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Measuring Coping : Evaluating the Psychometric Properties of the COPE

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Measuring Coping: Evaluating the Psychometric Properties of the COPE.

By Kathleen J. Donoghue

A report submitted in partial fulfilment of the requirements for the award of
Bachelor of Arts (Psychology) Honours,
Faculty of Community Studies, Education and Social Sciences,
Edith Cowan University.

October, 2004.

Declaration

"I declare that this written assignment is my own work and does not include:

- (i) material from published sources used without proper acknowledgement; or
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"I certify that this literature review and research project does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text."

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I would like to thank Dr Greg Dear for continuing as my supervisor throughout a couple of false starts. I am thankful that Greg had another project available when I realised that my first choice of project held a conflict of interest for me. I am further grateful that Greg was able to provide data and instrumentation necessary for the completion of this project, which was commenced late in the academic year.

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Finally, I would like to thank those students who provided the recent data for this project, and those who provided the earlier data in 1997, and their family and friends who also completed the coping inventory.

Structure of Thesis

In accordance with instructions in the 2004 Honours Handbook, this thesis has been prepared as two separate manuscripts. However, following discussion with the 4th year co-ordinator, I have elected *not* to nominate any particular journal for publication of the literature review. Hence, this section is formatted in accordance with the *Publication Manual of the APA* (5th ed.). The literature review covers an extensive body of work encompassing the theoretical and empirical development of coping scales, as well as reviewing evidence of factorial validity specific to the instrument under examination and would be suitable for submission to journals such as *Psychological Review* and *Psychological Bulletin* which publish lengthy review articles.

The research paper has been prepared in accordance with Instructions for Authors for the journal of *Anxiety, Stress, and Coping*. Section headings and table numbering conform to these requirements rather than APA format, and American spelling was adopted in accord with the journal.

Each manuscript has its own title page, abstract, reference list and tables, and is numbered separately. Appendices which are not normally included in a journal article have been included as appendices to the thesis.

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Running Head: THE COPE INVENTORY

Measuring Coping: Evaluating the Psychometric Properties of the COPE.
A Literature Review.

Kathleen J. Donoghue
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Measuring Coping: Evaluating the Psychometric Properties of the COPE.

A Literature Review.

Abstract

Research into coping has been hampered by the limited psychometric properties of the available instruments, particularly with respect to the internal validity of multidimensional measures. The purpose of this paper was to review research relevant to the measurement of coping, and to evaluate the COPE based on this literature. The COPE is a widely used multidimensional self-report instrument containing 15 subscales to measure different ways of coping. Claims that the COPE has good factorial validity warrant further examination in light of widespread criticism aimed at coping checklists in general. The present review found mounting evidence that the internal structure of the COPE is unstable and characterised by intrascale redundancy whilst failing to encompass many coping responses. Hence, the COPE was found to be lacking in content validity with major deletion and revision of items required. Confirmatory factor analyses and tests of substantive validity were identified as fruitful directions for future psychometric evaluation of coping instruments.

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Supervisor: Dr Greg E. Dear

Submitted: August, 2004

Introduction

Coping assessment and the promotion of adaptive coping strategies represent important links between social psychology and clinical practice (Frank, 1999; Moos & Holahan, 2003) and a vast literature has grown in this area (Coyne & Racioppo, 2000). Although numerous coping instruments have been developed (e.g., Amirkhan, 1990; Ayers, Sandler, West, & Roosa, 1996; Carver, Scheier, & Weintraub, 1989; Endler & Parker, 1990, 1994; Folkman & Lazarus, 1980, 1985; Pearlin & Schooler, 1978; Stone & Neale, 1984), researchers have failed to reach consensus regarding the structure of coping and the adequacy of measures to assess coping processes (Aldwin & Revenson, 1987; Skinner, Edge, Altman, & Sherwood, 2003; Steed, 1998; Stone & Neale, 1984; Suls, David, & Harvey, 1996).

The COPE (Carver et al., 1989) is a widely used multidimensional self-report instrument with 15 subscales to measure different ways of coping (i.e., coping strategies). The COPE has been widely adopted on the basis of its "good factorial properties" (Carver & Scheier, 1994, p.186). However, widespread criticism (e.g., Coyne & Gottlieb, 1996; Coyne & Racioppo, 2000; Endler & Parker, 1990, 1994; Parker & Endler, 1992; Steed, 1998; Stone & Neale, 1984) aimed at the construction and use of coping checklists in general suggests that further evaluation of the psychometric properties of the COPE is warranted. The purpose of this paper was to review research relevant to the measurement of coping, and to evaluate the COPE based on this literature. Strengths and weaknesses of the COPE are identified and directions for future research are suggested.

The Study of Coping

Lazarus and Folkman (1984, p.141) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person." By this definition coping is limited to behaviours that are deliberate, rather than automatic, although some

researchers disagree with this restriction (e.g., Connor-Smith, Compas, Wadsworth, Harding Thomsen, & Saltzman, 2000; Coyne & Gottlieb, 1996; Stone & Neale, 1984). The difficulty of measuring unconscious behaviours means they are usually excluded from measures of coping and studied independently of coping research (Compas, Connor, Osowiecki, & Welch, 1997; Lazarus, 2000).

The Transactional Model of Stress and Coping

Folkman and Lazarus (1980) conceptualised coping in terms of a cognitive transaction between the individual and the environment that takes place within a particular context. Hence, the transactional model views coping as process-oriented rather than trait-oriented. Central to the transactional model is the appraisal process, in which individuals evaluate the significance of an event for their wellbeing and assess the resources they have available to bring to the event (Lazarus & Folkman, 1984). Coping is thereby viewed as a dynamic process that unfolds with the stressor, involving appraisals and reappraisals. The transactional model emphasises efforts to manage stress irrespective of whether coping strategies are deemed adaptive or maladaptive, allowing for a clear distinction between coping strategies and outcomes of coping efforts.

Dimensions of Coping

Lazarus and Folkman (1984) differentiated between emotion-focused coping, involving the management of distressful emotions associated with a stressor, and problem-focused coping, which involves plans or actions to physically change a situation causing distress. Folkman and Lazarus (1980) found that in 90 per cent of cases, both emotion- and problem-focused coping were brought to bear on a given situation. The emotion- versus problem-focused distinction is central to the study of coping and has been widely applied in research (Connor-Smith et al., 2000; Endler & Parker, 1990, 1994; Folkman & Moskowitz, 2004); however, the failure of this

dimension to discriminate between coping strategies restricts its usefulness in empirical studies.

Whilst the problem- versus emotion-focused distinction is useful, the adequacy of a two-dimensional model to describe and encompass the entire domain of coping strategies has been widely challenged (e.g., Amirkhan, 1990; Connor-Smith et al., 2000; Carver et al., 1989; Pearlin & Schooler, 1978; Westman & Shirom, 1995). There are many other useful primary dimensions along which coping has been conceived (e.g., proactive versus reactive, social versus solitary, cognitive versus behavioural, approach versus avoidance) (Endler & Parker, 1990; Latack & Havlovic, 1992). A recent review of child and adolescent coping by Skinner et al. (2003) identified over 400 different ways of classifying coping strategies. Furthermore, they found that no two studies identified the same set of underlying dimensions. Coping is clearly a multidimensional construct, however, widely differing conceptualisations and labelling of factors have led to a lack of consensus regarding the appropriate underlying dimensions to study.

Most scales developed to measure coping have been guided by empirical considerations, with a scale being developed or modified for a specific research project (Aldwin & Revenson, 1987; Steed, 1998). Even when multiple analyses of the same item set has been carried out, the use of factor analysis has not seen convergence on a set of core dimensions. Hence, the research question and the methodology to be employed dictate whether researchers choose narrow or broad dimensions of interest (Suls et al., 1996). The sheer number of coping measures in use, together with disagreement surrounding organisation of coping strategies into higher order dimensions, has created problems for the field because integration and aggregation of findings across studies necessitates individual analyses of subscales (Compas, Connor-Smith, Saltzman, Harding Thomsen, & Wadsworth, 2001; Skinner et al., 2003). Therefore, a critical problem for the field of coping relates to the construction of a

comprehensive set of dimensions that organise coping strategies into meaningful categories that allow for the examination of coping across the lifespan. The development of theory identifying dimensions of interest which are capable of discriminating between relevant categories of coping behaviours may be necessary before scales containing items that reliably tap such dimensions can be developed.

Measurement of Coping

Studies examining coping tend to rely on the use of self-report checklists to assess retrospective self-reports of how individuals have coped with naturally occurring stressors. Some researchers (e.g., Coyne & Gottlieb, 1996; Coyne & Racioppo, 2000; Livneh, Livneh, Maron, & Kaplan, 1996; O'Driscoll & Cooper, 1994) blame inconsistent findings and a lack of progress in the field on the widespread adoption of a checklist methodology. Methodological variance, sample characteristics, and the limitations of item pools included in measures are all likely to have contributed to inconsistent findings (Aldwin & Revenson, 1987; Carpenter, 1992). A number of issues, including a reliance on retrospective accounts, and issues related to the quantification of coping episodes (i.e., whether "a great deal" refers to frequency, duration, effort, or usefulness of a coping strategy) are beyond the scope of this paper, and discussed in detail elsewhere (Cohen, 1991; Compas et al., 2001; Parker, Endler, & Bagby, 1993; Ptacek, Smith, Espe, & Rafferty, 1994; Stone, Kennedy-Moore, Newman, Greenberg, & Neale, 1992; Stone, Greenberg, Kennedy-Moore, & Newman, 1991). Coping inventories have widespread appeal because they can be easily and quickly completed by respondents (Stone et al., 1992). Hence, they are likely to remain popular in spite of any shortcomings.

Factor structures tend to vary across samples even when the same methods of extraction, rotation, and cut-off rules are used (Steed, 1998; Westman & Shirom, 1995), leading to concerns regarding the reliability and validity of coping instruments. The

most widely used measure of coping, the Ways of Coping (WOC) questionnaire developed and revised by Folkman and Lazarus (1980, 1985), has yielded anywhere between two and nine factors, with considerable differences between resultant factor structures (Aldwin & Revenson, 1987; Amirkhan, 1990; Edwards & O'Neill, 1998; Parker et al., 1993; Skinner et al., 2003; Stone et al., 1992; Suls et al., 1996). Since the factor structure of the WOC was found to be unstable, researchers have frequently conducted their own factor analyses (as recommended by Parker et al., 1993), either modifying an existing measure or developing a new one.

The Construction of Coping Instruments

There have been two main approaches to the construction of coping instruments: theoretical and empirical. The theoretical approach begins with a set of hypothetical categories which are then tested by assessment of actual responses to stimuli. The categories that are included tend to be highly intercorrelated, indicating that they do not correspond with the domains proposed by theoreticians, and the validation process often highlights a failure to include important strategies or domains (Amirkhan, 1990). Hence, theoretically derived taxonomies may be general enough to fit a variety of populations and stressors but may lack validity within a particular sample.

The empirical development of scales typically begins with documentation of the coping strategies identified by a particular group or in response to a particular stressor. Statistical analyses are performed to identify clusters of coping strategies. The emergent scales tend to contain a greater number of categories than their theoretical counterparts; however, different investigations have produced distinctly different representations of the coping process (Amirkhan, 1990). Empirically derived scales may be more comprehensive in terms of included strategies but item pools may be limited due to unique characteristics of the population or stressor that was used in their development (Amirkhan, 1990; Carpenter, 1992). Therefore, researchers must choose

between measures that can be used with a wide variety of populations and stressors, and those that are richer in description but limited to use with specific populations or contexts.

