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Development and Initial Validation of the Adult Coping Inventory

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DEVELOPMENT AND INITIAL VALIDATION OF THE ADULT COPING INVENTORY

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Psychology

by
Kristen Ashley Hollas
B.A., University of California, Irvine, 2018
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ABSTRACT

There are few psychometrically sound measures for assessing coping in adults. For example, a widely used measure of coping, the COPE, has highly unstable sub-scale analyses (Lyne & Roger, 2000). The scarcity of instruments developed using evidence based “best practice” is concerning as coping skills are linked to a variety of positive and negative outcomes. For example, positive coping skills have been linked to better health outcomes among various populations (Garnefski & Kraaij, 2006; Littleton, Horsley, John & Nelson, 2007). This study aimed to address the lack of psychometrically sound measures of coping for an adult population. The current study consisted of three phases. Phase 1 involved generating coping items for a wide range of adults. After eliminating redundant items, a list of potential items was generated. Phase 2 included 526 adults completing the questionnaire (Adult Coping Inventory-Pilot) in order to eliminate items based on factor loadings and internal consistency. The factor structure was also determined during this phase. Phase 3 assessed the construct, concurrent and incremental validity of the questionnaire with 526 adults who completed the Adult Coping Inventory and the Brief COPE along with a measure of psychological symptoms (Depression, Anxiety, Stress Scale-21), and resiliency (Brief Resiliency Scale).

Introduction

Adaptive coping is essential for individuals to effectively deal with life stressors, losses, and traumatic events. Coping is defined by an individual responding to an internal or external stressor that is appraised as difficult and is believed to surpass the resources an individual has available (Lazarus & Folkman, 1984). In other words, coping is an adaptive process by which an individual employs specific strategies to manage unpleasant emotions that are the product of negative or stressful experiences. Examples of coping strategies may include exercise, problem-solving, and venting of emotions (Carver, Scheier & Weintraub, 1989; Holton, Barry & Chaney, 2014; Sasaki & Yamasaki, 2007). As such, the specific coping strategies an individual utilizes can impact their psychological adjustment when encountering a stressful event. Coping is a complex process and there is substantial literature dedicated to defining and understanding these complexities. Although there are several psychological instruments for measuring adaptive and maladaptive coping, all have psychometric limitations such as poor scale development, homogeneous participants in the construction and validation of the measure, and inconsistent factor structures. The current study addresses this limitation by developing and initially validating a measure of adult coping that is reliable and valid. The following provides a review of the extant literature on adaptive and maladaptive coping with stressful situations, summarizes the psychometric limitations of existing measures, and proposes the development of a novel coping measure for use in research settings.

Overview of Coping

Several studies have examined various constructs of coping. The literature primarily focuses on coping in terms of emotion- and problem-focused strategies (Brougham, Zail, Mendoza & Miller, 2009). This approach was first put forth by Lazarus (1998) who described

the categories as dichotomous and essential to the formation of an individual's integrated coping system. Emotion-focused coping is the emotional expression and reinterpretation of an individual's expectations for an outcome of a stressor (Brougham et al., 2009). The goal of emotion-focused coping is to reduce emotional turmoil that occurs in response to a stressor (Lazarus, 1998). Although not always accurate, the literature consistently views emotion-focused coping strategies as maladaptive (Baker & Berenbaum, 2007). For instance, coping strategies such as denial, rumination, and self-blame are examples of maladaptive, emotion-focused coping as they tend to produce poor health outcomes (Pritchard, Wilson & Yamnitz, 2007; Thompson et al., 2010).

Research has demonstrated that emotion-focused coping can lead to additional negative psychological outcomes. Garnefski and Kraaij (2006) found that self-blame, rumination, catastrophizing, along with a lack of positive reappraisal (i.e. reframing an event in a positive manner), were associated with greater psychological symptoms among adults. Additionally, among non-depressed women, those who engaged in low levels of adaptive coping and exhibited high levels of rumination, demonstrated higher levels of depressive symptomology (Thompson et al., 2010). Although there is significant research support that emotion-focused strategies are maladaptive, other studies indicate that adaptive, emotion-focused strategies are associated with positive outcomes. Adaptive emotion-focused strategies include behaviors such as meditation, seeking social support, and positive reappraisal (Garnefski & Kraaij, 2006; Holton et al., 2014). Positive reappraisal has been found to be related to lower depressive symptomology among adults and posttraumatic growth among partners of women diagnosed with breast cancer (Garnefski & Kraaij, 2006; Manne et al., 2004). Overall, research indicates that the type of emotion-focused strategy employed impacts the positive or negative nature of the outcome.

The second category, problem-focused coping, is defined as attempting to change the perceived stressor (Carver et al., 1989; Lazarus, 1998). This is achieved by engaging in behaviors designed to eliminate or alter the stressor such as planning ahead or problem-solving (Brougham et al., 2009). Specific activities involved in problem-focused coping include: planning, taking action, and seeking assistance (Carver et al., 1998); all are considered to be adaptive coping with a negative situation. Sasaki & Yamasaki (2007) found that college freshmen who engaged in problem-solving may enhance their ability for future adaptation. Additionally, Thompson et al. (2010) concluded that frequent use of adaptive strategies may serve as protective factors against maladaptive methods of coping. Problem-focused coping is considered to be more adaptive than emotion-focused coping because changing a situation is a way to eliminate or reduce the problem rather than changing your emotional reaction to the problem.

In addition to emotion-focused and problem-focused coping strategies, coping is also conceptualized as approach and avoidant strategies. Similar to problem-focused strategies, approach strategies involve taking action and recognizing when a situation changes in a way that may make it more controllable (Roth & Cohen, 1986). Specifically, behavioral approach strategies were associated with less distress among individuals who had experienced a trauma (Littleton et al., 2007). Additionally, approach strategies were associated with lower distress among those who experienced a trauma of a longer duration (Littleton et al., 2007). By contrast, avoidant strategies are those that attempt to reduce stress and anxiety resulting from a situation (Roth & Cohen, 1986). Some strategies that are classified as avoidant include: focusing on and venting emotions, avoidance, behavioral disengagement (i.e. engaging in other activities instead of solving the problem), and mental disengagement (i.e. avoid thinking about the stressor; Carver

et al., 1989; Evans & Dunn, 1994). For example, alcohol use in response to a negative life event is associated with maladaptive outcomes such as future drinking problems and negative mood (Armeli, O'Hara, Ehrenberg, Sullivan & Tennen, 2014; Holahan, Moos, Holahan, Cronkite & Randall, 2000; Thompson et al., 2010). Among college students, use of avoidant coping (e.g. focusing on or venting emotions, behavioral and mental disengagement) was associated with poorer psychological well-being (Chao, 2011). Just as emotion-focused and problem-focused coping are viewed as separate components of an integrated system; however, Roth and Cohen (1986) note that most people use both avoidant and approach strategies, suggesting they are not mutually exclusive.

Use of avoidant strategies is believed to be more effective for managing uncontrollable situations (i.e. avoiding being evaluated for an untreatable disease reduces anxiety), whereas approach strategies are considered more effective with situations that are within an individual's control (Awasthi & Mishra, 2007; Roth & Cohen, 1986). Women with diabetes who felt in control of their disease utilized approach strategies which decreased the negative impact of the disease (Awasthi & Mishra, 2007). On the other hand, women with diabetes who felt unable to control the disease used more avoidant coping strategies and experienced more complications with their illness.

Thus far, coping has been described in two dimensions but there is evidence that a two-dimensional view of coping may be inaccurate. Measures of coping often contain more than two factors. For example, the original factor analysis of the COPE questionnaire (Carver et al., 1989) yielded four factors (task, emotion, avoidance, cognitive coping). The task factor included active coping, planning, and suppression of competing activities (Carver et al., 1989). Next, the emotion factor involved seeking social support and focusing on emotions (Carver et al., 1989).

The avoidance factor was comprised of denial and mental and behavioral disengagement (Carver et al., 1989). Last, the cognitive coping factor included acceptance, restraint coping and positive reinterpretation and growth (Carver et al., 1989). The Coping Strategy Inventory extracted eight factors (problem solving, cognitive restructuring, express emotions, social support, problem avoidance, wishful thinking, self-criticism, and social withdrawal; Tobin, Holroyd, Reynolds, & Wigal, 1989).

