% consented, and 67% returned completed surveys (N = 1127). Sample characteristics are presented in Table 2.

Procedures

Once the informed consent form was signed and returned, the questionnaire was mailed to the participant with a postage-paid return envelope. If the questionnaire was not returned within four weeks, the research assistants called patients up to 10 times to determine if the survey had been completed and to request return.

Measures

Brief COPE. Participants completed the Brief COPE (Carver, 1997), a 28-item self-report measure of coping behaviors. Respondents indicated the extent to which they have been using different coping strategies on a 4-point ordered-category response scale (0 = *I haven't been doing this at all* through 3 = *I've been doing this a lot*). The instructions and items were modified to ask how participants had been coping with any stress that may have resulted from breast cancer (see items in Table 3).

Analytic Approach

Based on our review of the literature, we examined the fit of several a priori models (see Table 4): 1) a parsimonious 1-factor model (Overall Coping); 2) a 2-factor model comprising Approach and Avoidance Coping (Green, Wells, & Laasko, 2011); 3) a 2-factor model

comprising Active and Avoidant Coping (Dougall et al., 2009); 4) a 3-factor model comprising Problem-focused, Emotion-focused, and Dysfunctional Coping (Delgado-Guay et al, 2011); 5) a 3-factor model comprising Accommodative, Assimilative, and Disengaging Coping (Luszczynska et al, 2007); 6) an 8-factor model based on a shortened version of the COPE used by Fillion and colleagues (Fillion, Kovacs, Gagnon, & Endler, 2002); 7) a 9-factor model based on Carver (1997); and 8) a 14-factor model based on the original coping scales proposed by Carver (1997). Models were included in the analysis if they had been used in cancer-relevant samples.

Because the Brief COPE uses a 4-point ordered-categorical response scale, analysis of the manifest covariance matrix was deemed inappropriate. Instead, we conducted the CFA using polychoric correlations and asymptotic covariance matrices generated from the data and weighted least squares (WLS) estimations (Jöreskog & Moustaki, 2001).

Multiple indices were used to assess model fit, including: the Root Mean Square Error of Approximation (RMSEA; good fit = < 0.06) and its 90% confidence interval; the Comparative Fit Index (CFI; good fit = > 0.95); the Non-Normed Fit Index (NNFI; good fit = > 0.95); the Standardized Root Mean Residual (SRMR; good fit = < 0.08); and the Aikake Information Criterion (AIC; for comparing models; better fit = smaller value; Hu & Bentler, 1999). We also report the chi-square statistic (χ^2 ; good fit = $p > 0.05$) for each model. However, the chi-square statistic is almost always significant in models with large samples. Therefore, it was used only for making nested-model comparisons of fit in the supplemental analyses.

Results

Data Screening, Missing Value Imputation, and Descriptive Statistics

A total of 1127 BCS completed the Brief COPE. Missingness ranged from 0% to 1.15% across all 28 items. Because of the small proportion of missing data, they were considered missing at random, and PRELIS 2.8 was used to impute missing values by matching cases with missing values to other cases with complete values and similar response patterns over a set of matching variables (Jöreskog, 2005). Two cases were eliminated because missing values could not be imputed with this process, resulting in a final sample of 1125.

Next, the distributions of the items were examined and their skew and kurtosis values are presented in Table 3. Six items comprising three subscales (i.e., Denial, Substance Use, Disengagement) were found to have restricted variability, with the preponderance of BCS (85.5% to 94.0% across items) indicating they did not use these coping behaviors. However, because these coping behaviors are theoretically and clinically relevant we chose to retain them in the CFA.

Factor Structure

CFA—The factor models and their fit indices are shown in Table 4. Simpler models showed poorer fit. The 1-, 2-, and 3-factor models showed poor fit to the data across all fit indices. This was also true of the 8-factor model based on the study conducted by Fillion and colleagues (2002), although the CFI was .95. Both the 9-factor model and 14-factor model

based on the Carver (1997) study showed acceptable fit based on the RMSEA, CFI, and NNFI. However, the SRMR did not meet the criterion for good fit for either model. Although both models showed acceptable fit, the 14-factor model fit better than the 9-factor model based on the AIC. The standardized item loadings on the 14 factors are shown in Table 3. As the table shows, all of the standardized loadings were .79 or above, suggesting that the items are strong indicators of the factors they are intended to assess.