Generic versus Domain-Specific Scales

The proliferation of measures has led to debate as to whether domain-specific scales or generic scales should be used (Steed, 1998). Domain-specific scales focus on a particular event (e.g., rape, depression, abortion) or domain (e.g., marriage, health, work). Generic scales ask people to report on how they usually cope with stressful circumstances or how they actually coped during a self-identified event, and usually endeavour to sample the entire domain of coping responses (e.g., Ayers et al., 1996; Carver et al., 1989; Folkman & Lazarus, 1980). In order that measures will be widely applicable, items on generic scales are often vaguely worded bearing little relation to the specific context of coping in which they are applied (Coyne & Gottlieb, 1996). Whilst this may be convenient for researchers, it creates a more demanding task for respondents who have to judge whether their specific coping efforts actually reflect a particular item before they can endorse it. The likelihood of measuring accurate reflections of coping behaviour may consequently be compromised. Furthermore, the inclusion of items that are not applicable to the problem context under examination can dramatically affect the interpretability of a scale (Parker et al., 1993; Stone et al., 1991).

Situational versus Dispositional Measures

Lazarus and colleagues (Lazarus, 1999, 2000; Lazarus & Folkman, 1984, 1987; Folkman & Lazarus, 1980, 1985; Monat & Lazarus, 1991) have influenced the field of coping by shifting the focus from an earlier emphasis on enduring personality traits to the importance of situational determinants of coping. Lazarus and Folkman (1984) have argued that the use of coping strategies should be assessed during the unfolding of a stressful episode. Nonetheless, findings of consistency in coping across situations have

led to renewed interest in dispositional coping (cf. Watson, David, & Suls, 1999).

Dispositional coping (or coping style) is an enduring aspect of personality influenced by developmental and sociocultural factors, and considered relatively stable (Moos & Holahan, 2003). The examination of coping processes, on the other hand, emphasises change, and therefore suggests greater promise of identifying interventions that promote adaptive coping (Beutler, Moos, & Lane, 2003; Folkman & Moskowitz, 2004).

Studies in which participants are asked to report on their usual ways of coping with stress, without reference to a specific event, are effectively measure coping style rather than coping strategies (Aldwin & Brustrom, 1997). Hence, most researchers have employed measures that assess coping styles. Lazarus (1999) questioned the validity of using process measures, such as the WOC (Folkman & Lazarus, 1980, 1985), to examine what people usually do instead of what they actually did on a given occasion. Lazarus argued that this methodology inherently produces vague, socially desirable, or ideal responses that may have limited correspondence with reality, and studies have found that an individual's reports on specific events show limited correspondence with reports of their usual practices (e.g., Ben-Zur & Zeidner, 1995; Bouchard, Guillemette, & Landry-Leger, 2004; Carver & Scheier, 1994; Fromme & Rivet, 1994; Schwartz, Neale, Marco, Shiffman, & Stone, 1999). The very task of bringing to mind a specific situation should limit the range of coping strategies considered because strategies generally favoured by an individual will not lend themselves equally well across variable contexts. Thus, some item sets will be irrelevant to certain stressors, populations, or contexts. Moreover, when participants are asked to report retrospectively they tend to produce dispositional accounts (Stone et al., 1991). Hence, there has been a move toward longitudinal studies of naturalistic coping that allow for prospective analyses of the coping process as it unfolds (e.g., Bolger, 1990; Carver et al., 1993; Folkman & Lazarus, 1985; Fugate, Kinicki, & Scheck, 2002; Stanton &

Snider, 1993). Longitudinal examinations of coping by Parkes (1986) and Terry (1994) attest to the importance of attending to situational variables.

Debate within the coping field about the use of situational (state) versus dispositional (state) measures of coping is a direct reflection of the wider debate within the field of personality concerning the influence of personality processes versus personality dispositions (Mischel & Shoda, 1995, 1998). Whilst many agree to the need for attention to both aspects, Mischel and Shoda provide an integrative framework which encompasses both approaches, allowing for examination of both inter-individual and intra-individual differences (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Parker & Endler, 1992). Furthermore, such an integrative framework has the capacity to take into account variables such as coping resources, perceptions of resources, and the efficacy of coping strategies, which Oakland and Ostell (1996) argued were largely neglected in studies of coping. Such an approach holds the promise of reconciling many of the inconsistent and contradictory findings within the field of coping. Mischel and Shoda's framework can encompass and build upon the transactional model offered by Lazarus and Folkman (1984, 1987) which fails to encompass mediators of stress other than appraisals and coping, and is consistent with calls for theoretical models that account for dispositions, processes, and situations (e.g., Krohne, 1986).

Factor Analysis and Measures of Coping

There is disagreement among researchers regarding appropriate psychometric standards for coping instruments, with a number of researchers arguing against further use of exploratory factor analysis in the development and evaluation of coping scales (e.g., Ayers et al., 1996; Coyne & Gottlieb, 1996; Steed, 1998; Stone & Kennedy-Moore, 1992; Stone & Neale, 1984; Suls et al., 1996). This is because measures of internal consistency are based on the assumption that endorsement of one item

contributing to a scale score makes it more likely that a respondent will endorse other items on that scale. However, coping items violate this assumption because effective employment of one strategy reduces the likelihood that other strategies will be employed (Coyne & Gottlieb, 1996; Steed, 1998; Stone & Neale, 1984). This observation has implications for the way measures are scored and highlights the need to pay close attention to the development and psychometric properties of coping instruments.

Coping strategies are interrelated in complex ways, with some used to the exclusion of others, some used in conjunction with others, and some strategies employed in a particular sequence (Thoits, 1991). Furthermore, endorsement of items has different implications for different people in different contexts and may refer to very different kinds of coping efforts (Carpenter, 1992; Coyne & Gottlieb, 1996; Stone & Neale, 1984). When coping items serve multiple functions they are likely to load on multiple factors leading to their deletion from the item pool (Steed, 1998; Stone et al., 1992). Hence, constructing and analysing scales using exploratory factor analysis may be of limited value because valid and useful coping strategies may be deleted from measures based on differences between samples. Removal of items from scales based on samples drawn from one population may result in a scale that under represents the range of coping required by populations dealing with other problems. Hence, it may be necessary to develop coping instruments that are specifically tailored to certain populations or contexts (Somerfield & McCrae, 2000). The above issues have undoubtedly contributed to the inherent difficulties with interpretation and replication of factor solutions, especially when generic coping measures were used without reference to a specific stressor.

Another drawback with the use of factor analysis is that identification of clear and meaningful categories depends on interpretation at the item level as well as the

category level (Skinner et al., 2003). It is essential that item pools contain multiple items to tap each category; however, when theoretical dimensions have not been identified in advance it becomes difficult to ensure that sufficient items are present to allow for their emergence (Skinner et al., 2003). Furthermore, items may load on a factor for reasons that are unrelated to that particular factor (e.g., items may have the same emotional tone) and items that are intended to represent the same category may load onto separate factors due to other commonalities (e.g., cognitive avoidance and behavioural avoidance) (Skinner et al., 2003). Hence, exploratory factor analysis is data driven and can produce factors that load together for idiosyncratic reasons.

The reasons outlined above suggest that it may be time to abandon further attempts to develop coping measures empirically and to focus on the development or refinement of theoretically-derived measures (such as the COPE; Carver et al., 1989) which can be examined using confirmatory factor analysis (CFA). The use of CFA has been recommended for examining the internal structure of coping instruments because it allows for a direct test of both the constructs and the model under examination (Ayers et al., 1996; Ayers, Sandler, & Twohey, 1998; Compas et al., 2001; Connor-Smith et al., 2000; Skinner et al., 2003). While many of the problems discussed above are equally applicable to CFA this approach has the advantage of testing the adequacy of a theoretical model of latent structure. Therefore, the use of CFA is likely to assist in the identification of dimensions that are more replicable and conceptually meaningful than those obtained with exploratory factor analysis (Ayers et al., 1996; Compas et al., 2001). However, further refinement of scales (using methods other than exploratory factor analysis) may be necessary before coping instruments contain items sufficient to encompass domains of interest and produce a stable factor structure across populations and situations.

The COPE

The above discussion highlights the complexity of the coping process and the inherent difficulties in its measurement. Many coping checklists have not been evaluated beyond the sample from which they originated and certainly none have been subject to such rigorous evaluation as the WOC (Folkman & Lazarus, 1980,1985). The COPE inventory developed by Carver, Scheier, and Weintraub (1989) is a frequently cited generic measure of coping intended to measure a wide range of potential coping strategies. The unique ability of the COPE to measure both situational and dispositional coping has contributed to its popularity. To obtain a dispositional measure items are simply framed in terms of “what the person usually does when under stress”; whilst to measure situational coping items are framed in terms of “what the person did, or is doing” in a specific coping situation or a specified period of time (Carver et al., 1989, p. 270). Carver and Scheier (1994) had individuals complete both versions of the COPE in a replication of Folkman and Lazarus (1985) longitudinal analysis of coping with a college exam. Consistent with a transactional approach, significant differences were found between reports of general coping style and situational reports.

The original COPE was described by its authors (Carver et al., 1989) as a theoretically-constructed, multidimensional coping scale with 13 subscales each consisting of four items that focused on distinct aspects of coping. Five subscales measured problem-focused coping, namely Active Coping, Planning, Suppression of Competing Activities, Restraint Coping, and Seeking Social Support for Instrumental Reasons. A further five subscales measured emotion-focused coping: Seeking of Social Support for Emotional Reasons, Positive Reinterpretation and Growth, Acceptance, Denial, and Turning to Religion. The final three subscales, described by Carver et al. (p.267) as “less useful” were labelled Focus on and Venting of Emotions, Behavioral Disengagement, and Mental Disengagement. Additionally, a single item related to the

use of alcohol and drugs to cope was included in the original measure for exploratory reasons. This has since been developed into a four-item scale, and a scale assessing the use of humour was also developed since publication of the original validation study in 1989, resulting in a 60-item COPE, with 15 subscales consisting of four items each (personal correspondence Carver, Scheier, & Weintraub, January 1989; see also footnotes in Carver & Scheier, 1994). Concept definitions for each of the subscales are provided in Table 1.

The COPE items are scored on a 4-point Likert-type scale, with scores ranging from 1 (*I don't do this at all*) to 4 (*I do this a great deal*) for the situational form, and from 1 (*I usually don't do this at all*) to 4 (*I usually do this a great deal*) for the dispositional form. Items are summed to produce scale scores, with higher scores reflecting greater use of a particular coping strategy.

Based on findings from Stanton, Danoff-Burg, Cameron, and Ellis (1994), the Focus on and Venting of Emotions subscale (e.g., "I get upset and let my emotions out") was dropped by Carver and Scheier (1994) as it was confounded with distress levels (outcome). Stanton et al. had experts assess items from four published coping scales and found that coping measures were frequently confounded with psychopathology. This weakness is likely to have contributed to the large number of correlations found in the literature between certain coping modes and distress, and may have led to erroneous conclusions (Stanton & Franz, 1999).

Researchers have utilised the COPE in various natural settings including college exams (Carver & Scheier, 1994) and college adjustment (Brissette, Scheier, & Carver, 2002). Outside of college settings, the COPE has been used to assess coping during a community crisis (Ben-Zur & Zeidner, 1995) and following organisational restructuring (Begley, 1998). Health-related settings have included breast cancer screening, (Sweet, Savoie, & Lemyre, 1999), breast cancer diagnoses (Carver et al., 1993), infertility

treatment (Berghuis & Stanton, 2002), amputation (Livneh, Antonak, & Gerhardt, 2000), cellular immune functioning (Stowell, Kiecolt-Glaser, & Glaser, 2001), and open-heart surgery (Ben-Zur, Rappaport, Ammar, & Uretzky, 2000). The COPE has also been used in studies examining perfectionism (Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000), optimism (Fontaine, Manstead, & Wagner, 1993), shyness (Eisenberg, Fabes, & Murphy, 1995), romantic relationships (Knee, 1998), and alcohol use (Fromme & Rivet, 1994).