Coping Across Various Situations

Stressors in Everyday Life

People experience stressful situations every day, many of which are chronic stressors and require individuals to employ coping strategies. Sperling (2003) examined how adults cope with everyday stressors such as marital conflict, health problems, housing and financial concerns. The authors found that individuals with marital problems reported using numerous coping strategies such as seeking social support, adjusting to the needs/habits of others, relating to other people's aims/success and accepting the situation (Sperling, 2003). For addressing health and financial problems adjusting to the institutional aspects of the situation was the most reported coping strategy. For the health domain, this involved exploring health insurance and treatment options whereas for financial stress, this included placing money in the bank and having a bank invest money (Sperling, 2003). Additionally, Serido, Shim, Mishra & Tang (2010) found preventive financial strategies (e.g. budgeting) were related to lower psychological distress. However, there was not a common coping strategy for those experiencing a housing situation such as moving or having a dispute with a neighbor (Sperling, 2003). This could be because the housing category classified many situations (e.g. moving, renovating, dispute with a neighbor) where each could involve a different strategy, not leading to a consensus within the category.

Moreover, marriage/partnership stress was viewed as a more personal issue (i.e. pertaining to private life, relationships, emotions) which led to using a greater number of coping strategies and more often employed interpersonal methods of coping, such as seeking social support (Sperling, 2003). Whereas, coping with health, housing and finances were not seen as personal issues and as being influenced by external factors (Sperling, 2003). As shown here, the type of coping strategy people utilized varied based on the individual stressor they encountered.

Occupational Stress

Many individuals report being stressed by their employment (American Psychological Association, 2011). Frequent adaptive coping strategies for addressing work related stress include engaging in physical exercise and communicating with a friend or family member (Graham, Albery, Ramirez & Richards, 2001; Holton et al., 2014). Conversely, maladaptive strategies frequently used by employees are consumption of alcohol and overeating (Grunberg, Moore, Anderson-Connolly & Greenberg, 1999; Holton et al., 2014). Brown, Westbrook, and Challagalla (2005) examined the relationship between negative work events and coping. They found venting (i.e. the verbal expression of negative emotions about work related stress) increased negative emotions which, in turn, negatively impacted job performance (Brown et al., 2005). Lively (2000) examined the use of venting among attorneys and also found that venting emotions was an ineffective coping response.

Brown et al. (2005) also examined the relationship between self-control (i.e. resisting engaging in negative actions that may worsen the situation), negative emotions, and job performance. The authors found that as self-control increased, job performance was influenced either positively or negatively depending upon whether self-control was used as an emotion-focused or problem-focused strategy (Brown et al., 2005). Specifically, when self-control was

used as an emotion-focused strategy, such as ignoring the urge to engage in problematic behavior, this buffered the effect of negative emotions on job performance (Brown et al., 2005). Alternatively, when self-control is used as a problem-focused strategy, such as attempting to alter the situation, job performance decreased regardless of negative emotion (Brown et al., 2005). It was hypothesized that in attempts to alter a negative work situation, the individual likely focused on the negative situation instead of their work. This study amplifies how complicated the coping process is and shows how the same coping strategy can be both adaptive and maladaptive dependent upon how it is being used in a given situation.

Social Media

Approximately 93% of adults between the ages of 18-29 report using the internet (Lenhart, Purcell, Smith & Zickuhr, 2010). Further, 47% of adults report using social networking which has risen from 37% in 2008 (Lenhart et al., 2010). Of those using social networking sites, 52% have two or more profiles which is up from 42% in 2008 (Lenhart et al., 2010). However, internet addiction is positively associated with depression in adults when they engage in avoidant coping strategies (McNicol & Thorsteinsson, 2017). McNicol and Thorsteinsson (2017) found younger adults to have a greater likelihood of internet addiction than older adults.

Avoidant coping was associated with increased symptoms of depression and anxiety as well as internet addiction (McNicol & Thorsteinsson, 2017). Therefore, not only are social media use and depression related, but also the use of avoidant coping strategies. It also is possible that use of social media can be a source of social support and therefore be an adaptive coping strategy. Hence, social media may serve an important role in coping that has not been fully examined. Current coping inventories do not include social media items which may be important to more fully understand adaptive and maladaptive coping.

College

College students experience a high level of stress (Hudd et al., 2000; Pierceall & Keim, 2007) requiring the use of coping strategies. The literature indicates that problem-focused coping among college students is associated with better health outcomes (e.g. decreased somatic symptoms, anxiety, insomnia, depression, social dysfunction) and increased motivation, whereas emotion-focused coping is associated with negative health and mood outcomes (Pritchard et al., 2007; Sasaki & Yamasaki, 2007; Struthers, Perry & Menec, 2000). Brougham and colleagues (2009) examined gender differences in college students' coping and found that college students tend to engage in emotion-focused coping strategies (Brougham et al., 2009; Kariv & Heiman, 2005). Specifically, coping with daily hassles, such as not being able to find a parking spot, men and women used avoidance and self-punishment (i.e. self-focused rumination and self-blame) which are maladaptive (Brougham et al., 2009). However, some daily hassles can be avoided by using problem-focused coping which could alleviate some stress that college students experience. For example, Additionally, males reported engaging in adaptive strategies for dealing with financial and social stress such as accommodation and self-help (e.g. acceptance, reframing negative outcomes, sustaining emotional well-being) more often than their female counterparts (Brougham et al., 2009). On the other hand, men also reported using maladaptive strategies for family stress such as self-punishment (Brougham et al., 2009). Women reported more stress overall and specifically with finances compared to men and using self-punishment and self-help strategies to cope (Brougham et al., 2009; Hudd et al., 2000).

Current Coping Measures

There are several measures that assess adult coping. However, many are psychometrically flawed. Thus, it is difficult to compare results across studies as current

measures may not accurately represent the comprehensive strategies of coping. Below is a review of the commonly used coping measures and their methodological strengths and limitations.

COPE Questionnaire

The COPE questionnaire (Carver et al., 1989) is one of the most frequently used measures of coping (Kato, 2013). The COPE consists of fifty-two items that load on fourteen factors (Carver et al., 1989). The scales were rationally derived a priori and were confirmed based on factor loading (Carver et al., 1989). Each scale consists of four items with the exception of the alcohol-drug disengagement scale which has one item (Carver et al., 1989). Coping scale scores are based on the sum of the items for each of the fourteen scales. Each item is assessed on a 4-point Likert scale, ranging from “I usually don’t do this” to “I usually do this a lot” (Carver et al., 1989). The internal consistency of each scale is quite variable, and some have very low alphas. Half of the subscales (active coping, suppression of competing activities, positive reinterpretation and growth, behavioral disengagement, mental disengagement, acceptance) had alphas that fell below 0.7 (Carver et al., 1989; Kato, 2013; Lyne & Rogers, 2000). This indicates that the COPE questionnaire may not provide an accurate representation of individuals’ coping strategies because of its poor psychometrics.

There are many limitations of the COPE questionnaire especially pertaining to the validation of the measure. First, the authors did not report details on the methodology of the original factor analysis which can be problematic for replication (Parker & Endler, 1992). A meta-analysis conducted by Kato (2013) found that 75% of researchers who used the COPE modified the questionnaire in some way. The adapted versions of the COPE used some of the original subscales or formed new scales after an additional factor analysis was conducted (Kato,

2013). This is interesting to note since it is not typical to change the original questionnaire for various studies as it was created for a specific purpose.

Researchers have obtained different factor structures of the COPE. Originally, the authors cited four factors (task, emotion, avoidance, cognitive coping) (Carver et al., 1989; Lyne & Rogers, 2000). However, Lyne & Rogers (2000) found a three-factor solution that yielded the most interpretable factors. The factors included: rational coping, emotion-focused coping and avoidance coping. The discrepancy in the number of factors may have been due to the original analysis' eigenvalues being overestimated, since the Kaiser rule that Carver et al. (1989) utilized to develop the measure tends to overestimate the number of factors, which may have led to the extraction of four rather than three factors (Zwick & Velicer, 1982). Taken together, this evidence demonstrates that the COPE lacks internal consistency and an unstable factor solution. Additionally, the COPE questionnaire was developed 30 years ago and therefore may not account for current coping strategies such as social media use. With the immense faults of the COPE questionnaire, a new measure could address these and improve on this measure.

Brief COPE

The Brief COPE is a shortened version of the COPE questionnaire consisting of twenty-eight items that are grouped into fourteen subscales (Carver, 1997). The original purpose of this measure was to assess how people cope with a specific stressor (e.g., recovery after a hurricane). Coping strategies were based on the sum of the items for each of the fourteen scales. Brief COPE items are rated on a 4-point Likert (“I haven’t been doing this at all” to “I’ve been doing this a lot”). Similar to the COPE, the Brief COPE has problematic internal consistency with many factors having alphas below 0.6 (acceptance $\alpha=.57$, denial $\alpha=.54$, venting $\alpha=.50$) (Carver, 1997). There are also discrepancies among the “turning to religion” factor on this measure. Previous

studies found the factor, “turning to religion”, was an adaptive strategy for subscale analyses and a maladaptive strategy at the item-level analyses (Krägeloh, 2011). However, this evidence of the unstable factor structure may have an explanation in the fact that the initial development of the Brief COPE did not follow the recommended guidelines on creating a shortened measure (Krägeloh, 2011). Although this measure is very popular, it lacks psychometric support.