Supplemental Analyses.—Examination of the correlations among the 14 factors showed that there were large correlations between Instrumental Support and Emotional Support ($\psi = .94$) and between Active Coping and Planning ($\psi = .89$). This is consistent with Carver's (1997) EFA results showing that Active Coping and Planning formed a single factor as did Emotional Support and Instrumental Support. Therefore, we conducted supplemental analyses to determine if these factors could be combined while maintaining good model fit. First, we examined constraining Emotional Support and Instrumental Support to a single factor, and the resulting model showed acceptable fit across several indices: $\chi^2_{(df = 260)} = 931.04$, $p < .001$, RMSEA = 0.048 (90% C.I.: 0.045–0.051), CFI = 0.98, NNFI = 0.98, SRMR = 0.14. However, a nested chi-square difference test showed that this model fit significantly worse than the 14-factor model, $\chi^2_{(df = 1)} = 143.07$, $p < .001$.

Then we constrained Active Coping and Planning to a single factor, and the resulting model showed acceptable fit across several indices: $\chi^2_{(df = 260)} = 947.61$, $p < .001$, RMSEA = 0.049 (90% C.I.: 0.045–0.052), CFI = 0.98, NNFI = 0.98, SRMR = 0.16. However, a nested chi-square difference test showed that this model fit significantly worse than the 14-factor model, $\chi^2_{(df = 1)} = 159.70$, $p < .001$. Based on these results, we concluded that the 14-factor model was the most appropriate conceptualization of the Brief COPE among BCS.

Discussion

Based on our review of the coping literature in cancer and other health-relevant populations, we examined the fit of several factor models of the Brief COPE in a large sample of BCS. We hypothesized that Carver's original 14-factor model would best fit the data. Although 2- and 3-factor coping models are parsimonious and theoretically interesting, we found that they do not adequately capture the complexity of coping behaviors as assessed by the Brief COPE in BCS. Indeed, there was not a single fit index that achieved acceptability across all of the 2- and 3-factor models. We interpret this as strong evidence that these factor models are inappropriate oversimplifications of the complex nature of coping among BCS. If further research is conducted using these simplistic models, it may lead to inaccurate conclusions about the nature of coping. Ultimately, this could lead to unhelpful and potentially harmful clinical intervention strategies.

The 8-factor model based on the model described by Fillion and colleagues (2002) showed acceptable fit based on the CFI, but not on any of the other indices. Moreover, this model was based on an earlier version of the Brief COPE and did not include the Instrumental Support, Venting, or Self-Blame factors. Therefore, we view this as an inadequate model for describing coping in BCS.

Two models showed evidence of acceptable fit to the data across several indices. Interestingly, both of these models are derived from Carver's (1997) original validation article of the Brief COPE, which did not involve a cancer-relevant sample. Clearly the best-fitting model, however, was the 14-factor model originally proposed by Carver (1997). This model showed better fit than the 9-factor model based on its lower AIC (see Table 4). Strong associations between Instrumental Support and Emotional Support and between Active Coping and Planning were discovered, suggesting that these factors could be combined to form Help-Seeking and Approach Coping factors, respectively. Our supplemental analyses revealed, however, that although the resulting models generally showed acceptable fit, they fit significantly worse than the 14-factor model. As the number of long-term BCS continues to grow, it is imperative that research examining how they cope with survivorship uses the most appropriate assessment strategy. Our results suggest that the fully-atomized factor model will provide the most accurate description of coping behaviors in this population.

One other finding is worth discussing. We found that the large majority of BCS (85.5 to 94%) did not report using Substance Use, Denial, or Disengagement to cope with their cancer survivorship. Because the restriction of variability on these three scales might affect the fit of the 14-factor model, we also examined the fit of an 11-factor model with these scales omitted. This model also showed good fit: $\chi^2_{(df = 154)} = 556.89$, $p < .001$, RMSEA = 0.048 (90% C.I.: 0.044–0.053), CFI = 0.98, NNFI = 0.97, SRMR = 0.12.