The COPE has frequently been used in a modified format with researchers often selecting particular subscales of interest (e.g., Begley, 1998; Dunkley et al., 2000). The COPE has been translated into Hebrew (e.g., Ben-Zur et al., 2000; Ben-Zur & Zeidner, 1995), French (e.g., Bouchard et al., 2004), Croatian (i.e., Hudek-Knezevic, Kardum, & Vukmirovic, 1999), German (e.g., Vollrath & Torgersen, 2000), and Spanish (i.e., Prelow, Tein, Roosa, & Wood, 2000), and it has been adapted for use as a daily behavioural checklist (Fromme & Rivet, 1994). Whilst the COPE appears to be widely used and well established, this does not equate with having good factorial properties, and given its popularity, the psychometric properties of the COPE warrant further investigation. Translated, modified, and abbreviated versions of the COPE, including the Brief COPE (cf. Carver, 1997) require validation studies in their own right. The studies reviewed in the following section all used the full version of the COPE, although they varied in the number of scales included depending on their use of the two newer subscales and whether they retained the Venting of Emotions subscale or not.

Factor Analyses of the COPE

Initial factor analysis conducted by Carver et al. (1989) yielded eleven factors, nine of which were consistent with the instrument's 13 subscales, and two that contained eight items each. The items from the Active Coping and Planning subscales emerged as a single factor, as did the items for Social Support for Instrumental Reasons

and Social Support for Emotional Reasons. These subscales were retained separately by Carver et al. on the basis that they were conceptually distinct. Fontaine, Manstead, and Wagner (1993) replicated the factor structure of the COPE but disagreed with the separation of these two subscales. In the Fontaine et al. study, the Positive Reinterpretation subscale split into two separate factors but otherwise the overall similarities suggested that the factor structure underlying the COPE was stable and in accordance with Carver et al. However, this might not be the case. Both the original validation and the replication study relied on undergraduate populations, who were reporting dispositionally, and this may have biased the results. Furthermore, these findings may have been reliant on intrascale redundancy and the use of dubious factor analytic methodology (Cook & Heppner, 1997).

Using a later version of the COPE with 14 subscales, Cook and Heppner (1997) conducted CFA and found a moderate degree of support for either a 12- or 14-factor model (depending on treatment of the convergent subscales identified above); however this was not the best fit to the data. In fact, Cook and Heppner found that coping instruments (including the COPE) were best represented by a 3-factor model and argued that existing representations were overly complex and inappropriate. They found that coping was best conceptualised by a Problem Engagement dimension consisting of task-oriented, problem-focused efforts, a Social/Emotional factor consisting of social support and emotion-focused efforts, and an Avoidance factor, which included denial, wishful thinking, mental disengagement, and social withdrawal strategies.

The three factors identified by Cook and Heppner (1997) are similar to those identified in a second-order factor analysis of the COPE reported by Carver et al. (1989). Carver et al. found a 4-factor solution (which they did not label) with three of the factors being identical across their two studies. The first factor related to problem-engagement by combining Active Coping, Planning, and Suppression of Competing

Activities. The second factor combined the two social support subscales with the Focus on Emotion subscale. A third factor relating to avoidance coping consisted of the Behavioral and Mental Disengagement subscales, together with Denial, and Turning to Religion. The fourth factor suggested positive reappraisal and consisted of Acceptance, Restraint Coping, and Positive Reinterpretation and Growth. The only difference between the two analyses carried out by Carver et al. was that Turning to Religion failed to load on any factor when the situational form was used. Respondents were reporting on "the most stressful event they had experienced during the past 2 months" (Carver et al., 1989, p. 277) and perhaps the use of religion was not applicable to many of the scenarios that were brought to mind by this instruction. Alternatively, turning to religion might reflect a respondent's religious beliefs and not be correlated with any of the higher-order factors more strongly than with any of the other factors.

Deisinger, Cassisi, and Whitaker (1996) performed a replication of the second order factor analysis carried out by Carver et al. (1989) but with the inclusion of the two newer subscales (i.e., Humour, & Alcohol/Drugs). They found support for a 5-factor model, with the fifth factor (labelled Hedonistic Escapism) consisting of the two new subscales. The other four factors were identical to those found by Carver et al. with the exception of Restraint Coping, which loaded on the problem-engagement factor. Following removal of redundant items, other researchers have also found support for a 4-factor model underlying the COPE (Eisenberg et al., 1995; Phelps & Jarvis, 1994; Washburn-Ormachea, Hillman, & Sawilowsky, 2004). However, these factor solutions differed considerably across studies in spite of similarly labelled factors and various subscales were eliminated for their inability to load clearly on any factor.

Whilst Carver et al. (1989) did not report details of the factor analytic techniques they used in their second-order analysis, it was based on data from their initial factor analysis and was likely to have utilised similar methodology. Lyne and Roger (2000)

were highly critical of the factor analysis carried out by Carver et al. (1989) suggesting that seven factor analytic conventions were ignored and that Carver et al.'s validation of the COPE failed to confirm the 13-factor model purported to underlie the instrument. Lyne and Roger attempted to replicate the findings of Carver et al. (1989) but were unable to do so, even when they used radial parcel analysis (Cattell & Barrett, 1975, cited in Lyne & Roger, 2000) to force the structure into 13 groups of four items. Lyne and Roger used rigorous factor analytic techniques and found that many of the COPE items failed to load neatly on their intended factors. Carver et al. reported only two items with double loadings, yet Lyne and Roger found that anywhere from nine to 17 items had double loadings in the various solutions that their analyses yielded. Hence, Lyne and Roger concluded that the factor structure underlying the COPE was highly unstable.

Following the removal of 16 redundant items, Lyne and Roger (2000) found the COPE was best conceptualised in terms of three underlying factors. A number of other studies have also identified a variety of 3-factor models underlying the COPE (e.g., Hien & Miele, 2003; Laurent, Catanzaro, & Callan, 1997; Park & Levenson, 2002; Stowell, Kiecolt-Glaser, & Glaser, 2001). Using CFA and following removal of seven redundant items, Hasking and Oei (2002) found some support for both a 14-factor primary structure and a 3-factor higher order structure with data from a community sample but found that it was impossible to produce any interpretable structure with an alcohol-dependent sample. The high reliance on alcohol and denial within this group rendered the data unsuitable for factor analysis. This finding highlights the importance of establishing stability of a measure across samples that are heterogenous as well as with clinical samples.

In addition to numerous findings of a 3- or 4-factor model underlying the COPE, there have also been findings of a 6-factor model (i.e., Wade et al., 2001). Due to the

various range of items included in factor analyses of the COPE it is difficult to compare individual findings, however, taken together the studies identified above fail to provide support for Carver and Scheier's (1994, p.186) claim that "the COPE's dispositional form has good factorial properties." In fact, the internal structure of the COPE appears to be very unstable across samples.

Internal Consistency Reliabilities

Carver et al. (1989) reported alphas for the situational form of the COPE between .68 and .91, with the exception of the Mental Disengagement subscale. Alpha reliabilities for the dispositional form of the COPE ranged from .45 to .92, with six of the subscales having alphas less than .70, but only one below .60 (i.e., Mental Disengagement, .45). Similar reliabilities were reported throughout the research examined in this review and whilst Fontaine et al. (1993) described them as highly acceptable, others have disagreed (e.g., Cook & Heppner, 1997).

Although some of these reliabilities are unsatisfactory by conventional test standards, they are consistent with those reported for other coping instruments, which have been found to range from .38 to .92, with an average of .71 (Latack & Havlovic, 1992). Folkman (1992) has suggested that setting Cronbach's alpha at .70 (as opposed to .90 for measures of attitude) might be appropriate for measures of coping. Furthermore, when measured by coefficient alpha, reliability increases with the number of items, and Skinner et al. (2003) have suggested that five to six items per scale are required to produce satisfactory internal consistencies. With only four items per subscale, the COPE does not meet this criterion. Furthermore, the use of factor analytic techniques has often reduced subscales to two or three items each (e.g., Carver et al., 1993). Given the relatively small number of items used to represent each factor, the alpha reliabilities reported for the COPE appear to be acceptable, with the exception of the Mental Disengagement subscale.

Cook and Heppner (1997) used CFA to examine and compare the internal structure of three coping instruments: the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1994), the Coping Strategies Inventory (CSI; Tobin, Holroyd, & Reynolds, 1989), and the COPE (Carver et al., 1989). These measures were selected on the basis that they represented potential instruments of choice for future studies. Cook and Heppner reported unsatisfactory alphas ($< .70$) for five of the COPE subscales. The COPE was found to have internal consistency estimates ranging from .46 to .93, whilst the CSI had estimates between .70 and .91, and for the CISS they were between .78 and .92. Thus, in comparison to these two coping instruments, the COPE was found to have inferior estimates of internal consistency. However, one weakness of the Cook and Heppner (1997) study was their failure to control for the stressful situation. The COPE and the CISS were used in dispositional forms and the CSI was used situationally but respondents were reporting on any stressful event that occurred in the prior month. For the reasons outlined earlier, it would be more prudent to have respondents report on a comparable situation.

Test-Retest Reliabilities

According to Folkman (1992) the alternate-forms method of assessing reliability is inappropriate because coping items are not necessarily equivalent. The inherent variability in the use of coping strategies across situations means that test-retest reliability may also be of limited value in establishing the psychometric properties of coping instruments (Coyne & Gottlieb, 1996; Folkman, 1992). Carver et al. (1989) reported test-retest reliabilities for the dispositional form of the COPE ranging from .42 to .89 at 6 weeks, and from .46 to .86 at 8 weeks. However, several of the subscales in the current version of the COPE were not developed at the time of these studies.

Item Redundancy

Whilst Carver and Scheier (1994) have modified the original COPE, further revision may be necessary. In the initial analysis (Carver et al., 1989) five items had weak loadings ($< .30$) on their intended factors. Of particular concern were two items from the Positive Reinterpretation subscale (i.e., "I learn something from the experience," .23; "I try to grow as a person as a result of the experience," .19) and two from the Mental Disengagement subscale (i.e., "I daydream about things other than this," .28; "I sleep more than usual," .23) which potentially weaken these subscales. Fontaine et al. (1993) eliminated three items (i.e., "I turn to work or other substitute activities to take my mind off things", "I act as though it hasn't happened," and "I slept more than usual") that failed to load above .40. If a similar cut-off point had been adopted by Carver et al. (1989) ten items would have been deleted. Moreover, only one of them ("I sleep more than usual") would have been the same as in the Fontaine et al. study. Whilst some of these items might be in need of revision, this should not be determined solely on factor loadings that might be unique to a particular study.

Carver et al. (1993) found that three of the subscales (i.e., Active Coping, Denial, and Mental Disengagement) each contained an item that consistently reduced that subscale's reliability. Hence, they dropped these items from their analysis. The COPE has been modified by selecting items with the highest reported loadings (e.g., Begley, 1998; Brissette et al., 2002) or items that were more clearly worded (e.g., Carver et al., 1993) to represent scales of interest. The Mental Disengagement subscale has been especially problematic in most studies reviewed by this paper, with reliability coefficients dropping to as low as .36 in some studies (e.g., Knee, 1998; Zuckerman, Kieffer, & Knee, 1998).

Some subscales of the COPE (e.g., Humour, and Alcohol/Drug Use) have questionable content validity in that some items appear to be semantic variations of each

other rather than conceptually distinct items. For example, "I kid around about it" versus "I make jokes about it," and "I use alcohol or drugs to help me get through it" versus "I use alcohol or drugs to make myself feel better". Livneh et al. (1996) questioned the similarity of items from the Denial subscale (i.e., "I act as though it hasn't even happened yet" and "I pretend that it hasn't really happened") and the Planning subscale (i.e., "I try to come up with a strategy about what to do" and "I make a plan of action"). Lyne and Roger (2000) questioned the inclusion of redundant items in the Religion, Alcohol/Drug Use, and Seeking of Emotional Support subscales and found it necessary to remove 16 redundant items. Hence, the COPE appears to contain many items that are redundant, highlighting the need for scrutiny of this measure at the item level because intrascale content redundancy may have seriously undermined the use of factor analysis in its development and validation. Items that are merely paraphrases of each other are certain to be highly correlated and to load together irrespective of their relationship to external criteria (Kline, 1994).