Ways of Coping Questionnaire

The next most widely used coping measure after the COPE is the Ways of Coping Checklist (WCC)/Ways of Coping Questionnaire (WCQ) (Folkman & Lazarus, 1980, 1985; Kato, 2013). The WCQ’s items were retained from the WCC including a range of strategies people use to cope with stressful situations (Folkman & Lazarus, 1985). Additionally, items were added or changed based on feedback provided by participants who completed the WCC (Folkman & Lazarus, 1985). Further, the WCQ uses a four-point Likert scale format. This measure’s internal consistency ranged from .65-.85. A problem with this measure is the lack of replicability of the factor structure and psychometric data even among the same population (i.e. college students) on which it was originally normed (Parker, Endler, & Bagby, 1993). There are two plausible reasons for this to occur. One, as seen in the COPE, there may be a problem with the factor-analytic procedure (i.e. administering the items to the same participants at multiple time points) that was originally used for this measure (Parker et al., 1993). Another possible reason for this may be that there are psychometric issues with the items on this measure such as having too vague or general items (Parker et al., 1993). It was also noted that researchers cannot confidently generalize the results using this measure across situations or populations based on the original, non-representative sample (Lundqvista & Ahlströmb, 2005). Taken together, this is also a measure that has significant issues that cannot be ignored.

Coping Strategies Inventory

There are other coping measures that are less commonly used in research but are also psychometrically flawed. For example, the Coping Strategies Inventory (Tobin et al., 1989) was validated solely on undergraduate students of which 90% were Caucasian. Thus, the measure may not be relevant to more heterogeneous samples. Based on this evidence, the current available coping measures each possess various issues which question how confident researchers can be with the results found using these measures. Many of the issues related to these questionnaires surround their initial development. Therefore, it is important to use their limitations to inform future scale development.

Overall, there have been various conceptualizations of coping (e.g. emotion-focused vs. problem-focused; avoidant vs. approach; multiple factors based on coping measures). Multiple studies have examined coping strategies that are used in various settings and have determined maladaptive and adaptive coping strategies. However, the current coping measures that are used in the literature have limitations (e.g. poor psychometric properties, inconsistent factor structure). Additionally, the current coping measures were developed before the rise of technology so current coping measures do not include items addressing technological advances. Therefore, the development of a new coping measure would benefit coping researchers.

The aim of this study is to develop a psychometrically sound measure of adult coping. The measure was developed in three phases. Phase 1 involved generating a pool of items based on a review of the literature and existing measures. Phase 2 eliminated items based on factor loadings and internal consistency. This phase also included determining the factor structure of the scale. It is expected that the final measure will have at least two factors (adaptive and maladaptive coping strategies) and include items with internal reliability alphas of 0.7 and

higher. Finally, the construct, concurrent, and incremental validity of the Adult Coping inventory was examined in Phase 3. Construct validity was examined by comparing the total score of the Adult Coping Inventory and the Brief COPE (DeVellis, 2016). To determine the concurrent validity of the Adult Coping Inventory, the Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995) and the Brief Resilience Scale were completed by the participants. If the measure has concurrent validity, maladaptive coping strategies will be related to higher scores on the DASS-21 and lower scores on the Brief Resilience Scale (Gustems-Carnicer & Calderon, 2013; Smith et al., 2008). Additionally, adaptive coping strategies will be related to lower scores on the DASS-21 and higher scores on the Brief Resilience Scale (Gustems-Carnicer & Calderon, 2013; Smith et al., 2008). Incremental validity was examined by examining whether the ACI total score explained additional variance than the Brief COPE on various outcome variables (resilience, depression, anxiety, stress)

Hypotheses

1. Hypothesis 1: The total score of the Adult Coping Inventory will be moderately correlated with the Brief COPE total score.
2. Hypothesis 2: Factors on the Adult Coping Inventory that measure maladaptive coping will be negatively correlated with the total score on the Brief Resilience Scale. Similarly, the adaptive coping strategies will be positively correlated with scores on the Brief Resilience Scale.
3. Hypothesis 3: The frequency of negative and positive coping strategies will have a strong, negative correlation with scores on the Depression, Anxiety, and Stress Scale.

Method and Results

Phase 1: Item Generation

The purpose of Phase 1 is to generate a pool of coping items for adults.

Participants

Six graduate students and two faculty members in clinical psychology reviewed the items for redundancy and clarity.

Procedure

The item pool was generated based on a review of the assessment and treatment literature and existing coping measures. The items were then reviewed by clinical psychology graduate students and faculty. Items were eliminated based on redundancy and lack of clarity which resulted in the pool of items called “Adult Coping Inventory-Pilot”.

Results of Phase 1

Item Generation

The examination of the literature and previous measures resulted in 129 items to be included in the “Adult Coping Inventory-Pilot”. The items were separated into 5 categories including behavior activation, mindfulness/relaxation, health, problem-solving and social support.

Item Review

The 129 items were reviewed by two clinical psychology faculty members and seven graduate-level psychology students. Items identified as unclear or redundant were considered for deletion. Additionally, items the reviewers suggested be reworded, combined or added were considered. The final Adult Coping Inventory-Pilot included 124 items. The final item pool

provided a comprehensive list of coping strategies across multiple areas: behavior activation, mindfulness/relaxation, health, problem-solving and social support.

Phase 2: Item Selection.

The purpose of Phase 2 is to select common coping items based on items generated in the Adult Coping Inventory-Pilot.

Participants

The participants included 526 adults between the age of 18-65 who reside in the United States and read and write English. The participants were primarily recruited through Prolific, an online forum where qualifying participants complete questionnaires in exchange for monetary compensation. A small portion of the participants were collected from the community at a local library. Participants (M = 45.6% and F = 51.1%) were predominately Caucasian (76.8%) with 8.4% Asian, 8% African American and 5.5% Hispanic/Latino. The majority of participants were college graduates (36.5%) and have an annual household income of \$50,000-\$99,999 (32.7%). See Table 1 for demographic characteristics of all participants.

Once Institutional Review Board (IRB) approval was received, participants completed an online survey (through Qualtrics) either through Prolific or at the library. The survey began with an explanation of the study and consent was obtained. After obtaining informed consent, participants completed the measure.

Prolific

Prolific is a website that allows individuals to choose from various tasks that require different time commitments and compensation for doing so. Researchers have begun utilizing websites, including Prolific, to collect data. Research examining the quality of the data collected through Prolific found high internal reliability (alpha above 0.90) for scales used on Prolific

which was comparable to college student populations (Peer, Brandimarte, Samat & Acquisti, 2017). Prolific participants also reported high naivety to research studies overall and participants are diligent when completing the studies (Peer et al., 2017). Periodic validity checks were included throughout the survey to ensure proper participant attention. Prolific participants were found to have a mean age of 27 with a range of 23-37, indicating a more representative sample than a college student population (Peer et al., 2017). Prolific has shown to be a more valuable crowdsourcing platform than its competitors (Palan & Schitter, 2018).

Measures

Participants completed a demographic questionnaire and a proposed measure of coping strategies, The Adult Coping Inventory-Pilot.

Demographic Questionnaire. This measure was used to collect demographic information including age, gender, race, ethnicity, marital status, highest level of education, current occupation (e.g. unemployed, self-employed, etc) annual household income and religious affiliation (Appendix B).

Table 1. Demographic characteristics

	Frequency (N=526)	Percentage
Gender		
Female	269	51.1
Male	240	45.6
Transgender	8	1.5
Gender Fluid	7	1.3
Different Identity	2	0.4
Age		
18-25	147	27.9
26-35	176	33.5

(table cont'd.)

	Frequency (N=526)	Percentage
36-45	98	18.6
46-60	93	17.7
60+	12	2.3
Race		
White	404	76.8
Asian	44	8.4
Black or African American	42	8.0
Hispanic or Latino	29	5.5
American Indian or Alaska Native	5	1
Native Hawaiian or Other Pacific Islander	2	0.4
Hispanic Ethnicity		
Not Hispanic or Latino	473	89.9
Hispanic or Latino	53	10.1
Marital Status		
Single	267	50.8
Married	166	31.6
Living with unmarried Partner	64	12.2
Separated	21	4.0
Widowed	8	1.5
Highest Level of Education		
Standard College Graduate	192	36.5
Some College	186	35.4
Post-College Degree	71	13.5
High School/GED	67	12.7
Some High School	9	1.7
Less than Junior High	1	0.2
Annual Income		
0-24,999	130	24.7
25,000-49,000	138	26.2
50,000-99,999	172	32.7
100,000+	86	16.3
Type of Occupation		
White Collar	173	32.9

(table cont'd.)