We highlight a variety of reasons why BCS in this sample might not have reported using these coping strategies. First, the present sample consisted of survivors who were almost six years post diagnosis, on average (see Table 2). Consequently, they likely had adequate time to integrate the concept of cancer survivorship into their sense of self, and therefore no longer relied on coping strategies aimed at temporary escape from the stress of their situations. Secondly, social desirability makes it less likely that BCS would report using some of these coping behaviors (e.g., Substance Use). Lastly, the characteristics of this particular sample of BCS might have played a role. The majority of this sample was highly-educated, Caucasian, older adults who had not experienced a recurrence of breast cancer. The homogeneity of this sample could have had an effect on the absence of these coping strategies as endorsement of these styles of coping may require a more diverse sample of the BCS population. It may be possible to omit these subscales in future research with BCS, however, the 14-factor model may still be preferred due to its inclusivity to the BCS population as a whole and its good fit as a model even with low endorsement in some subscales. Yet, to solidify these assertions, further research is needed.

There are several strengths to this study. First, we examined the factor structure of the Brief COPE in a large sample of BCS ($N = 1,125$). The extant factor analytic studies of the Brief COPE relied on substantially smaller samples, usually less than 200. The suggested minimum sample size for factor analysis is normally 200 to 300 cases (Tabachnick & Fidell, 2007), meaning previous findings regarding the factor structure of the Brief COPE should be viewed with caution. A second strength of this study is that we examined the fit of several *a priori* factor models using CFA. Hence, the risk of spurious findings associated with overfitting the model is reduced compared to EFA approaches (Gregorich, 2006). Third, this study used analytic procedures appropriate for the data generated by the Brief COPE.

Specifically, the use of polychoric correlations and asymptotic covariance matrices is appropriate for ordered-categorical responses (Jöreskog, 2005; Jöreskog & Moustaki, 2001).

Study Limitations

There are also limitations to the present study worth mentioning. First, the data were cross-sectional, so we cannot examine longitudinal relationships of coping with other important outcomes. Second, the sample was composed primarily of Caucasian and highly-educated survivors, so the present results may not generalize to other racial or ethnic groups or less educated populations. Future studies should examine the factor structure of the Brief COPE in more diverse racial and ethnic groups of BCS. Third, the results of the present study may not generalize to survivors who received different treatment protocols. Specifically, all participants in the present study received comparable chemotherapy regimens, so we could not investigate potential differences in the coping factor structure between women who did or did not receive chemotherapy or in women who received different types of chemotherapy. Lastly, the sample consisted of women who had never experienced a recurrence of breast cancer. Recurrences of cancer provide additional stressors which could impact BCS coping behaviors. Future research should examine if there are differences in coping behaviors for women who experience recurrent cancer. Despite these limitations, the present study makes an important contribution to understanding the measurement of coping behaviors using the Brief COPE in breast cancer survivors.

Relevance to Nursing Practice, Research, and Education

We found that the best-fitting factor model of the Brief COPE was the original 14-factor version. Moreover, we found that 1-, 2-, and 3-factor models demonstrated poor fit across most fit indices. This suggests that more simplified conceptualizations of coping strategies (e.g., Active vs. Passive, Adaptive vs. Maladaptive) are not empirically supported for use in BCS, despite their intuitive appeal. For research purposes, this means that using the fully-atomized conceptualization of the Brief COPE is necessary to accurately capture the diversity of coping strategies and how they might differentially relate to various aspects of quality of life and psychological well-being. If researchers use simplified conceptualizations of the Brief COPE (e.g., Active vs. Passive) to study coping among BCS, they may miss the subtle and complex relationships between coping strategies and survivor well-being. For example, the use of emotional support may be uniquely associated with some dimensions of psychological well-being and not others. If emotional support is subsumed under a broader coping category (e.g., Adaptive Coping), these unique associations may not be discovered.

In practice, assessing coping at the appropriate level of detail can help health professionals discern which coping strategies are situationally appropriate. For example, Green and colleagues (2011) categorized positive reframing as a component of approach coping, which is generally considered more adaptive than avoidant coping. However, while positive reframing may be an adaptive strategy for dealing with unchangeable health problems (e.g., having a cancer diagnosis), it may not be optimal for dealing with more modifiable issues (e.g., experiencing symptoms of fatigue). If health professionals simply conceptualize coping strategies as falling within superordinate categories, they may miss important

information that could be useful for tailoring interventions to help cancer survivors with diverse preferences across a variety of situations. Coping behaviors in BCS must be appropriately measured to fully understanding their situational utility and their differential associations with various aspects of psychological well-being and quality of life. The results of the present study suggest that coping among BCS is nuanced, complex, and cannot be simplified.