Alternate Evidence of Construct Validity

Convergent, Discriminant and Nomological Evidence

Carver et al. (1989) reported evidence of convergent and discriminant validity for the dispositional form of the COPE, finding modest correlations in predicted directions between relevant scales and a number of personality measures (e.g., self-esteem, optimism, hardiness, blunting, Type A tendencies, and trait anxiety). While there are reasons for not employing measures of pathology as a validation criterion for coping scales, such indices have, in fact, been widely used for this purpose (Amirkhan, 1990). In fact, the best evidence for the construct validity of coping scales comes from correlational studies in which lower levels of psychological distress were associated with the use of particular coping strategies (Stone et al., 1992). However, this evidence for construct validity is of questionable value given the findings of Stanton et al. (1994)

regarding the contamination of coping items with distress, and because of the circularity involved when studies are also testing relationships between coping and outcomes (Connor-Smith et al., 2000; Compas et al., 2001). The validity of measures of coping needs to be established independently of outcome measures.

Cohen (1991) suggested that researchers assess coping using more than one instrument to allow assessment of their convergent validity and noted that correlations between measures were generally low. The problem with making direct comparisons between coping measures is that they often served as sources for the measures being validated and their lack of independence and shared item pools render such comparisons suspect (Amirkhan, 1990). Cook and Heppner (1997) compared three coping instruments and found the COPE to be inferior to the CISS (Endler & Parker, 1994) and the CSI (Tobin, Holroyd, Reynolds, & Wigal, 1989) based on internal consistency reliabilities. However, if the coping instruments were all measuring different aspects of coping then comparison between such statistics would not yield useful information.

Substantive Validity

Analysis of substantive validity (or item validity) involves independent assessments as to whether each item is a reliable indicator of the domain it is intended to represent and only that domain (Anderson & Gerbing, 1991). Tests of substantive validity utilise small samples of participants who are given the task of assigning items into their respective domains using a pen and paper item-sort task. Coefficients are calculated to determine the degree to which participants are able to identify the appropriate subscale for each item and substantive validity exists when items are correctly allocated to their intended subscales or domains. Hence, this method is informative about the adequacy of individual items as well as the constructs under examination and is a useful alternative to exploratory factor analysis. A measure that has poor substantive validity lacks construct validity and will not perform well in factor

analysis (Anderson & Gerbing, 1991). Examination of the substantive validity of coping instruments has not been reported in the literature. Hence, examination of the substantive validity of coping instruments should be performed prior to the more rigorous and costly test of CFA.

Demographic Variables

Samples may vary on a range of important variables and measures of coping have not necessarily been validated for use across samples with varying demographics (e.g., age, sex, education, ethnicity, and income). Most studies have been limited to Caucasian participants of middle socioeconomic status (Compas et al., 2001). Snyder (1999) noted that samples have been biased towards younger people and males; however, the current review found a bias toward samples that were predominantly female. Gender stereotypes suggest that men are likely to use more problem-solving strategies whilst women are more likely to utilise emotional coping and social support, however, such stereotypical notions tend to find support only when assessments occur without reference to a specific stressor (e.g., Carver et al., 1989; cf. Thoits, 1991). Given that coping outcomes and the use of coping strategies has been found to vary by sex (e.g., Bouchard et al., 2004; Connor-Smith et al., 2000; Endler & Parker, 1990, 1994; Stanton et al., 1994; Stone & Neale, 1984), closer attention needs to be paid to the analysis of gender differences and other demographic variables. Given that the use of coping strategies is influenced by situational variables, it is important to rely less on student populations, who are usually reporting about study-related stress, which may not reflect coping in wider domains, such as interpersonal stress (Terry, 1994).

Content Validity: Comprehensiveness of the Item Pool

Stone and Kennedy-Moore (1992) have observed that current scales might not encompass the entire domain of potential coping strategies, allowing the possibility that important strategies are overlooked. As there are myriad ways in which a person can

deal with life's adversities it is unlikely that any single measure will capture every possibility so researchers need to make a choice of measures on theoretical grounds depending on the purpose of their research. In terms of comprehensiveness, Carver et al. (1989) noted that the COPE does not include measures of seeking information, nor responses that relate to the assessment of blame, social comparison, or wishful thinking.

The removal from the COPE (rather than modification) of the Focus on Emotion subscale might have led to the COPE under-representing adaptive emotional-coping strategies. Hence, when using the COPE, some researchers (e.g., Berghuis & Stanton, 2000; Zuckerman et al., 1998) have also included additional scales to encompass emotional processing and emotional expression. Repetti (1992) has argued that coping instruments should also include items representing Social Withdrawal as a coping strategy. Gol and Cook (2004) noted that scales related to cognitive composure (i.e., self-soothing, self-management, and relaxation) were notably absent from the COPE. Livneh et al. (2000) considered the coping domain to be more adequately represented by combining the COPE with the CSI (Tobin et al., 1989). These examples demonstrate that whilst the COPE encompasses a wide variety of coping strategies it doesn't seem to contain strategies that are of particular interest in some domains.

Most coping scales, including the COPE, have been developed with individuals in mind; however, coping frequently takes place in a social or interpersonal context (Eckenrode, 1991; O'Brien & DeLongis, 1997). Assessment of coping within couples, families, and other social groups also requires examination. Most measures are oriented to the individual and do not include strategies such as negotiation, accommodation, and social buffering (Berghuis & Stanton, 2002). Hence, the COPE cannot be considered to be sampling from the entire domain of coping strategies, and researchers need to continue to examine scales at the item level to ascertain whether instruments are

adequate to address their research question because the omission of relevant items can influence the interpretation of findings.

Conclusions

There is disagreement among researchers as to the appropriate psychometric standards that should be applied to measures of coping, as well as controversy regarding the use and meaning of scale scores produced by factor analysis (Coyne & Gottlieb, 1996; Steed, 1998; Stone & Neale, 1984). It becomes difficult to test hypotheses and refine theory when meaningful and consistent interpretations of scale scores cannot be assured due to the use of unsatisfactory measurement techniques (Coyne & Gottlieb, 1996). Given their ease of administration, and the number of studies that have already been conducted with them, researchers are likely to continue to rely on standardised checklists (Coyne & Gottlieb, 1996). Hence, it is necessary that further attention be directed to investigating their psychometric properties and establishing their validity. The use of factor analysis has failed to produce measures with sound psychometric properties. Some commentators (e.g., Steed, 1998) have argued that factor analytic methods are not appropriate for identifying the internal structure of coping measures because the assumption that scale items are indicators of a single latent variable are not relevant to the actual psychological processes underlying individuals' selection of coping strategies for various stressful situations. Substantive validity analysis might provide a more appropriate tool for developing psychometrically sound multidimensional measures of coping, because there are no assumptions that items within a domain should form specific mathematical relationships such as correlations with each other but not with variables outside the domain.

While some (e.g., Coyne & Racioppo, 2000; Somerfield & McCrae, 2000) have argued that the field of coping is in crisis, Lazarus (2000) has suggested that the field of coping is maturing, with longitudinal prospective studies that examine specific stressful

events beginning to appear in the literature (e.g., Bolger, 1990; Carver et al, 1993; Fugate et al., 2002; Stanton & Snider, 1993). Such studies are time consuming, costly and depend on reliable and valid measurement instruments, and whilst the COPE has been a popular replacement for the WOC, the present review of the psychometric properties of the COPE found mounting evidence that this widely-used instrument lacks a stable internal structure, and consists of intrascale redundancy rather than well conceptualised items. Coping research has been biased toward dispositional accounts of coping and the situational form of the COPE has received less attention than its dispositional counterpart. Nonetheless, further examination of the situational form of the COPE may be unwarranted on the basis that it consists of the same redundant items as the situational form.

A number of issues have been raised that point to potential problems with the development and use of coping inventories. The need for continued research examining the psychometric properties of coping inventories is clear and the adoption of a theoretical approach to the study of coping and the ongoing development of scales is required to move the field beyond the empirical/correlational studies that have proliferated (Snyder, 1999). Validation studies reporting some recently developed coping measures (e.g., Ayers et al., 1996; Connor-Smith et al., 2000) indicate they have been developed theoretically, using confirmatory factor analysis, and taking into account criticisms of existing measures. These instruments might have superior psychometric qualities to their earlier counterparts, but further research is required before this will become clear. Moreover, these measures were designed for specific populations, such as adolescents (Connor-Smith et al., 2000) and children (Ayers et al., 1996).

The field of coping has a number of challenges to overcome. The identification of a comprehensive taxonomy of coping strategies is fundamental, together with

identification of their higher order categorisation (Skinner et al., 2003). Such a theoretical framework would facilitate the identification and development of psychometrically sound instruments capable of tapping appropriate dimensions. Valid coping instruments will produce reliable scores and move the field towards standardisation of measurement allowing researchers to compare and replicate results across different stressors and coping domains. Valid measures, together with the adoption of an integrative framework such as that offered by Mischel and Shoda (1995, 1998), should allow researchers to delineate the contextual appropriateness of coping efforts, leading to the identification of adaptive coping strategies. In the meantime, researchers' choice of an instrument shall continue to be guided by factors related to the research question, dimensions of interest, and the methodology to be employed.

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Table 1

Concept Definitions

Concept	Definition
Denial	An attempt to reject the reality of the stressful event.
Religion	Increased engagement in religious activities.
Seeking Instrumental Social Support	Seeking assistance, information, or advice about what to do.
Humour	Making jokes about the stressor.
Restraint Coping	Coping passively by holding back one's coping attempts until they can be of use.
Active Coping	Taking action, exerting efforts, to remove or circumvent the stressor.
Alcohol/Drug Use	Turning to the use of alcohol or other drugs as a way of disengaging from the stressor.
Mental Disengagement	Psychological disengagement from <i>the goal that the stressor is interfering with</i> , through daydreaming, sleep, or self-distraction.
Planning	Thinking about how to confront the stressor, planning active coping efforts.
Acceptance	Accepting the fact that the stressful event has occurred and is real.
Seeking Emotional Social Support	Getting sympathy or emotional support from someone.
Suppression of Competing Activities	Suppressing attention to other activities in which one might engage, in order to concentrate more completely on dealing with the stressor.
Behavioural Disengagement	Giving up, or withdrawing effort from trying to attain <i>the goal that the stressor is interfering with</i> .
Positive Reinterpretation and Growth	Making the best of the situation by growing from it, or viewing it in a more favourable light.
Focus on and Venting of Emotions	An increased awareness of one's emotional distress, and a tendency to ventilate or discharge those feelings.

Running Head: EXAMINING THE COPE

Measuring Coping: Examining the Internal Structure of the COPE.

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Measuring Coping: Examining the Internal Structure of the COPE.

Abstract

The COPE is a widely used multidimensional self-report instrument intended to measure different ways of coping. A review of the literature suggested that the factor structure of the COPE was unstable and that the instrument contained a high level of item redundancy. Hence, the purpose of this study was to examine the internal structure and intrascale redundancy of the COPE using an Australian sample. The proposed factor structure was not replicated and a high level of intrascale redundancy was found, rather than well conceptualized items. Furthermore, 13 items failed to show adequate substantive validity. The COPE appears to lack content validity. Therefore, findings and conclusions based on the use of the COPE should be critically re-examined as widespread use of this instrument might have contributed to inconsistencies in the coping literature.

KEYWORDS: Coping; Measurement of coping; Coping dimensions;
Substantive validity; Construct validity

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MEASURING COPING: EXAMINING THE INTERNAL STRUCTURE OF THE COPE.

Coping is considered to be a multidimensional construct, however, there is a lack of consensus regarding its underlying dimensions (Skinner, Edge, Altman, & Sherwood, 2003) and widely differing conceptualizations have led to a proliferation of coping instruments (e.g., Amirkhan, 1990; Ayers, Sandler, West, & Roosa, 1996; Carver, Scheier, & Weintraub, 1989; Endler & Parker, 1990, 1994; Folkman & Lazarus, 1980, 1985; Pearlin & Schooler, 1978; Stone & Neale, 1984). Research into coping has been hampered by the limited psychometric properties of the available instruments, particularly with respect to the internal validity of multidimensional measures. Many coping instruments have not been evaluated beyond their sample of origin and there is disagreement among researchers regarding appropriate psychometric standards for coping instruments. The sheer number of coping measures in use, together with disagreement surrounding organization of coping strategies into higher-order dimensions, has created problems for the field of coping. Factor structures tend to vary across samples even when the same instrument and methods are used (cf. Steed, 1998; Westman & Shirom, 1995). Hence, integration and aggregation of findings across studies usually necessitates individual analyses of subscales (Compas, Connor-Smith, Saltzman, Harding Thomsen, & Wadsworth, 2001; Skinner et al., 2003).