	Frequency (N=526)	Percentage
Unemployed	143	27.2
Blue Collar	91	17.3
Self-Employed	88	16.7
Professional Career	31	5.9
College Enrollment Status		
No	426	81
1 st year	14	2.7
2 nd year	20	3.8
3 rd year	26	4.9
4 th year	8	1.5
5 th year or higher	8	1.5
Graduate Student	24	4.6

Adult Coping Inventory-Pilot Participants completed the Adult Coping Inventory-Pilot which included 125 items. This measure intends to assess individual’s coping strategies. Items are rated using a four-point scale (from 0 “never” to 3 “most of the time”).

Procedure

Items were considered for elimination if they met the pre-established criteria. The retained items were included in the Adult Coping Inventory. Next, an exploratory factor analysis was conducted on the Adult Coping Inventory items to determine the factor structure. Inter-item correlations are reported. The exploratory factor analysis was completed in IBM SPSS using the maximum likelihood analysis. Then, a scree plot was analyzed to determine the number of factors appropriate for the scale (Costello & Osborne, 2005). An oblique rotation was analyzed since the underlying latent variables are believed to correlate (DeVellis, 2016). A reliability analysis was conducted by calculating coefficient alpha and items were removed if they fell below 0.7.

Results of Phase 2

Item Selection

Item frequency, item means and inter-item correlations were calculated. Items were considered for elimination if they meet the following criteria: a) items endorsed by 40% of the population as “never”, b) item means below 1, and c) factor loadings less than 0.4 (Guadagnoli & Velicer, 1988; Field, 2017; Sytsma, Kelley, & Wymer, 2001).

Item Frequency

Frequency endorsement was calculated for each item. Item endorsement of a rating of 0 (“never”) exceeding 40% were considered for elimination. Thirty-nine items were eliminated based on this criterion.

Item Means

Item means were calculated for each of the items. Item means less than 1 were considered for elimination. Two additional items were eliminated based on this criterion.

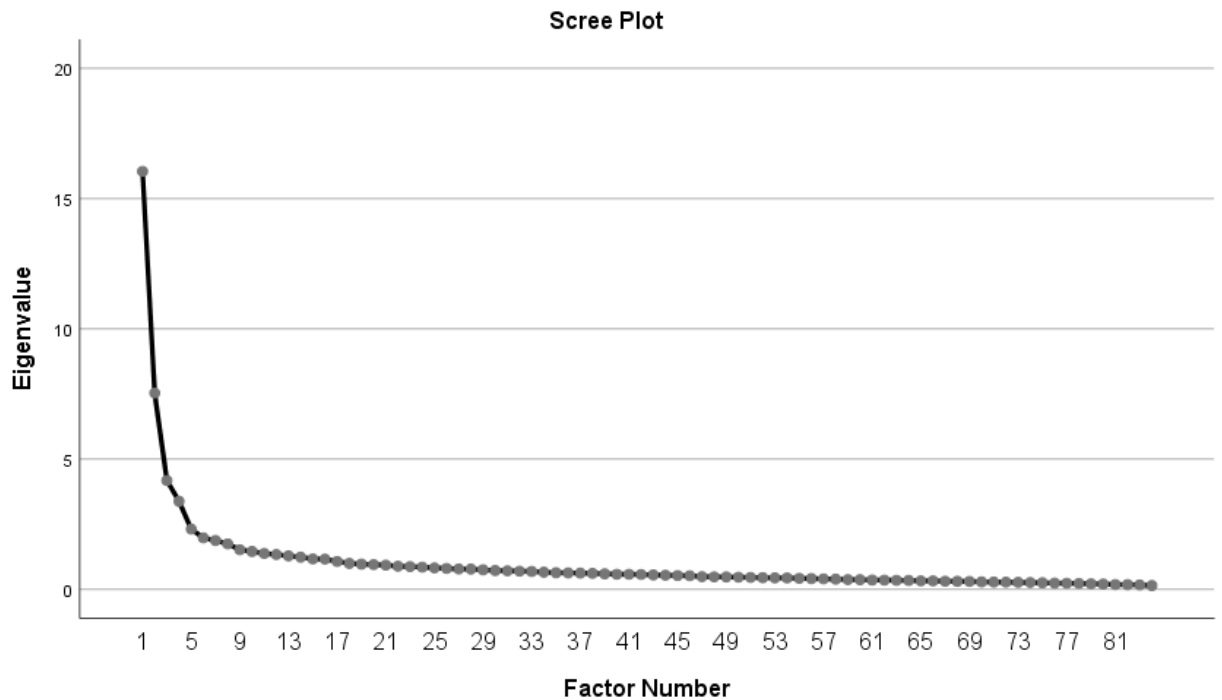
Inter-Item Correlations

Inter-item correlations were examined to determine whether multicollinearity was present in the items. Inter-item correlations above .8 were considered for elimination (Field, 2017). One item pair met this criterion. The items were combined into one item.

Exploratory Factor Analysis

SPSS was used for data analyses. Exploratory Factor Analysis was used to determine the factor structure. An oblique maximum likelihood analysis was conducted on the remaining 82 items. The initial scree plot illustrated that the first five factors accounted for the most variance (Figure 1).

Figure 1. Scree Plot



Next, analyses of a five-factor model were conducted. This model accounts for 39.82% of variance and resulted in 54 items. The factor loadings are presented in Table 2.

Factor 1, Problem Solving, includes fifteen items related to active approaches to problem solving. An example item includes: “Brainstorm all possible solutions”. Factor 2, Mindfulness, includes sixteen items that describe mindfulness techniques. An example item includes: “Visualize myself somewhere peaceful”. Factor 3, Maladaptive Coping, includes nine items that describe negative coping strategies. An example item includes: “Dwell on the worst outcomes”. Factor 4, Social Support, includes eight items that involve turning to others when distressed. An example item includes: “Talk to a friend about the problem”. Factor 5, Avoidance, includes six items that involve avoiding the problem and/or others. An example item includes: “Avoid stressful situations”.

Table 2. Factor Loadings

Items	Factor ¹					Item-Total Correlation
	1	2	3	4	5	
Factor 1: Problem Solving						
Evaluate the possible outcomes of the situation	.924					.55
Checking the facts of the situation	.912					.61
Brainstorm all possible solutions	.811					.57
Assess the outcome after I used the solution	.741					.62
Determine whether there is another way to look at the situation	.712					.61
If my initial solution, doesn't work, choose a different solution and try it	.627					.57
Stop and think about my response	.626					.59
Identify the problem	.594					.59
Rate how effective each solution is	.560					.52
Identify irrational beliefs	.545					.47
Plan to use the highest rated solution	.524					.53
Think back to past situations for solutions	.520					.51
Nonjudgmentally accepting the experience	.487					.50
Seek information online about the situation	.424					.44
Pretend I am in the other person's Shoes	.413					.56
Factor 2: Mindfulness						
Visualize myself somewhere peaceful		.758				.44
Visualize a place I enjoy		.728				.49
Commit to engage in something meaningful and important everyday		.646				.49
Practice deep breathing		.613				.43
Stretch my muscles		.599				.44
Practice a skill or hobby		.552				.46
Engage in positive self-talk		.508				.50
Take a bath or shower		.485				.31
Do something nice for someone else		.482				.54
Clean my house		.469				.44
Engage in social activity		.469				.38
Reward myself for successfully using a solution		.463				.57
Consume a healthy diet		.458				.41

(table cont'd.)

Items	Factor					Item-Total Correlation
	1	2	3	4	5	
Read a book		.447				.41
Exercise		.442				.32
Take a walk		.409				.27
Factor 3: Maladaptive Coping						
Take my frustration out on myself			.798			.16
Dwell on the worst outcome			.728			.18
Blame myself for the situation			.726			.22
Feeling shame/guilt			.687			.27
Feeling ignored, criticized or rejected			.622			.25
Easily annoyed by others			.522			.22
Go over and over the situation in my mind			.508			.31
Take my frustration out on others			.478			.24
Blame others for the situation			.426			.24
Factor 4: Social Support						
Talk to someone about my feelings around what is bothering me				.907		.52
Talk about the experience				.825		.57
Talk to someone about what is bothering me				.817		.52
Talk to a friend about the problem				.750		.50
Seek reassurance from others				.727		.53
Venting my emotions				.638		.40
Ask for help				.594		.40
Talk to someone about something positive				.453		.59
Factor 5: Avoidance						
Avoid people or situations that are upsetting					.669	.30
Leave stressful situation					.656	.44
Avoid stressful situations					.588	.30
Avoiding other people					.513	.14
Take quiet time to myself					.480	.40
Engage in an activity by myself					.455	.42

Reliability

Reliability was calculated on the total score and for each factor using Chronbach's alpha.