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Table 1

Published Factor Conceptualizations of the Brief COPE

Number of Factors	Factor Names	Reference	Sample	N	Brief COPE Version	Notes
2	Approach, Avoidance	Green et al. (2011)	Prostate Cancer Patients & Partners	105; 85	28-item	
2	Active, Avoidant	Dougall et al. (2009)	Women at Elevated Risk for Breast Cancer; Women with Breast Cancer	126; 250	24-item	Did not include Self-Blame or Instrumental Support scales
		Kershaw et al. (2004)	Breast Cancer Patients & Caregivers	189		
3	Problem-Focused, Emotion-Focused, Dysfunctional	Delgado-Guay et al. (2011)	Patients with Advanced Cancer	100	28-item	
3	Accommodative, Assimilative, Disengaging	Luszczynska et al. (2007)	German Cancer Patients & Partners	321; 122	26-item	Substance Use Scale was excluded
8	Disengagement, Self-Distraction, Active, Emotional Support from Partner, Emotional Support from Friends, Religion, Humor, Substance Use	Fillion et al. (2002)	French-Canadian Breast Cancer Patients	132	28-item	Items were based on earlier version of Brief COPE; did not include Instrumental Support, Venting, or Self-Blame
9	Active, Support-Seeking, Emotion-Focused, Dysfunctional, Acceptance, Humor, Religion, Substance Use, Disengagement	Carver (1997)	Community Residents Affected by a Hurricane	168	28-item	
14	Active, Planning, Positive Reframing, Acceptance, Humor, Religion, Emotional Support, Instrumental Support, Self-Distraction, Denial, Venting, Substance Use, Disengagement, Self-Blame	Carver (1997)	Community Residents Affected by a Hurricane	168	28-item	
		David et al. (2006)	Breast Cancer Patients	60		
		Scrignaro et al. (2011)	Cancer Patients	41		Substance Use and Venting were excluded due to lack of variability

Table 2

Sample Characteristics

Characteristics (M, SD)	N = 1127
Current age in years	57.14 (11.61)
Body Mass Index	28.18 (6.02)
Years since Diagnosis	5.94 (1.48)
Race/Ethnicity (N, %)	
Caucasian	1020 (90.5)
African American	43 (3.8)
Hispanic	21 (1.9)
Asian	10 (0.9)
Native American/Alaskan Native	1 (0.1)
Multi-Racial/Other	32 (2.8)
Relationship Status (N, %)	
Married or living with partner	836 (74.2)
Single	89 (7.9)
Divorced	80 (7.1)
Widowed	104 (9.2)
Missing	18 (1.6)
Education (N, %)	
Grade school or less	2 (0.2)
Some high school or technical school	32 (2.8)
High school graduate	269 (23.9)
Technical or trade school	103 (9.1)
Some college	192 (17.0)
2 year college graduate (Associate's)	89 (7.9)
4 year college graduate (Bachelor's)	157 (13.9)
Some graduate school	55 (4.9)
Graduate or professional degree	211 (18.7)
Missing	17 (1.5)
Employment Status (N, %)	
Employed	697 (61.8)
Not Employed	164 (14.6)
Retired	246 (21.8)
Student	5 (0.4)
Missing	15 (1.3)
Type of Surgery (N, %)	
Mastectomy	591 (52.4)
Lumpectomy	536 (47.6)