Some researchers have argued against further use of exploratory factor analysis in the development and evaluation of coping scales (e.g., Ayers et al., 1996; Coyne & Gottlieb, 1996; Steed, 1998; Stone & Kennedy-Moore, 1992; Stone & Neale, 1984; Suls, David, & Harvey, 1996). This is because coping strategies are interrelated in complex ways, with some used to the exclusion of others, some used in conjunction with others, and some strategies employed in a particular sequence (Thoits, 1991). Furthermore, endorsement of items has different implications for different people in different contexts and might refer to very different kinds of coping efforts (Carpenter,

1992; Coyne & Gottlieb, 1996; Stone & Neale, 1984). When coping items serve multiple functions they are likely to load on multiple factors leading to their deletion from the item pool (Steed, 1998; Stone, Kennedy-Moore, Newman, Greenberg, & Neale, 1992). Hence, constructing and analysing scales using exploratory factor analysis might be of limited value because valid and useful coping strategies could be deleted from measures based on differences between samples or because of items serving multiple functions. Removal of items from scales based on samples drawn from one population might result in a scale that under represents the range of coping required by populations dealing with other problems. Hence, it might be necessary to develop coping instruments that are specifically tailored to certain populations or contexts (Somerfield & McCrae, 2000). The above issues have undoubtedly contributed to the inherent difficulties with interpretation and replication of factor solutions, especially when generic coping measures have been used without reference to a specific stressor.

Furthermore, measures of internal consistency are based on the assumption that endorsement of one item contributing to a scale score makes it more likely that a respondent will endorse other items on that scale. However, coping items violate this assumption because effective employment of one strategy reduces the likelihood that other strategies will be employed (Coyne & Gottlieb, 1996; Steed, 1998; Stone & Neale, 1984). This observation has implications for the way measures are scored and highlights the need to pay close attention to the development and psychometric properties of coping instruments.

It is essential that item pools contain multiple items to tap each category; however, when theoretical dimensions have not been identified in advance (i.e., when scales are developed using exploratory factor analysis) it becomes difficult to ensure that sufficient items are present to allow for the emergence of latent causative variables (Skinner et al., 2003). Factor analysis is based on the assumption that latent variables cause people to respond to subsets of items in certain ways rather than others. However,

items can load on a factor for reasons that are unrelated to that particular factor (e.g., items might have the same emotional tone) and items that are intended to represent the same category could load onto separate factors due to other commonalities (e.g., cognitive avoidance and behavioral avoidance) (Skinner et al., 2003). Exploratory factor analysis is data driven and can produce factors in which items load together for idiosyncratic reasons. Hence, it is important to adopt a theoretical approach to the construction of coping scales in order that confirmatory factor analysis (CFA) can be employed as a direct test of proposed constructs and models (Ayers et al., 1996; Ayers, Sandler, & Twohey, 1998; Compas et al., 2001; Connor-Smith, Compas, Wadsworth, Harding Thomsen, & Saltzman, 2000; Skinner et al., 2003).

While many of the problems mentioned above are equally applicable to CFA this approach has the advantage of testing the adequacy of a theoretical model of latent structure. Hence, CFA is likely to assist in the identification of dimensions that are more replicable and conceptually meaningful than those obtained with exploratory factor analysis (Ayers et al., 1996; Compas et al., 2001). However, like exploratory factor analysis, CFA depends on the assumption that variations in item scores occur due to the influence of latent causal variables. The COPE was developed based on this assumption and claims have been made that the assumption holds because the internal structure is stable. A review of the literature indicated that the structure underlying the COPE might not, in fact, be stable and that stability of some subscales of the COPE might be an artefact of intrascale redundancy (Donoghue, 2004).

The COPE

The COPE (Carver et al., 1989) is a widely used multidimensional self-report instrument with 15 subscales to measure different ways of coping. The COPE has been widely adopted on the basis of its “good factorial properties” (Carver & Scheier, 1994, p.186). However, widespread criticism (e.g., Coyne & Gottlieb, 1996; Coyne & Racioppo, 2000; Endler & Parker, 1990, 1994; Parker & Endler, 1992; Steed, 1998;

Stone & Neale, 1984) regarding the measurement of coping suggests that further evaluation of the psychometric properties of the COPE is warranted.

The COPE was described by its authors (Carver et al., 1989) as a theoretically-constructed, multidimensional coping scale with 13 subscales each consisting of four items that focused on distinct aspects of coping. Five subscales measured problem-focused coping: Active Coping, Planning, Suppression of Competing Activities, Restraint Coping, and Seeking Social Support for Instrumental Reasons. A further five subscales measured emotion-focused coping: Seeking of Social Support for Emotional Reasons, Positive Reinterpretation and Growth, Acceptance, Denial, and Turning to Religion. Three subscales, described by Carver et al. (p.267) as "less useful" were labelled Focus on and Venting of Emotions, Behavioral Disengagement, and Mental Disengagement. A single item related to the use of alcohol and drugs was included in the original measure for exploratory reasons. This has since been developed into a four-item scale, and a scale assessing the use of humor was also developed following publication of the original validation study, resulting in a 60-item COPE, with 15 subscales (personal correspondence Carver, Scheier, & Weintraub, January 1989; see also footnotes in Carver & Scheier, 1994). Concept definitions for each of the subscales appear in Table 1.

Factor Analyses of the COPE

Factor analysis conducted by Carver et al. (1989) yielded eleven factors, nine of which were consistent with the instrument's subscales and two that contained eight items each. The subscales for Active Coping and Planning converged, as did Social Support for Instrumental Reasons and Social Support for Emotional Reasons. These subscales were retained separately by Carver et al. on the basis that they were conceptually distinct. Fontaine, Manstead, and Wagner (1993) replicated the factor structure of the COPE but disagreed with separation of the subscales that converged. In the Fontaine et al. study, the Positive Reinterpretation subscale split into two separate

factors but otherwise the overall similarities suggested that the factor structure underlying the COPE was stable and in accordance with Carver et al. Using a later version of the COPE with 14 subscales, Cook and Heppner (1997) conducted CFA and found a moderate degree of support for either a 12- or 14-factor model (depending on treatment of the convergent subscales identified above). However this was not the best fit to the data. In fact, Cook and Heppner found that the COPE was better represented by a 3-factor model.

The three factors identified by Cook and Heppner (1997) were similar to those identified in second-order factor analyses of the COPE reported by its authors. Carver et al. (1989) found a 4-factor solution (which they did not label) with three of the emergent factors being identical across their two studies. The first factor related to problem-focused coping by combining Active Coping, Planning, and Suppression of Activities. The second factor combined the two social support subscales with the Venting of Emotions subscale. A third factor, relating to avoidance coping, consisted of the Behavioral and Mental Disengagement subscales, together with Denial, and Turning to Religion. The fourth factor suggested positive reappraisal and consisted of Acceptance, Restraint Coping, and Positive Reinterpretation and Growth. The only difference between the two analyses carried out by Carver et al. was that Turning to Religion failed to load on any factor in one of their analyses.

Deisinger, Cassisi, and Whitaker (1996) performed a replication of the second-order factor analysis carried out by Carver et al. but with the inclusion of the two newer subscales (i.e., Humor, Alcohol/Drugs). They found support for a 5-factor model, with the fifth factor (labelled Hedonistic Escapism) consisting of the two newer subscales. The other four factors were identical to those found by Carver et al. (1989) with the exception of Restraint Coping, which loaded in with the problem-solving factor. Following removal of redundant items, other researchers have also found a 4-factor model underlying the COPE (e.g., Eisenberg, Fabes, & Murphy, 1995; Phelps & Jarvis,

1994; Washburn-Ormachewa, Hillman, & Sawilowsky, 2004). However, these factor solutions differed considerably across studies in spite of similarly labelled factors and various subscales were eliminated for their inability to load clearly on any factor.

Lyne and Roger (2000) were highly critical of the factor analyses carried out by Carver et al. (1989) suggesting that seven factor analytic conventions were ignored and that Carver et al.'s validation of the COPE failed to confirm the 13-factor model purported to underlie the instrument. Lyne and Roger attempted to replicate the findings of Carver et al. (1989) but were unable to do so, even when they used radial parcel analysis (Cattell & Barrett, 1975, cited in Lyne & Roger, 2000) to force the structure into 13 groups of four items. Lyne and Roger used rigorous factor analytic techniques and found that many of the COPE items failed to load neatly on their intended factors. Whereas Carver et al. reported only two items with double loadings, Lyne and Roger found that anywhere from nine to 17 items had double loadings in the various solutions that their analyses yielded. Lyne and Roger concluded that the factor structure underlying the COPE was highly unstable.

Following removal of 16 redundant items, Lyne and Roger (2000) found the COPE was best conceptualized in terms of three underlying factors. A number of other studies have also identified various 3-factor models underlying the COPE (e.g., Hien & Miele, 2003; Laurent, Catanzaro, & Callan, 1997; Park & Levenson, 2002; Stowell, Kiecolt-Glaser, & Glaser, 2001). Using CFA and following removal of seven redundant items, Hasking and Oei (2002) found some support for both a 14-factor primary structure and a 3-factor higher-order structure with data from a community sample but found that it was impossible to produce any interpretable structure with an alcohol-dependent sample. Wade et al. (2001) found a 6-factor model underlying the COPE. Due to the various range of items included in factor analyses of the COPE it is difficult to compare individual findings, however, taken together the above studies fail to provide support for Carver and Scheier's (1994) claim that the COPE has good factorial

properties. In fact, the internal structure of the COPE appears to be very unstable across samples.

Weak Loadings

In the initial analysis (Carver et al., 1989) five items had weak loadings ($< .30$) on their intended factors. Of particular concern were two items from the Positive Reinterpretation subscale (i.e., "I learn something from the experience," .23; "I try to grow as a person as a result of the experience," .19) and two from the Mental Disengagement subscale (i.e., "I daydream about things other than this," .28; "I sleep more than usual," .23). Fontaine et al. (1993) eliminated three items (i.e., "I turn to work or other substitute activities to take my mind off things", "I act as though it hasn't happened," and "I slept more than usual") that failed to load above .40. If a similar cut-off point had been adopted by Carver et al. (1989) ten items would have been deleted. Moreover, only one of them ("I sleep more than usual") would have been the same as in the Fontaine et al. study. Carver et al. (1993) found that three of the subscales (i.e., Active Coping, Denial, and Mental Disengagement) each contained an item that consistently reduced that subscale's reliability. Hence, they dropped these items from their analysis. In order to overcome apparent shortcomings, the COPE has been modified by selecting items with the highest reported loadings (e.g., Begley, 1998; Brissette, Scheier, & Carver, 2002) or items that were more clearly worded (e.g., Carver et al., 1993).

Item Redundancy

Some subscales of the COPE (e.g., Humor, and Alcohol/Drug Use) have questionable content validity in that some items appear to be semantic variations of each other rather than conceptually distinct items. For example, "I kid around about it" versus "I make jokes about it," and "I use alcohol or drugs to help me get through it" versus "I use alcohol or drugs to make myself feel better". Livneh, Livneh, Maron, and Kaplan (1996) questioned the similarity of items from the Denial subscale (i.e., "I act

as though it hasn't even happened yet" and "I pretend that it hasn't really happened") and the Planning subscale (i.e., "I try to come up with a strategy about what to do" and "I make a plan of action"). Lyne and Roger (2000) questioned the inclusion of redundant items in the Religion, Alcohol/Drug Use, and Seeking of Emotional Support subscales and found it necessary to remove 16 redundant items. Hence, the COPE appears to contain many items that are redundant, highlighting the need for scrutiny of this measure at the item level because intrascale content redundancy might have seriously undermined the use of factor analysis in its development and validation. Items that are merely paraphrases of each other are certain to be highly correlated and to load together irrespective of their relationship to external criteria (Kline, 1994).