The full scale demonstrated excellent internal consistency ($\alpha = .95$) and the factors reliability

scores range from adequate to excellent (Factor 1 $\alpha = .92$; Factor 2 $\alpha = .88$; Factor 3 $\alpha = .85$; Factor 4 $\alpha = .90$; Factor 5 $\alpha = .76$).

Phase 3: Validation

The purpose of Phase 3 is to assess the psychometric properties of the Adult Coping Inventory. Specifically, construct, concurrent and incremental validity of the Adult Coping Inventory was assessed.

Participants

The participants are the same from Phase 2. The same sample of 526 adult participants also completed Phase 3.

Procedure

The participants completed the Adult Coping Inventory along with the Brief Resilience Scale and the DASS-21 in order to determine the concurrent validity of the Adult Coping Inventory. Additionally, participants completed the Brief COPE to determine the construct validity of the Adult Coping Inventory.

Depression-Anxiety Stress Scale-21 (DASS-21)

The Depression, Anxiety, Stress Scale-21 (Lovibond & Lovibond, 1995) is a 21-item self-report measure that measures one's depression, anxiety and stress (Appendix D). This measure has been used in a multitude of studies to examine the depression, anxiety and stress levels among various participants (Falk, Norris & Quinn, 2014; Frost, Tolin, Stekette, Fitch & Selbo-Bruns, 2009; Yusoff et al., 2013). The items are ranked on a scale from 0 ("never") to 3 ("almost always) based on how an individual felt over the past week. Higher scores on each subscale indicate increased symptomology and total scores are calculated for each subscale and doubled to indicate the level of severity. This measure has acceptable internal consistency among

depression ($\alpha = .94$), anxiety ($\alpha = .87$), and stress ($\alpha = .91$) (Antony, Bieling, Cox, Enns, & Swinson, 1998).

Brief Resilience Scale

The Brief Resilience Scale (Smith et al., 2008) is a 6-item self-report measure of resilience. Resilience is defined as the ability to recover from stress (Appendix E). Items are rated on a scale from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). Item responses are summed, and the mean is taken to form a participant’s overall score, with higher scores indicating greater resilience. Chronbach’s alpha range from .80-.91 with factor loadings ranging from .68-.91. Test-retest reliability was also found at one month ($\alpha = .69$) and at three months ($\alpha = .62$).

Brief COPE

The Brief COPE (Carver, 1997) is a 28-item self-report measure that encompasses 14 different coping methods including venting, religion, and denial (Appendix C). Items are rated on a scale from 1 (“not at all”) to 4 (“a lot”). The sum of scores on each factor will be measured to determine the participants current coping strategies. Chronbach’s alpha range from .50 to .90. Additionally, scores of adaptive and maladaptive coping factors will be generated based on Meyer’s (2001) methodology. Correlations between the Brief COPE and Adult Coping Inventory have been analyzed for construct validity.

Adult Coping Inventory

This is a 54-item measure that assesses individuals’ coping strategies. Items were rated from 0 (“never”) to 3 (“always”). To calculate the total score of the ACI, all items on the Maladaptive Coping subscale and two items on the Avoidance subscale were reverse scored.

Then, the total score of each factor were summed to create the total score of the Adult Coping Inventory. Higher scores indicate more positive coping skills.

Results of Phase 3

For the following analyses, partial correlations were analyzed controlling for age, gender, education level, occupation type, annual income, and religious affiliation.

Hypothesis 1

The first hypothesis proposed that the total score of the Adult Coping Inventory (ACI) would be moderately correlated with the Brief COPE subscales. Partial correlations were conducted to examine the relationship between the Brief Cope and the ACI. In this analysis, the adaptive and maladaptive subscales of the Brief Cope were utilized which was determined by Meyer (2001). There was a strong, positive partial correlation between the adaptive coping scale of the Brief COPE and the total score of the ACI, which was statistically significant, $r(518) = .76, p < .01$. Additionally, each factor of the ACI was significantly related to the adaptive and maladaptive subscales on the Brief COPE after controlling for various demographic variables. The Problem Solving, Mindfulness and Social Support scales were positively related to the adaptive coping scale, $r(518) = .72, r(518) = .61, r(518) = .67, p < .01$. The Maladaptive Coping and Avoidance subscales were positively related to maladaptive coping scale of the Brief COPE $r(518) = .70, r(518) = .29, p < .01$. These findings are listed in Table 3.

Hypothesis 2

The second hypothesis proposed factors measuring maladaptive coping strategies on the Adult Coping Inventory would be negatively correlated with the total score of the Brief Resilience Scale. Partial correlations were conducted to examine the relationship between the Brief Resilience Scale and the ACI. Factor 3 (Maladaptive Coping) and factor 5 (Avoidance)

were found to have a significant negative relationship with the total score of the Brief Resilience Scale as hypothesized, $r(518) = -.47$, $r(518) = -.15$, $p < .01$. Hypothesis 2 also stated that factors related to adaptive coping strategies on the ACI would be positively related to the total score of the Brief Resilience Scale. Factors 1 (Problem Solving), 2 (Mindfulness) and 4 (Social Support) were found to have a significant positive relationship with the total score of the Brief Resilience Scale, $r(518) = .26$, $r(518) = .23$, $p < .01$, $r(518) = .10$, $p < .05$. Additionally, the total score of the ACI was significantly positively related to the total score of the Brief Resilience Scale, $r(518) = .38$, $p < .01$. These findings are summarized in Table 3.

Hypothesis 3

The third hypothesis stated the frequency of negative and positive coping strategies will have a strong, negative correlation with scores on the Depression, Anxiety, and Stress Scale. Partial correlations were conducted to examine the relationship between the Depression, Anxiety, Stress Scale-21 and the ACI. Factors 1, 2 and 4 of the ACI, which assesses positive coping skills, have a significant negative relationship with the Depression scale, $r(518) = -.15$, $r(518) = -.17$, $r(518) = -.15$, $p < .01$. Additionally, Factor 3 and 5, which assesses negative coping skills has a significant positive relationship with the Depression, Anxiety and Stress Scales, $r(518) = .49$, $r(518) = .14$, $r(518) = .43$, $r(518) = .14$, $r(518) = .58$, $r(518) = .20$, $p < .01$. The total score of the ACI has a significant negative relationship with the Depression and Stress scales, $r(518) = -.33$, $r(518) = -.15$, $p < .01$. The significance values are listed in Tables 3 and 4.

Table 3. Validity Partial Correlations

Subscales	Adult Coping Inventory: Problem Solving	Adult Coping Inventory: Mindfulness	Adult Coping Inventory: Maladaptive Coping	Adult Coping Inventory: Social Support	Adult Coping Inventory: Avoidance	Adult Coping Inventory: Total Score
Brief COPE: Adaptive Coping	.72**	.61**	.12**	.67**	.29**	.76**
Brief COPE: Maladaptive Coping	.11*	.11*	.70**	.20**	.29**	---
Brief Resilience Scale	.26**	.23**	-.47**	.10*	-.15**	.38**
DASS-21: Depression	-.15**	-.17**	.49**	-.15**	.14**	-.33**
DASS-21: Anxiety	---	---	.43**	---	.14**	---
DASS-21: Stress	---	---	.58**	---	.20**	-.15**

*Correlation significant at the $p < .05$ level

** Correlation significant at the $p < .01$ level

Table 4. Validity Correlations for Hypotheses

Hypothesis	Subscale	Correlation Coefficient
Hypothesis 1		
ACI Total Score	Brief COPE: Adaptive Coping	.76**
ACI Problem Solving Scale	Brief COPE: Adaptive Coping	.72**
	Brief COPE: Maladaptive Coping	.11*
ACI Mindfulness Scale	Brief COPE: Adaptive Coping	.61**
	Brief COPE: Maladaptive Coping	.11*
ACI Maladaptive Coping Scale	Brief COPE: Maladaptive Coping	.70**
	Brief COPE: Adaptive Coping	.12**
ACI Social Support Scale	Brief COPE: Adaptive Coping	.67**
	Brief COPE: Maladaptive Coping	.20**
ACI Avoidance Scale	Brief COPE: Maladaptive Coping	.29**
	Brief COPE: Adaptive Coping	.29**
Hypothesis 2		
ACI Total Score	Brief Resilience Scale	.38**
ACI Problem Solving Scale	Brief Resilience Scale	.26**
ACI Mindfulness Scale	Brief Resilience Scale	.23**
ACI Maladaptive Coping Scale	Brief Resilience Scale	-.47**
ACI Social Support Scale	Brief Resilience Scale	.23**
ACI Avoidance Scale	Brief Resilience Scale	-.15**

(table cont'd.)