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Table 3

Brief COPE Items and Descriptive Data

Factor Name	M	SD	α	Skewness	Kurtosis	Item Loading
Item						
Active	2.44	1.92	0.728	0.297	-0.963	
02. I've been concentrating my efforts on doing something about the situation I'm in.	1.05	1.07		0.547	-0.981	0.95
07. I've been taking action to try to make the situation better.	1.39	1.10		0.096	-1.310	0.93
Planning	1.78	1.84	0.749	0.772	-0.451	
14. I've been trying to come up with a strategy about what to do.	0.76	0.98		1.045	-0.125	0.92
25. I've been thinking hard about what steps to take.	1.02	1.07		0.609	-0.964	0.95
Positive Reframing	2.77	1.96	0.744	0.149	-1.098	
12. I've been trying to see it in a different light, to make it seem more positive	1.25	1.10		0.299	-1.237	0.92
17. I've been looking for something good in what is happening.	1.52	1.10		-0.003	-1.319	0.88
Acceptance	4.52	1.79	0.709	-1.096	0.208	
20. I've been accepting the reality of the fact that situation has happened.	2.29	0.99		-1.204	0.201	0.85
24. I've been learning to live with the situation.	2.23	1.04		-1.092	-0.172	0.90
Humor	1.09	1.66	0.831	1.499	1.258	
18. I've been making jokes about the situation.	0.94	1.39		1.385	0.696	0.97
28. I've been making fun of the situation	0.48	0.85		1.699	1.814	0.90
Religion	3.72	2.16	0.871	-0.447	-1.199	
22. I've been trying to find comfort in my religion or spiritual beliefs.	1.84	1.16		-0.415	-1.328	0.99
27. I've been praying or meditating.	1.88	1.14		-0.485	-1.224	0.89
Emotional Support	2.41	1.88	0.775	0.395	-0.873	
05. I've been getting emotional support from others.	1.19	1.10		0.387	-0.952	0.89
15. I've been getting comfort and understanding from someone.	1.22	1.08		0.354	-1.115	0.93
Instrumental Support	1.53	1.68	0.774	0.993	0.171	
10. I've been getting help and advice from other people.	0.84	0.94		0.893	-0.170	0.95
23. I've been trying to get advice or help from other people about what to do.	0.69	0.93		1.174	0.298	0.92
Self-Distraction	1.97	1.85	0.633	0.547	-0.840	
01. I've been turning to work or other activities to take my mind of things.	1.04	1.10		0.582	-1.067	0.86

Factor Name	M	SD	α	Skewness	Kurtosis	Item Loading
Item						
19. I've been doing something to think about it less, such as going to the movies, watching TV, reading, daydreaming, sleeping, or shopping.	0.93	1.10		0.741	-0.817	0.84
Denial	0.30	0.81	0.507	3.273	11.527	
03. I've been saying to myself "this isn't real."	0.19	0.54		3.256	11.226	0.93
08. I've been refusing to believe that the situation has happened.	0.10	0.44		4.773	23.908	0.89
Venting	1.04	1.31	0.645	1.411	1.846	
09. I've been saying things to let my unpleasant feelings escape.	0.36	0.66		2.010	3.835	0.86
21. I've been expressing my negative feelings.	0.69	0.85		1.132	0.591	0.87
Substance Use	0.24	0.80	0.795	4.445	22.837	
04. I've been using alcohol or other drugs to make myself feel better.	0.16	0.51		3.772	15.128	0.97
11. I've been using alcohol or other drugs to help me get through things.	0.08	0.37		5.506	34.235	0.99
Disengagement	0.26	0.77	0.466	3.566	14.284	
06. I've been giving up trying to deal with things.	0.16	0.53		3.783	14.575	0.85
16. I've been giving up the attempt to cope.	0.10	0.43		4.795	24.847	0.79
Self-Blame	0.71	1.21	0.688	2.094	4.520	
13. I've been criticizing myself.	0.41	0.73		1.903	3.207	0.88
26. I've been blaming myself for things that happened.	0.30	0.66		2.427	5.664	0.86

Table 4

Fit Indices for A Priori Models

Model	Factors	Reference	χ^2	df	p (p > .05)	RMSEA (< .06)	RMSEA 90% CI	CFI (> .95)	NNFI (> .95)	SRMR (< .08)	AIC (smallest value)
1	1		4731.51	350	<0.001	0.110	0.100– 0.110	0.89	0.88	0.48	4843.51
2	2	Green et al. (2011)	4578.02	349	<0.001	0.104	0.100– 0.110	0.90	0.89	0.46	4692.02
3	2	Dougall et al. (2009)	1257.64	103	<0.001	0.100	0.095– 0.100	0.89	0.87	0.26	1323.64
4	3	Delgado-Guay et al. (2011)	4198.31	347	<0.001	0.099	0.097– 0.100	0.91	0.90	0.41	4372.31
5	3	Luszczynska et al. (2007)	2819.57	296	<0.001	0.087	0.084– 0.090	0.91	0.90	0.37	2981.57
6	8	Fillion et al. (2002)	1468.30	188	<0.001	0.078	0.074– 0.082	0.95	0.93	0.25	1598.30
7	9	Carver (1997)	1437.34	314	<0.001	0.056	0.053– 0.059	0.97	0.97	0.19	1621.34
8	14	Carver (1997)	787.97	259	<0.001	0.043	0.039– 0.046	0.99	0.98	0.12	1137.97

Note: Values in parentheses indicate fit index criteria for good model fit.

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