The Present Study

The current research examined the internal structure of the COPE using an Australian community sample to determine whether the factor structure was consistent with that proposed by its authors. The purpose of the present research was twofold. First, factor analysis was carried out specifically to explore the influence of item redundancy on emergent structure. The purpose of the second study was to explore the substantive validity (Anderson & Gerbing, 1991) of the instrument. While examination of the substantive validity of coping instruments has not been reported in the literature, it is an informative methodology that overcomes the limitations inherent in factor analysing coping data. A measure that has poor substantive validity lacks construct validity and will not perform well in factor analysis (Anderson & Gerbing, 1991). Examination of the substantive validity of coping instruments is useful prior to the more rigorous and costly test of CFA. Findings from the current studies will determine whether data obtained with the COPE are suitable for the more rigorous test of CFA and will provide information relevant to establishing the construct validity of the COPE.

STUDY ONE

Participants

Second year psychology students at Edith Cowan University in Western Australia completed the COPE inventory and each student recruited three additional participants from their local community. Participation was voluntary and no inducements were offered. This resulted in a sample of 413 respondents with a mean age of 32 (SD 12.79) and an age range of 16 to 76. Sixty-two percent of the participants were female and 90% were Caucasian. Table 2 provides complete demographic information.

Instrument

The COPE (Carver, et al., 1989) contains 15 subscales (representing different ways of coping) with four items in each. Concept definitions for the subscales are listed in Table 1. The COPE is preceded by two paragraphs instructing participants on how to complete the questionnaire. The COPE can be administered in either a situational or a dispositional form. To obtain a dispositional measure items are framed in terms of “what the person usually does when under stress”; whilst to measure situational coping items are framed in terms of “what the person did, or is doing” in a specific coping situation or a specified period of time (Carver et al., 1989, p. 270). In the present study the COPE was administered in its dispositional form, which is scored on a 4-point Likert-type scale, with scores ranging from 1 (*I usually don't do this at all*) to 4 (*I usually do this a great deal*). Items are summed to produce scale scores with higher scores reflecting greater use of a particular coping strategy.

The COPE consists of 13 original subscales (see Table 1) plus two subscales (i.e., Alcohol/Drug Use; Humor) which were developed subsequent to the validation study reported by Carver, et al. (1989). Based on findings from Stanton, Danoff-Burg, Cameron, and Ellis (1994), the Focus on and Venting of Emotions subscale (e.g., “I get upset and let my emotions out”) was dropped by Carver and Scheier (1994) as it was

confounded with distress levels (outcome). However, as this subscale has frequently been used by researchers it was retained for the purposes of the present analysis. Hence, the full 60-item version of the COPE was used in the present studies.

Carver et al. (1989) reported alphas for the situational form of the COPE between .68 and .91, with the exception of the Mental Disengagement subscale. Alpha reliabilities for the dispositional form of the COPE ranged from .45 to .92, with six of the subscales having alphas less than .70, but only one below .60 (i.e., Mental Disengagement, .45). Carver et al. reported test-retest reliabilities for the dispositional form of the COPE ranging from .42 to .89 at 6 weeks, and from .46 to .86 at 8 weeks. However, several of the subscales were not developed at the time of these studies.

Procedure

Participants were instructed to read the cover page prior to completing the inventory in their own time. Informed consent and demographic data were collected with the questionnaire. Each participant was provided with an envelope to ensure confidentiality and students collected and returned the envelopes to the university.

Results

In an attempt to replicate the internal structure found by Carver et al. (1989), Principal Axis factor analysis with oblique rotation (Oblimin with Kaiser normalization) was carried out on the 60 COPE variables using SPSS (version 11.5). The correlation matrix revealed a considerable number of correlations exceeding .30. The Bartlett's test was significant and the KMO measure of sampling adequacy was .87 indicating suitability for factor analysis. In order to replicate the findings of Carver et al. (1989), the number of factors to extract was set to 15.

The factor solution obtained by Carver et al. (1989) was not replicated. Three of the extracted factors were consistent with the COPE's subscales, however, items loaded on the remaining twelve factors in ways that did not correspond to the instrument's proposed structure. Two items from the Mental Disengagement subscale failed to load

above .30 on any factor and a further 12 items were considered complex variables as they had loadings above .20 on more than one factor. Whilst .30 is the usual convention for determining complexity of variables, the more stringent cut off point of .20 was adopted in the present analysis because the highest factor loading for many of the complex variables was low. For example, the highest loading for item 51 from the Behavioral Disengagement scale was .32, however, it also loaded on two other factors at .26 and .24. Hence, taking into account only those loadings above .30 seemed inappropriate as it failed to capture the complexity of some variables.

Factor one contained all items from the Active Coping and the Planning subscales, however, six of the nine items in this factor also had loadings on other factors. The four Behavioral Disengagement factors formed factor two although one of the items also loaded on two other factors. Factor three contained the eight social support items although two of the Venting of Emotions items also had secondary loadings in this factor. Factors four, five and six were consistent with the COPE subscales for Religion, Humor, and Alcohol/Drug Use respectively. The items that formed these subscales loaded purely into their factors with no secondary loadings.

Factor seven contained the Acceptance items, two of which also had secondary loadings on other factors. Factor eight contained the Venting of Emotions items with two of these items also loading on other factors. The four items from the Restraint Coping scale, together with a Suppression of Competing Activities item, formed Factor nine, and an Active Coping item also had a secondary loading in this factor. Factor 10 contained two of the Mental Disengagement items together with a Suppression of Competing Activities item. Factor 11 contained two of the Positive Reinterpretation and Growth items. Factor 12 contained all four denial items together with secondary loadings for an Acceptance item and a Behavioral Disengagement item. The only item that loaded purely on Factor 13 was a Positive Reinterpretation item. Three of the Suppression of Competing Activities items loaded into Factor 14 but one had an equally

high loading on Factor 15 which contained only secondary loadings of complex variables.

As the present analysis failed to replicate the 15 factor model proposed by Carver et al. (1989) the actual internal structure of the data was explored. Three items were found to have low communalities ($<.20$), indicating that they were unrelated to other items on the instrument. Two of these items were from the Mental Disengagement subscale and the other was from Suppression of Competing Activities. The scree plot suggested that the COPE data was represented by approximately seven factors at most, so the analysis was repeated setting the number of factors to extract at seven.

Seven factors accounted for 49% of the variance in the solution. Factor loadings for the COPE subscales, together with percentages of variance, and estimates of internal consistency (Cronbach's alpha) are reported in Table 3. Factor one consisted of eleven items including all items from Active Coping, Planning, and the three Suppression of Competing Activities items that were included in the analysis. All the items loaded purely on this factor except for one of the Active Coping items which had a secondary loading on Factor 7. Factor one was labelled Problem Engagement and accounted for 16.2% of the variance.

Factor two accounted for 9.2% of the variance and consisted of the Behavioral Disengagement items and the Denial items, all of which loaded purely onto this factor, which was labelled Problem Disengagement. Factor three accounted for 7.1% of the variance in the solution. It contained all items from both Social Support scales, together with the Venting of Emotions items and was labelled Social Support and Venting. Three of the four Venting items also had secondary loadings on Factor 2, and one also had a further loading on Factor 5.

Factors four, five, and six were consistent with the COPE scales for Religion, Humor, and Alcohol/Drug Use accounting for 6.0%, 4.5%, and 3.5% of the variance

Examining the COPE 15
respectively. Item 29 from the Positive Reinterpretation subscale and item 16 from the Mental Disengagement scale had their highest loadings on the factor relating to Humor, however, these were both complex variables with similar loadings on other factors.

Factor seven accounted for 2.5% of the variance and included the subscales for Acceptance, and Restraint Coping, together with two of the Positive Reinterpretation items. Two of the Restraint items, two of the Positive Reinterpretation items, and one of the Acceptance items were complex variables with secondary loadings above .20 on other factors. This factor was labeled Accommodation as the items seemed to be related to acceptance and accommodation of the stressful event.

Three items were removed from analysis due to low communalities, however, a further four items failed to load on any factor. The two Mental Disengagement items that were retained for analysis failed to load above .30 on any factor and two of the Positive Reinterpretation items were complex variables whose highest loading of .30 was very close to secondary loadings (.29, .26) on other factors. Nine additional items had complex loadings. Hence, 16 (27%) of the 60 COPE items failed to perform adequately in the present factor analysis.

Discussion

The present study failed to replicate the factor solution obtained by Carver et al. (1989). Findings did not support the notion that there are 15 distinct coping domains underlying the instrument. Only three of the emergent factors were consistent with subscales from the COPE. Exploratory factor analysis suggested that the internal structure of the COPE consists of no more than seven factors, which accounted for 49% of variance in the solution. Findings from the present analysis were similar to Carver et al.'s (1989) second-order analysis of the COPE.

Only three of the COPE's subscales emerged cleanly in both factor analyses carried out in the present study. These were Humor, Alcohol/Drug Use, and Religion. The subscales for Humor and Alcohol/Drug Use were developed subsequent to

validation of the COPE. Hence, they were not included in Carver et al.'s (1989) second-order analyses. The Religion subscale emerged as a factor in its own right in the second-order analysis carried out by Carver et al. when the situational form of the COPE was used but loaded with the denial and disengagement items when the dispositional form was used. The dispositional form of the COPE was used in the present study, however, the religion subscale still formed a unique factor. Hence, turning to religion might reflect a respondent's religious beliefs and not be correlated with any of the higher-order factors more strongly than with any of the other factors.

These three scales (and others to a lesser extent) appear to contain a high level of redundancy. The Alcohol/Drug Use scale, for example, consists of the following four items: "I use alcohol or drugs to make myself feel better", "I try to lose myself for a while by drinking alcohol or taking drugs", "I drink alcohol or take drugs, in order to think about it less", and "I use alcohol or drugs to help me get through it". Furthermore, items on these subscales are highly correlated. For example, the items that form the Religion subscale had Corrected Item – Total Correlations ranging from .87 to .92 and loadings of between .92 and .96 on their factor. Hence, the emergence of these three scales as distinct dimensions of coping with high internal consistency is likely to be an artefact of redundancy. It is likely that someone responding to a subscale consisting of redundant items will respond to more of these items because they are repetitions of the same question, not because this strategy was employed more frequently. Therefore, it is not yet clear how these constructs might relate to the other coping constructs under examination.

The remaining four factors that emerged were consistent with Carver et al.'s (1989) second-order analyses of the COPE. The items from the Active Coping, Planning, and Suppression of Competing Activities formed a single factor suggesting an underlying problem-engagement dimension. Suppression of Competing Activities can be seen as complimentary to Active Coping and Planning strategies. A second factor

consisted primarily of Denial and Behavioral Disengagement items reflecting a problem-disengagement dimension. These items all related to a reduction of efforts to deal with the stressor, however, the Mental Disengagement items did not load in this factor as they did for Carver et al. Two of the Mental Disengagement items were not included due to low communalities ($<.20$) and the remaining items failed to load above .30 on any factor. The failure of the Mental Disengagement scale is consistent with prior studies in which these items have consistently been problematic, with internal consistencies as low as .36 in some studies (e.g., Knee, 1998; Zuckerman, Kieffer, & Knee, 1998). Furthermore, the Mental Disengagement subscale had weak loadings ($<.30$) and unsatisfactory internal consistency ($\alpha = .45$) in the validation studies carried out by Carver et al.

The social support items from both subscales loaded with the Venting of Emotions items to form a single factor. It is reasonable to expect that items related to the expression of emotions would load with social support items as it is often within the social context that such expression occurs. Nonetheless, the items from the Venting of Emotions subscale may be problematic as three of the four also had loadings on at least one other factor.