Hypothesis 3		
ACI Total Score	Depression Scale Stress Scale	-.33** -.15**
ACI Problem Solving Scale	Depression Scale	-.15**
ACI Mindfulness Scale	Depression Scale	-.17**
ACI Maladaptive Coping Scale	Depression Scale Anxiety Scale Stress Scale	.49** .43** .58**
ACI Social Support Scale	Depression Scale	-.15**
ACI Avoidance Scale	Depression Scale Anxiety Scale Stress Scale	.14** .14** .20**

*Correlation significant at the $p < .05$ level

** Correlation significant at the $p < .01$ level

Incremental Validity

Incremental validity was examined to determine whether the ACI increases the predictive validity above and beyond the Brief COPE. Hierarchical regressions were analyzed to examine the potential of this relationship for each outcome measure (resilience, depression, anxiety, stress). The appropriate Brief COPE subscale (adaptive or maladaptive) was entered in the first step and the appropriate ACI subscale was entered for the second step of the equation.

For resilience, the overall model was significant on the first step $F(1, 524) = 47.16, p < .001$; Adjusted $R^2 = .08$), indicating the Brief COPE adaptive subscale significantly predicted resilience ($\beta = .29, t = 6.87, p < .001$). The second step, $\Delta F(2, 523) = 49.65, p < .001$; $\Delta R^2 = .08$, Adjusted $R^2 = .16$, was also significant, with the ACI total score significantly contributing to the model ($\beta = .44, t = 7.05, p < .001$) above and beyond the Brief COPE adaptive subscale.

For depression, the overall model was significant on the first step $F(1, 524) = 196.50, p < .001$; Adjusted $R^2 = .27$), indicating the Brief COPE maladaptive subscale

significantly predicted depression ($\beta = .52, t = 14.02, p < .001$). The second step, $\Delta F(2, 523) = 99.93, p < .001; \Delta R^2 = .12, \text{Adjusted } R^2 = .39$, was also significant, with the ACI total score significantly contributing to the model ($\beta = -.34, t = -.10.0, p < .001$) above and beyond the Brief COPE maladaptive subscale.

For anxiety, the overall model was significant on the first step $F(1, 524) = 161.83, p < .001; \text{Adjusted } R^2 = .24$, indicating the Brief COPE maladaptive subscale significantly predicted anxiety ($\beta = .49, t = 12.72, p < .001$). The second step, $\Delta F(2, 523) = 5.61, p < .05; \Delta R^2 = .008, \text{Adjusted } R^2 = .24$, was also significant, with the ACI total score significantly contributing to the model ($\beta = -.09, t = -2.37, p < .05$) above and beyond the Brief COPE maladaptive subscale.

For stress, the overall model was significant on the first step $F(1, 524) = 238.71, p < .001; \text{Adjusted } R^2 = .31$, indicating the Brief COPE maladaptive subscale significantly predicted stress ($\beta = .56, t = 15.45, p < .001$). The second step, $\Delta F(2, 523) = 16.52, p < .001; \Delta R^2 = .02, \text{Adjusted } R^2 = .33$, was also significant, with the ACI total score significantly contributing to the model ($\beta = -.15, t = -4.06, p < .001$) above and beyond the Brief COPE maladaptive subscale.

Overall, these results indicate the ACI total score has better predicative validity than the Brief COPE on resilience, depression, anxiety and stress.

Discussion

Coping has been examined in the literature for many years across different topics and populations. There are well-known coping measures that were developed over 20 years ago that continue to be widely used today. However, these measures were developed with homogenous samples and have psychometric properties that are adequate but need to be improved upon. The aim of this study was to develop a new coping measure for adults that includes a diverse sample of participants. Additionally, this study aimed to develop a psychometric sound alternative to existing measures using best practice methods for measure development.

Item generation consisted of reviewing the assessment and treatment literature in addition to the current coping measures. Items were reviewed by clinical psychology faculty and graduate students. This resulted in 124 initial items. These items were administered to a large sample of participants who varied in age, race and annual income. After items were eliminated based on pre-established criteria (i.e. items endorsed by 40% of the population as “never”, item means above 2.0, and factor loadings less than 0.4), an Exploratory Factor Analysis was conducted on these items, resulting in a measure of 54 items across 5 subscales: Problem Solving, Mindfulness, Social Support, Maladaptive Coping, and Avoidance.

Overall, the results indicate that the Adult Coping Inventory has good internal consistency, construct validity, concurrent validity and incremental validity. The internal consistency of the full scale was excellent ($\alpha = 0.95$) and ranged from moderate to excellent on each subscale ($\alpha = 0.92, 0.88, 0.85, 0.90, 0.76$). During the validation phase, the measure demonstrated overall construct validity with a widely used coping measure, the Brief COPE. Additionally, each subscale of the Adult Coping Inventory demonstrated good construct validity with the maladaptive and adaptive coping scales of the Brief COPE. Concurrent validity was also

demonstrated between the Adult Coping Inventory and the Brief Resilience Scale and the Depression, Anxiety, Stress Scale-21. Each subscale assessing positive coping skills was positively related to resilience and negatively related to depression. Subscales assessing negative coping were negatively related to resilience and positively related to depression, anxiety and stress. The ACI total score significantly explains more variance on resilience, depression, anxiety and stress than the Brief COPE indicating good incremental validity. Therefore, this measure appears to provide a more appropriate measure of coping relative to outdated measures. Overall, these results provide initial support for the psychometric properties of the Adult Coping Inventory

Limitations

While the Adult Coping Inventory demonstrated adequate psychometric properties, there are limitations to be considered and addressed in future research. First, although the sample is of a general adult population, the data was collected on a crowd-sourcing website. Therefore, there may be characteristics of this population that are not generalizable to other individuals. To have a better understanding of the sample, a fill-in-the-blank option would have been more appropriate to collect the age of the sample.

Future Directions

A confirmatory factor analysis is needed to provide further support for factor and item retention demonstrated by the exploratory factor analysis. This will aid in determining whether the current structure should be maintained.

Future research should explore the clinical utility of this assessment tool. Given the preliminary correlations between coping skills with depression and anxiety, this suggests a need

to explore the use of this tool within clinical populations to further support generalizability and clinical utility.

While self-report is primarily used in assessment and treatment within adult populations, the risk of social desirability bias may require the need for informant assessment tools that parallel self-report measures to provide opportunities to gather this information from multiple informants. Therefore, research should examine the appropriateness of measures of coping completed by other informants. Once a measure is created, inter-rater reliability between self-report and other-informant measures should be assessed.

Conclusions

The results suggest that the measure demonstrates appropriate initial validity and reliability. The measure improves upon existing coping tools by exhibiting higher psychometric properties and by use on a less homogeneous population. A confirmatory factor analysis would further support the appropriateness of the current structure.

Appendix A.

CONSENT SCRIPT

1. Study Title: Development and Initial Validation of the Adult Coping Inventory
 2. The purpose of this study is to develop and validate the Adult Coping Inventory on a diverse adult population. This study will take place over the course of 6 months. Your expected time in the study is 15 minutes. This study will entail a demographic questionnaire, two coping measures, and questionnaires examining general psychological distress and resiliency. Some sample questions that will be asked include “I tend to bounce back quickly after hard times” and “I’ve been getting emotional support from others”. To participate in this study, you must meet the requirements of both the inclusion and exclusion criteria. The inclusion criteria include: living in the United States, being able to read/write English, and are above the age of 18. Exclusion criteria include pregnant women.
 3. There are no risks to participating in this study. However, some of the questions may be uncomfortable. If you become distressed, please seek medical attention from the National Suicide Prevention Lifeline (1-800-273-8255) or a local provider. If you require immediate medical attention, please contact 911. The study is voluntary so if you feel distressed, you are able to discontinue the study at any time.
 4. Investigators: For questions regarding this study, investigators may be reached Monday – Friday 8 am – 4:30 pm by email or by phone at 225-578-4113:
 - Kristen Hollas (kholla9@lsu.edu)
 - Ella Sprang (espran1@lsu.edu)
 - Alexandra Herman (aherma5@lsu.edu)
 - Claire LaGrone (clagro3@lsu.edu)
 - Dr. Mary Lou Kelley, PhD (mkelley@lsu.edu)
 5. Subjects may choose not to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.
 6. Results of the study may be published, but no names or identifying information will be included in the publication. Subject identity will remain confidential unless disclosure is required by law.
 7. This study has been approved by the LSU IRB. For questions concerning participant rights, please contact the IRB Chair, Dr. Dennis Landin, 225-578-8692, or irb@lsu.edu.
- By continuing this survey, you are giving consent to participate in this study.