The final factor seemed to be about accommodating to the stressor as it consisted of the Acceptance, Restraint, and Positive Reinterpretation and Growth subscales. Two of the Restraint items and two of the Positive Reinterpretation items had complex loadings and a Restraint item was found to reduce the internal consistency of this factor. Hence, some of the items included in this factor may be ambiguous and poor indicators of accommodating to the stressor.

Findings from the present analysis suggest that many of the subscales from the COPE consist of inter-related items that could be indicators of higher-order coping dimensions, however, the items fail to distinguish between 15 different types of coping

as proposed by Carver et al. (1989). The subscales from the COPE tended to form factors more consistent with higher-order factor analyses carried out on the COPE.

Almost one-third of the COPE items failed to perform adequately in the present analyses. Three items were initially removed due to low communalities ($<.20$) which indicated the items were unrelated to other items contained in the instrument. Four additional items failed to load above .30 on any factor and a further nine items were complex variables, loading above .20 on more than one factor. These 16 items would appear to be weak indicators of their respective subscales. The various items might serve different functions for different people and given different samples these items are likely to load more highly on different factors. These weak items could be partly responsible for the variety of different factor solutions that have emerged in factor analytic studies of the COPE (e.g., Cook & Heppner, 1997; Deisinger et al., 1996; Eisenberg et al., 1995; Hien & Miele, 2003; Laurent, et al., 1997; Lyne & Roger, 2000; Park & Levenson, 2002; Phelps & Jarvis, 1994; Stowell, et al., 2001; Washburn-Ormachea, et al., 2004).

Findings from the present analysis indicate that the COPE does not measure 15 distinct ways of coping and provides further support for Lyne and Roger's (2000) assertion that the internal structure of the COPE appears to be unstable. Furthermore, the few subscales that did emerge cleanly in both factor analyses are those that appear to consist of redundant items (i.e., a single item repeated four times with minor variations). Hence, their emergence as factors is likely to be an artefact of this redundancy revealing nothing substantive about the constructs under examination. Substantive validity analysis was, therefore, carried out in a second study in order to obtain another perspective on the COPE items.

STUDY TWO

Participants

Twenty-six first-year psychology students at Edith Cowan University in Western Australia participated on a voluntary basis. This sample consisted mostly of young, female, Australian students. Complete demographic information is provided in Table 4.

Instrument

Analysis of substantive validity (or item validity) involves independent assessments as to whether each item is a reliable indicator of the domain it is intended to represent and only that domain (Anderson & Gerbing, 1991). Tests of substantive validity utilize small samples of participants who are given the task of assigning items into their respective domains using a pen and paper item-sort task. Coefficients are calculated to determine the degree to which participants are able to identify the appropriate subscale for each item and substantive validity exists when items are correctly allocated to their intended subscales or domains.

The questionnaire instructed participants to label 60 items with one of 15 categories or concept definitions provided, according to where they thought the item belonged. The items were from the COPE and the categories were their corresponding subscale domains. The questionnaire referred to the investigation of coping behaviors but did not identify the items or concepts as belonging to a particular instrument.

Procedure

Participants read an Information Letter and signed the Informed Consent statement before proceeding to the main questionnaire, which was preceded by a paragraph instructing participants on what was required and providing an example. Participants then labelled each of the 60 items with one of the 15 concept definitions, and provided demographic information. The task took approximately 10 to 15 minutes.

Results

Substantive validity coefficients (C_{sv}) were calculated to reflect the extent to which an item was assigned to its intended domain more than to any other domain (Anderson & Gerbing, 1991). The following formula was used:

$$C_{sv} = (n_c - n_o) / N$$

where n_c represents the number of respondents assigning an item to its intended domain, n_o represents the number of times an item is assigned to the alternative domain that received the largest number of assignments, and N represents the total number of respondents. C_{sv} values range from -1 to +1, with higher values indicating greater substantive validity. A large negative value indicates that an item had substantive validity but for a domain other than the one for which the researcher intended (Anderson & Gerbing, 1991).

Following Anderson and Gerbing (1991), C_{sv} values above .55 were considered significant and of *high validity*, whilst C_{sv} values between .30 and .55 represented *moderate validity*. Items with either high or moderate positive C_{sv} values were deemed worthy of retention in the instrument provided that no more than 30% of respondents had assigned the item incorrectly. Items that were found to tap into more than one domain were considered *ambiguous*. Those with C_{sv} values below .30 (including negative values) were considered *useless* as they are the most problematic in subsequent CFA (Anderson & Gerbing, 1991). Low substantive validity coefficients indicate the existence of either problematic items or problematic concept definitions.

Of the 60 COPE items, 47 (78.7%) had acceptable C_{sv} values, with 46 of these items reflecting high substantive validity (>.55), and one item close to this cut-off, with a C_{sv} value of .54. Of the remaining 13 items, eight were found to be ambiguous, and a further five were found to be useless. Therefore, 21.3% of the COPE items were found to be lacking in substantive validity.

Problematic items were identified from eight of the subscales. Responses to the Mental Disengagement subscale were especially problematic with three of the four

items found to be ambiguous, leaving only one item to represent this subscale. The ambiguity of these variables was demonstrated by the broad range of responses to the items, which participants assigned to seven different categories. Fifteen percent of responses to the Mental Disengagement items were assigned to Behavioral Disengagement and a further 10% were assigned to Denial.

Two items from the Active Coping subscale were found to be useless. "I do what has to be done, one step at a time" had a negative C_{nv} of .15 indicating it had higher substantive validity for a domain other than its intended one. Sixteen (61%) respondents incorrectly assigned this item, with 14 (54%) respondents perceiving this item to indicate Planning rather than Active Coping. Thirteen respondents (50%) indicated that "I concentrate my efforts on doing something about it" was also suggestive of Planning. An item from the Planning scale ("I think hard about how I might best handle the problem") was found to be ambiguous as seven (27%) respondents allocated this item to Active Coping.

Three of the eight social support items were found to be ambiguous. Four participants viewed "talking to someone who could do something concrete about the problem" as Active Coping or Planning efforts. Two items from the Emotional Social Support subscale were rated as Instrumental Social Support by 31% of participants.

The substantive validity analysis also identified two problematic items within the Suppression of Competing Activities subscale. "I focus on dealing with this problem and, if necessary let other things slide a little" was incorrectly assigned by eight (31%) respondents. Six participants (23%) rated this item as indicative of Active Coping, whilst two (8%) viewed it as reflecting Restraint Coping. "I keep myself from getting distracted by other thoughts or activities" was found to be a useless item with 15 people (58%) incorrectly assigning it. Five participants (19%) thought this item reflected Active Coping, whilst another five thought it referred to Mental Disengagement.

Two other useless items were identified. "I restrain myself from doing anything too quickly" was incorrectly assigned by 12 (46%) respondents. Eight (31%) respondents viewed this as a Planning item rather than a Restraint item. Finally, 14 (54%) respondents failed to identify "I reduce the amount of effort I'm putting into solving the problem" as a Behavioral Disengagement strategy. Six participants categorized this item as Mental Disengagement, whilst five saw it as Restraint Coping.

Seven of the COPE's subscales showed high substantive validity for all four items. These scales were: Positive Reinterpretation and Growth, Turning to Religion, Acceptance, Focus on and Venting of Emotions, Denial, Alcohol/Drug Use, and Humor. Further information (including C_{sv} values) is available upon request.

Discussion

The item-sort task used in this study showed that 13 (21.3%) of the 60 COPE items lacked substantive validity. The Mental Disengagement scale was especially problematic with three of the four items lacking substantive validity. This finding confirms the inherent weakness of this subscale, which had weak loadings ($<.30$) and unsatisfactory internal consistency ($\alpha = .45$) in the validation studies carried out by Carver et al. (1989). Furthermore, in reviewing studies that used the COPE the Mental Disengagement subscale was consistently found to be problematic, with internal consistencies as low as .36 in some studies (e.g., Knee, 1998; Zuckerman, Kieffer, & Knee, 1998). Whilst Carver et al. (p.271) argued that lower reliabilities for the Mental Disengagement subscale were not entirely unexpected due to this scale being "more of a multiple-act criterion" than the others, data from the item-sort task clearly suggest that the items are unrelated and ambiguous. Hence, the failure of this subscale to perform adequately in factor analysis.

In the validation study carried out by Carver et al. (1989), and the replication by Fontaine et al. (1993), the subscales for Active Coping and Planning converged to form a single factor. In second-order factor analysis (e.g., Carver et al., 1989; Deisinger et

al., 1996) and other studies (e.g., Eisenberg et al., 1995; Laurent et al., 1997; Lyne & Roger, 2000) items from the Active Coping and Planning subscales have also tended to form a single factor (together with other items) that generally indicates an underlying problem-focused dimension. Findings from the item-sort task indicate that respondents might have difficulty making the distinction between acting (Active Coping) and forming intentions to act (Planning). The two might not be distinct in people's behavior. Alternatively, it might be that these particular items are poorly worded. The phrase "one step at a time" is strongly indicative of planning, even though the item is about "do[ing] what has to be done". The other problematic Active Coping item used the word "concentrate", which is highly indicative of mental activity, to describe efforts at "doing something". Alternative wording of items would need to be tested to determine whether the items or the constructs are problematic.

Consistent with findings of Carver et al. (1989), participants had some difficulty in distinguishing between Social Support for Instrumental Reasons and Social Support for Emotional Reasons. In the present analysis, the concept definitions clearly make the distinction between these two subscales, however, the two items concerned ("I discuss my feelings with someone" and "I talk to someone about how I feel") might be too vague to clearly articulate this distinction. Alternatively, such a distinction might not be valid in terms of actual behavior. Considering that one is likely to obtain emotional support when seeking instrumental support and vice-versa, the distinction between seeking social support for instrumental versus emotional reasons might not reflect the reality of people's behavior.

In summary, 13 of the 60 COPE variables failed to show adequate substantive validity indicating that these items are poor indicators of the various coping strategies they are supposed to represent or that the constructs themselves are poorly defined. Many of the activities that make up the COPE items can be carried out for reasons other than those intended by the questionnaire. The above findings suggest that some of the

theoretical distinctions among the coping strategies proposed by Carver et al. (1989)

might not reflect distinctions in terms of people's actual coping behavior. Furthermore, the seven scales which showed high substantive validity are those which appear to contain semantic variations rather than conceptually distinct items (i.e., Alcohol/Drug Use; Humor). The high substantive validity of these items is probably due to the similarity of the items, as well as the fact that many of these subscales measure constructs that are quite distinct from other aspects of coping measured by the instrument.

GENERAL DISCUSSION

The current research examined the internal structure of the COPE to determine whether the factor structure was consistent with that proposed by its authors (Carver et al. (1989). The first study was intended to explore the influence of item redundancy on emergent factor structure, whilst the second study used an item-sort task to explore the substantive validity of the instrument. A replication of the factor analysis carried out by Carver et al. failed to support the 15-factor model proposed to underlie the COPE. The factor structure produced in the present analysis was more parsimonious than that proposed by the COPE's authors with seven factors emerging. Other researchers who have factor analysed data obtained with the COPE have found various different 3-factor models (e.g., Cook & Heppner, 1997; Hien & Miele, 2003; Laurent, et al., 1997; Lyne & Roger, 2000; Park & Levenson, 2002; Stowell, et al., 2001), 4-factor models (e.g., Eisenberg et al., 1995; Phelps & Jarvis, 1994; Washburn-Ormachena, et al., 2004), and a 6-factor model (i.e., Wade et al., 2001). Factor solutions differed considerably across the above studies in spite of similarly labelled factors, and various subscales were eliminated for their failure to load clearly on any factor. Findings from the present studies, taken together with those studies identified above, suggest that the internal structure of the COPE is unstable across samples.

Examination of factor loadings and inter-item correlations revealed that emergent factor structure was strongly influenced by the level of item redundancy present in the instrument. Items from several of the subscales (e.g., Humor, Religion, and Alcohol/Drug Use) were very highly correlated producing factors on which the items loaded very highly and purely on their respective factors. As the majority of items on these scales appear to be semantic variations rather than clearly distinct items they would be expected to load together irrespective of their relationship to external criteria. If redundant items were removed from these subscales there would only be one item to represent each construct. Hence, the relationship of these constructs to latent causative variables and higher-order dimensions of coping is not yet clear as clearly distinct items would need to be developed in order to explore such relationships.