Appendix B.

Demographics Questionnaire

Age:

- 18-25
- 26-35
- 36-45
- 46-60
- 60+

Race:

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or Other Pacific Islander
- White

Ethnicity:

- Hispanic or Latino
- Not Hispanic or Latino

What is your current gender identity:

- Male
- Female
- Transgender
- Gender Fluid
- Different identity (please state):_____

Marital Status:

- Single, never married
- Married
- Separated
- Widowed
- Living with unmarried partner

Level of highest education:

- Less than Junior High School
- Junior High School (6th, 7th, 8th grade)
- Some High School (9th, 10th, 11th, 12th grade)/ Did not Graduate
- High School Graduate/GED

- Some College (at least 1 year) or specialized training (Associate Degree)
- Standard College Graduate (B.A., B.S.)
- Post-College Advanced Degree (Masters or Doctorate)

Occupation:

- Unemployed
- Blue Collar work
- White Collar work
- Self-employed
- Professional career (e.g. Doctor, Lawyer, etc)

Are you currently enrolled in college?

- No
- Yes – 1st year
- Yes – 2nd year
- Yes – 3rd year
- Yes – 4th year
- Yes – 5th year or higher
- Yes – Graduate Student

Current annual household income:

- \$0-\$24,999
- \$25,000 – \$49,999
- \$50,000 – \$99,999
- Over \$100,000

Religious Affiliation

- Christian
- Jewish
- Muslim
- Buddhist
- Hindu
- Other: _____
- None

Appendix C.

Brief COPE

These items deal with ways you've been coping with the stress in your life since you found out you were going to have to have this operation. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

- 1 = I haven't been doing this at all
- 2 = I've been doing this a little bit
- 3 = I've been doing this a medium amount
- 4 = I've been doing this a lot

1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real."
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.

27. I've been praying or meditating.
28. I've been making fun of the situation.

Appendix D.

Depression, Anxiety, Stress Scale-21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree or a good part of time

3 Applied to me very much or most of the time

1. I found it hard to wind down	0	1	2	3
2. I was aware of dryness of my mouth	0	1	2	3
3. I couldn't seem to experience any positive feeling at all	0	1	2	3
4. I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5. I found it difficult to work up the initiative to do things	0	1	2	3
6. I tended to over-react to situations	0	1	2	3
7. I experienced trembling (e.g. in the hands)	0	1	2	3
8. I felt that I was using a lot of nervous energy	0	1	2	3
9. I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10. I felt that I had nothing to look forward to	0	1	2	3
11. I found myself getting agitated	0	1	2	3
12. I found it difficult to relax	0	1	2	3
13. I felt down-hearted and blue	0	1	2	3
14. I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15. I felt I was close to panic	0	1	2	3
16. I was unable to become enthusiastic about anything	0	1	2	3
17. I felt I wasn't worth much as a person	0	1	2	3
18. I felt I was rather touchy	0	1	2	3
19. I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart race increase, heart missing a beat)	0	1	2	3
20. I felt scared without any good reason	0	1	2	3
21. I felt that life was meaningless	0	1	2	3

Appendix E.

Brief Resilience Scale

Please indicate the extent to which you agree with each of the following statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

1. I tend to bounce back quickly after hard times	1	2	3	4	5
2. I have a hard time making it through stressful events	1	2	3	4	5
3. It does not take me long to recover from a stressful event	1	2	3	4	5
4. It is hard for me to snap back when something bad happens	1	2	3	4	5
5. I usually come through difficult times with little trouble	1	2	3	4	5
6. I tend to take a long time to get over set-backs in my Life	1	2	3	4	5

Appendix F.
Item Frequencies

Item	Never	Response Seldom	Percentage Some of the time	Most of the time
Engage in a social activity	29.7	40.1	26	4.2
Engage in an activity by myself	3.8	11.8	42.2	42.2
Engage in non-suicidal self-injury	77.4	14.4	6.7	1.5
Watch youtube	17.7	22.2	31	29.1
Scream	51.5	31.2	12.5	4.8
Play a game on my phone or computer	16.2	19.8	35.6	28.5
Cook or bake	40.9	31	23.2	4.9
Read a book	26.4	26	32.5	15
Do something creative (i.e. paint, arts and crafts)	32.5	29.3	24.9	13.3
Clean my house	21.9	32.7	32.1	13.3
Play a musical instrument	70.2	16.2	8.9	4.8
Watch TV	9.7	20.5	39.7	30
Participate in a religious activity	74.1	13.9	8.4	3.6
Participate in a community activity (e.g., volunteering)	66.3	20.7	9.9	3
Practice a skill or hobby	15.8	31.2	36.7	16.3
Seek information online about the situation	9.9	18.4	38	33.7
Draw comfort from my spirituality	57	18.6	15.2	9.1
Go to a religious service	78.3	13.3	5.7	2.7
Write or express my feelings through a creative outlet	48.1	24.7	17.7	9.5
Commit to engage in something meaningful and important everyday	30	38.6	23.2	8.2
Stick to my routine	9.1	24.3	43.5	23
Take a walk	12.5	29.8	42.8	14.8
Ride my bike	71.1	15	9.7	4.2
Play a sport	65.2	18.4	12.2	4.2
Listen to music	7.2	18.3	39	35.6
Avoid people or situations that are upsetting	8	17.9	36.3	37.8
List my achievements	47	34.8	15.8	2.5
Attend a class	77.2	13.9	7	1.9
Cry	18.4	37.3	29.5	14.8

Look at or engage in social media	20.9	24.3	36.5	18.3
Practice deep breathing	27.2	28.5	29.7	14.6
Meditate	41.6	29.8	22.6	5.9
Pray	58.9	15	15.8	10.3
Participate in yoga	64.8	20	12	3.2
Visualize myself somewhere peaceful	31.9	32.9	25.7	9.5
Visually focus on something around me	41.4	30	22.1	6.5
Mindfully eat	39.2	37.3	18.6	4.9
Mindfully touch an object	61.6	23.2	12.2	3
Focus on smells around me	64.3	20.9	11	3.8
Practice guided relaxation	49.6	27.8	17.1	5.5
Use a comfort item (i.e. stress ball)	53.8	27	14.6	4.6
Look at a picture of a calming scene	49.6	27.8	17.3	5.3
Visualize a place I enjoy	38.2	26.8	21.9	13.1
Engage in aromatherapy	65	17.7	13.5	3.8
Write in a journal	60.3	23.8	12	4
Repeating a calm word or phrase while deeply breathing	50.2	27.2	17.5	5.1
Light a candle	56.1	23	16	4.9
Take quiet time to myself	2.5	10.8	41.1	45.6
Engage in positive self-talk	23	34.6	33.3	9.1
Praise myself	47.5	37.5	12.4	2.7
Be patient with myself	11	31.2	45.1	12.7
Nonjudgmentally accepting the experience	21.1	34.6	34.6	9.7
Take a bath or shower	16.7	27.6	40.3	15.4
Splash water on my face	46.8	26	19.8	7.4
Exercise	28.1	29.1	28.5	14.3
Consume a healthy diet	28.5	33.5	29.5	8.6
Eat more than usual	21.1	28.5	31.4	19
Eat less than usual	34.8	30	25.7	9.5
Ensure I am getting enough sleep	18.8	33.5	31.4	16.3
Sleep more than normal	23.2	24	33.1	19.8
Sleep less than normal	22.8	25.1	36.9	15.2
Stand in front of the air conditioning	62.9	21.3	12.9	2.9
Rest	2.7	22.6	47.5	27.2
Stretch my muscles	26.2	30.6	32.9	10.3
Take care of myself emotionally (i.e. take a break)	8.2	25.3	44.5	22.1
Use alcohol/drugs	47.9	24	18.1	10.1

Smoke a cigarette or vape	74.5	5.3	7.6	12.5
Think back to past situations for solutions	8.9	23	43.3	24.7
Dwell on the worst outcome	17.5	26	35	21.5
Visualize myself successfully dealing with the problem	32.1	27.2	26.2	14.4
Go over and over the situation in my mind	2.9	10.1	37.3	49.8
Seek reassurance from others	15.6	31.4	35.9	17.1
Talk to a friend about the problem	18.1	32.5	33.7	15.8
Talk to my therapist or counselor about the problem	63.7	18.3	10.6	7.4
Apologize	16	29.8	38.6	15.6
Pretend I am in the other person's shoes	20.5	26.4	39	14.1
Leave stressful situation	5.7	19.6	43.5	31.2
Avoid stressful situations	4.2	12	44.1	39.7
Stop and think about my response	10.8	26.4	45.2	17.5
Brainstorm all possible solutions	5.1	25.7	40.1	29.1
If my initial solution, doesn't work, choose a different solution and try it	5.3	25.3	49	20.3
Determine whether there is another way to look at the situation	10.1	23.8	44.9	21.3
Evaluate the possible outcomes of the situation	7.6	20.3	41.6	30.4
Identify the problem	2.7	12.5	46.4	38.4
Rate how effective each solution is	36.5	28.5	26.8	8.2
Pick the highest rated solution	26.4	25.9	34.6	13.1
Plan to use this solution	23.4	29.5	34.8	12.4
Assess the outcome after I used the solution	17.5	28.3	34	20.2
Reward myself for successfully using a solution	28.1	29.1	30.8	12
Identify irrational beliefs	17.3	29.5	38.8	14.4
Blame myself for the situation	12	28.7	37.3	22.1
Blame others for the situation	27.8	43.5	25.7	3
Deny that the situation is occurring	47.3	33.7	15.6	3.4
Avoid thinking about the stressor	17.5	36.1	35.2	11.2
Checking the facts of the situation	7.2	19.8	42	31
Find humor in the situation	16	31	35.3	17.7
Ignore the situation	22.2	41.4	28.5	7.8
Talk to someone about what is bothering me	11	26.6	39.7	22.6

Take my frustration out on others	27.4	39.7	25.5	7.4
Take my frustration out on myself	12.9	26.8	38.2	22.1
Do something nice for someone else	14.8	35.2	38.8	11.2
Talk to someone about something positive	19.6	33.7	35.7	11
Ask for help	13.9	46.8	31	8.4
Request space from others	19	31	35.6	14.4
Avoiding other people	6.5	20.2	38.8	34.6
Talk to someone about my feelings around what is bothering me	14.8	29.8	38	17.3
Join an in-person support group	84.6	9.5	4.2	1.7
Join an online support group	79.3	14.3	4.9	1.5
Post on social media about my feelings	69.2	18.6	8.6	3.6
Chat with someone online about what is bothering me	36.5	26.8	26.4	10.3
Chat with someone online about something positive	42.6	25.5	25.5	6.5
Seek professional help	57.6	23.8	14.6	4
Talk to religious leader(s)	84.6	8.2	5.9	1.3
Talk about the experience	15.6	32.9	35.6	16
Hug those I love	19.4	28.1	35.9	16.5
Hug my pet	31.2	14.3	25.9	28.7
Isolating myself	3.6	14.6	42.2	39.5
Avoid social media	25.3	31	24.9	18.8
Do not shy away from situation, people and places	26	43.5	24.9	5.5
Feeling ignored, criticized or rejected	18.1	25.5	33.8	22.6
Easily annoyed by others	6.8	16.3	44.1	32.7
Quieter, less talkative	7.6	19	37.3	36.1
Feeling shame/guilt	10.8	31.7	33.5	24
Venting my emotions	4.6	22.1	49	24.3

Appendix G.
Eliminated Items

Items with Low Frequencies

Engage in non-suicidal self-injury
Scream
Cook or bake
Play a musical instrument
Participate in a religious activity
Participate in a community activity (e.g., volunteering)
Draw comfort from my spirituality
Go to a religious service
Write or express my feelings through a creative outlet
Ride my bike
Play a sport
List my achievements
Attend a class
Meditate
Pray
Participate in yoga
Visually focus on something around me
Mindfully touch an object
Focus on smells around me
Practice guided relaxation
Use a comfort item (i.e. stress ball)
Look at a picture of a calming scene
Engage in aromatherapy
Write in a journal
Repeating a calm word or phrase while deeply breathing
Light a candle
Praise myself
Splash water on my face
Stand in front of the air conditioning
Talk to my therapist or counselor about the problem
Deny that the situation is occurring
Join an in-person support group
Join an online support group
Post on social media about my feelings
Seek professional help
Talk to religious leader(s)

Items with Low Means

Mindfully eat
Be patient with myself

Appendix H.

Adult Coping Inventory

When you are stressed, how frequently are you using the following coping strategies:

	Most of the time	Some of the time	Seldom	Never
Take a walk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take a bath or shower	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid stressful situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask for help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify irrational beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk to someone about what is bothering me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling shame/guilt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Think back to past situations for solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take quiet time to myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Go over and over the situation in mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engage in positive self-talk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engage in a social activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Most of the time	Some of the time	Seldom	Never
If my initial solution, doesn't work, choose a different solution and try it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify the problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice a skill or hobby	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reward myself for successfully using a solution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take my frustration out on myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easily annoyed by others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visualize myself somewhere peaceful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clean my house	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoiding other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commit to engage in something meaningful and important everyday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk to a friend about the problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluate the possible outcomes of the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Most of the time	Some of the time	Seldom	Never
Checking the facts of the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Venting my emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plan to use the highest rated solution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stop and think about my response	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do something nice for someone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pretend I am in other person's shoes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice deep breathing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consume a healthy diet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Determine whether there is another way to look at the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visualize a place I enjoy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid people or situations that are upsetting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seek information online about the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Most of the time	Some of the time	Seldom	Never
Stretch my muscles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seek reassurance from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brainstorm all possible solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate how effective each solution is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk to someone about my feelings around what is bothering me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leave stressful situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take my frustration out on others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engage in an activity by myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blame others for the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assess the outcome after I used the solution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nonjudgmentally accepting the experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blame myself for the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling ignored, criticized or rejected	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Most of the time	Some of the time	Seldom	Never
Read a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dwell on the worst outcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk to someone about something positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk about the experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix I.
Item Characteristics of Adult Coping Inventory

Item	Item Mean	Standard Deviation	Item-Total Correlation
Take a walk	1.60	.89	.27
Take a bath or shower	1.54	.95	.31
Avoid stressful situations	2.19	.81	.30
Ask for help	1.34	.82	.40
Identify irrational beliefs	1.50	.94	.47
Talk to someone about what is bothering me	1.74	.93	.52
Feeling shame/guilt	1.71	.95	.27
Think back to past situations for solutions	1.84	.90	.51
Take quiet time to myself	2.30	.76	.40
Go over and over the situation in my mind	2.34	.77	.31
Engage in positive self-talk	1.29	.92	.50
Engage in a social activity	1.05	.85	.38
If my initial solution, doesn't work, choose a different solution and try it	1.84	.80	.57
Identify the problem	2.21	.76	.59
Practice a skill or hobby	1.54	.95	.46
Reward myself for successfully using a solution	1.27	1	.57
Take my frustration out on myself	1.69	.96	.16
Easily annoyed by others	2.03	.88	.22
Visualize myself somewhere peaceful	1.13	.97	.44
Clean my house	1.37	.97	.44
Avoiding other people	2.02	.90	.14
Commit to engage in something meaningful and important everyday	1.10	.92	.49
Talk to a friend about the problem	1.47	.96	.50
Evaluate the possible outcomes of the situation	1.95	.90	.55
Checking the facts of the situation	1.97	.89	.61
Exercise	1.29	1.0	.32
Venting my emotions	1.93	.80	.40
Plan to use the highest rated solution	1.36	.97	.53
Stop and think about my response	1.69	.88	.59
Do something nice for someone else	1.46	.88	.54
Pretend I am in the other person's shoes	1.47	.97	.56
Practice deep breathing	1.32	1.0	.43
Consume a healthy diet	1.18	.94	.41
Determine whether there is another way to look at the situation	1.77	.90	.61
Visualize a place I enjoy	1.10	1.0	.49
Avoid people or situations that are upsetting	2.04	.94	.30
Seek information online about the situation	1.95	.96	.44
Stretch my muscles	1.27	.96	.44

Seek reassurance from others	1.55	.95	.53
Brainstorm all possible solutions	1.93	.87	.57
Rate how effective each solution is	1.07	.98	.52
Talk to someone about my feelings around what is bothering me	1.58	.94	.52
Leave stressful situation	2.0	.86	.44
Take my frustration out on others	1.13	.90	.24
Engage in an activity by myself	2.23	.80	.42
Blame others for the situation	1.04	.81	.24
Assess the outcome after I used the solution	1.57	1.0	.62
Nonjudgmentally accepting the experience	1.33	.92	.50
Blame myself for the situation	1.69	.95	.22
Feeling ignored, criticized, or rejected	1.61	1.0	.25
Read a book	1.36	1.0	.41
Dwell on the worst outcome	1.60	1.0	.18
Talk to someone about something positive	1.38	.92	.59
Talk about the experience	1.52	.94	.57

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