Item redundancy also has consequences in terms of scoring because items from the COPE are summed to produce scale scores with higher scores reflecting greater use of a coping strategy. It is likely that someone responding to a subscale consisting of redundant items will respond to more of these items because they are repetitions of the same question, not because this strategy was employed more frequently. For example, it appears that subscales for religious coping, the use of alcohol and drugs, and denial all contain some degree of item redundancy. Hence, a person's scores on this instrument might be inflated in terms of these subscales leading to erroneous conclusions about the coping strategies they employ. Studies that have relied on data from the COPE should be critically re-examined as measurement error due to intrascale redundancy renders findings suspect.

Given that coping subscales generally struggle to reach adequate levels of internal consistency, Cronbach's alphas for the seven factors emerging in the present analysis would appear to be relatively high, ranging from .74 to .96 (see Table 3). The three subscales that formed their own pure factors (i.e., Humor, Religion, and Drug/Alcohol Use) had alphas of .89, .93, and .96 respectively, which are very high

given the small number of items per scale. High internal consistency estimates produced by the COPE might be misleading as estimates of internal consistency become inflated when highly correlated redundant items are included in a measure.

The other four factors which emerged in the present factor analysis were similar to those found by Carver et al. (1989) in their higher-order factor analyses of the COPE. The various subscales tended to converge forming a problem-engagement factor primarily consisting of Active Coping, Planning, and Suppression of Competing Activities items, a problem-disengagement factor consisting of Behavioral Disengagement and Denial items, an accommodation factor consisting of Acceptance, Positive Reinterpretation and Growth, and Restraint items, and a social support/emotional expression factor consisting of the Social Support (both types) and Venting of Emotions items. The emergent constructs are consistent with those found throughout the coping literature. The items formed interpretable factors, however, the items included in the item pool may not be the best indicators of these constructs because the items were intended to represent 15 narrower constructs, rather than these four broader domains of coping. The failure of items to load purely on one factor might be an indication that the items are not ideal markers for the constructs.

ten of the COPE items loaded on more than one factor and two failed to load on any factor, which is consistent with findings from the item-sort task in which 13 of the 60 COPE variables failed to show adequate substantive validity. It is also consistent with the fact that in reviewed studies factor solutions differed considerably across studies (e.g., Cook & Heppner, 1997; Eisenberg et al., 1995; Hien & Miele, 2003; Laurent, et al., 1997; Lyne & Roger, 2000; Park & Levenson, 2002; Phelps & Jarvis, 1994; Stowell, et al., 2001; Wade et al., 2001; Washburn-Ormachea, et al., 2004).

Similar to Stone and Neale (1984) the present study included a sorting methodology that did not necessitate administration of the instrument. Consistent with the findings of Stone and Neale, the item-sort task demonstrated that items from the

COPE served different functions for different people. Stone and Neale allowed participants to classify coping items into as many categories as they saw fit and they found that items could often represent more than one coping strategy. Coping strategies often have different implications for different people under different conditions and may refer to very different kinds of coping efforts (Carpenter, 1992; Coyne & Gottlieb, 1996; Stone & Neale, 1984). Consequently, when a person selects a certain item, they may be doing so for reasons other than those intended by the instrument. When coping items serve multiple functions they are likely to load on multiple factors leading to their deletion from the item pool (Steed, 1998; Stone et al., 1992). Furthermore, Stone and Neale argued that endeavours to identify pure items representative of coping strategies was likely to produce item pools that poorly assess a given construct. For this reason, Stone and Neale rejected a checklist methodology and developed an alternative method for assessing coping that focuses on the intentions of the respondent rather than the test developer.

The intention-based approach developed by Stone and Neale (1984) produces shorter instrumentation because it requires only one item to assess each category of coping. Hence, Stone and Neale found it was ideal for daily assessment purposes overcoming the bias of retrospective accounts. Stone and Neale's instrument presented respondents with one-sentence descriptions of coping strategies and had respondents indicate whether they did anything that fit the categories. Positive responses were followed with an open-ended request for a description of actual thoughts or behaviors carried out. Respondents were also provided with the opportunity to include coping strategies that did not correspond to any of the categories provided. Hence, respondents could report on coping strategies that might be important in a given domain but which otherwise might not be captured due to the limitations imposed by the constructs and item pools of a particular instrument.

Stone and Neale (1984) also had respondents rate stressful events on situational parameters that included controllability, desirability, impact, anticipation, meaningfulness, chronicity, novelty, and stressfulness of the problem event. Pearlin and Schooler (1978) indicated that for efficacious coping a match was required between the specific characteristics of a stressful event and the selection of coping strategies. Hence, the methodology adopted by Stone and Neale not only overcomes the limitations inherent in many coping instruments (e.g., limitation of item pools, ambiguity of items) but it also allows for examination of the efficacy of coping because it collects information pertaining to the situational parameters of the stressful event. Hence, the methodology adopted by Stone and Neale appears to offer a way to measure coping that overcomes many of the drawbacks associated with the use of coping checklists, however, the limitations imposed by the need to analyze qualitative data (i.e., time and cost factors, smaller sample sizes) might deter researchers from adopting this approach when targeting large numbers of people.

Conclusions

A review of the literature suggested that the factor structure of the COPE was unstable and that the instrument contained a high level of item redundancy. Supporting this notion, the current factor analysis failed to replicate the proposed factor structure of the COPE and emergent factor structure appeared to be strongly influenced by a high level of intrascale redundancy. In the item-sort task, thirteen of the 60 COPE items failed to show adequate substantive validity. Findings from the current study support Lyne and Roger's (2000) assertion that the factor structure underlying the COPE is unstable. Hence, the COPE appears to lack content validity. This raises serious questions regarding the usefulness of information obtained using this instrument and highlights the need to confirm findings using alternatives to current measures. The methodology adopted by Stone and Neale (1984) overcomes many of the limitations inherent in the use of a checklist methodology to assess coping. Findings and

conclusions based on the use of the COPE should be critically re-examined as widespread use of this instrument might have contributed to inconsistencies in the coping literature.

The arguments of Stone and Neale (1984) and Steed (1998) that, unlike trait assessment, coping strategies may be reflected by endorsement of only one or two items on a scale means that other coping instruments developed along traditional psychometric lines might also be problematic. Hence, considerable caution should be exercised when interpreting results that have used similar measures of coping. The need for more research examining the psychometric properties of coping instruments is clear. Sorting tasks such as those used by Stone and Neale, and the present analysis of substantive validity, are informative methods for examining coping instruments. These methodologies do not rely on actual administration of coping instruments and, therefore, overcome the limitations inherent in factor analyzing coping data (cf. Steed, 1998; Stone et al., 1992).

Coping is an extremely important construct given its ability to moderate the stress-health link, however, until such time as agreement is reached regarding its basic underlying dimensions, assessment of coping responses will remain problematic. Due to differences in the ways in which respondents interpret similar coping items and the fact that coping strategies are adopted by people for different reasons it may be futile to endeavor to identify items that form conceptually clear, mutually exclusive and exhaustive categories of coping. Hence, alternative methodology such as that offered by Stone and Neale (1984) might hold a key to progress in the field of coping. Continued attention must be directed to the theory, development, validation, and psychometric properties of coping instruments. The field of coping requires conceptual agreement and standardization of measurement in order that meaningful integration of findings might occur. In the meantime, researchers should be wary about accepting conclusions

about the association between coping and adjustment that are based on the use of coping instruments that have questionable psychometric properties.

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TABLE 1

Concept Definitions

Concept	Definition
Denial	An attempt to reject the reality of the stressful event.
Religion	Increased engagement in religious activities.
Seeking Instrumental Social Support	Seeking assistance, information, or advice about what to do.
Humor	Making jokes about the stressor.
Restraint Coping	Coping passively by holding back one's coping attempts until they can be of use.
Active Coping	Taking action, exerting efforts, to remove or circumvent the stressor.
Alcohol/Drug Use	Turning to the use of alcohol or other drugs as a way of disengaging from the stressor.
Mental Disengagement	Psychological disengagement from <i>the goal that the stressor is interfering with</i> , through daydreaming, sleep, or self-distraction.
Planning	Thinking about how to confront the stressor, planning active coping efforts.
Acceptance	Accepting the fact that the stressful event has occurred and is real.
Seeking Emotional Social Support	Getting sympathy or emotional support from someone.
Suppression of Competing Activities	Suppressing attention to other activities in which one might engage, in order to concentrate more completely on dealing with the stressor.
Behavioral Disengagement	Giving up, or withdrawing effort from trying to attain <i>the goal that the stressor is interfering with</i> .
Positive Reinterpretation and Growth	Making the best of the situation by growing from it, or viewing it in a more favourable light.
Focus on and Venting of Emotions	An increased awareness of one's emotional distress, and a tendency to ventilate or discharge those feelings.

TABLE 2

Demographic Breakdown of Participants in Study One

Variable	Category	<i>n</i>	%
Sex	Male	156	37.9
	Female	256	62.1
Age	18 - 20	89	21.7
	21 - 25	80	19.5
	26 - 30	54	13.1
	31 - 35	52	12.7
	36 - 40	23	5.6
	41 & over	113	27.5
Place of Birth	Australia	279	67.8
	Other	133	32.2
Race	Aboriginal	3	.7
	Caucasian	373	90.8
	Asian	15	3.6
	Other	20	4.9
Student	Yes	150	32.0
	No	263	63.7
Employment status	Full time paid work	157	38.0
	Part time paid work	62	15.0
	Full time student	124	30.0
	Social security benefits	43	10.4
	No income or benefits	27	6.5
Relationship status	Married	140	34.1
	De facto	55	13.4
	Not living together	110	26.8
	Separated/divorced	27	6.6
	Single/not in a relationship	79	19.2

TABLE 3

Subscales from the COPE with Factor Loadings obtained in Study One

Item No.	COPE Subscale	F1	F2	F3	F4	F5	F6	F7
32	Planning	.74	...	...	...	...	...	...
56	Planning	.70	...	...	...	...	...	...
47	Active Coping	.63	...	...	...	...	...	...
19	Planning	.63	...	...	...	...	...	...
25	Active Coping	.62	...	...	...	...	...	...
39	Planning	.62	...	...	...	...	...	...
33	Suppression of Competing Activities	.58	...	...	...	...	...	...
5	Active Coping	.55	...	...	...	...	...	...
58*	Active Coping	.53	...	...	...	...	...	-.26
42	Suppression of Competing Activities	.51	...	...	...	...	...	...
55	Suppression of Competing Activities	.47	...	...	...	...	...	...
40	Denial	...	.63	...	...	...	...	...
37	Behavioral Disengagement	...	.60	...	...	...	...	...
24	Behavioral Disengagement	...	.58	...	...	...	...	...
51	Behavioral Disengagement	...	.53	...	...	...	...	...
9	Behavioral Disengagement	...	.52	...	...	...	...	...
57	Denial	...	.49	...	...	...	...	...
27	Denial	...	.46	...	...	...	...	...
6	Denial	...	.44	...	...	...	...	...
1**	Positive Reinterpretation	...	.30	...	...	...	...	.29
43**	Mental Disengagement	...	.23	...	...	...	...	...
52	Social Support (Emotional)	...	...	-.91	...	...	...	...
11	Social Support (Emotional)	...	...	-.84	...	...	...	...
23	Social Support (Emotional)	...	...	-.79	...	...	...	...
34	Social Support (Emotional)	...	...	-.77	...	...	...	...
14	Social Support (Instrumental)	...	...	-.71	...	...	...	...

Item No.	COPE Subscale	F1	F2	F3	F4	F5	F6	F7
4	Social Support (Instrumental)	...	...	-.70	...	...	...	...
45	Social Support (Instrumental)	...	...	-.68	...	...	...	...
28	Venting of Emotions	...	...	-.63	...	...	...	...
30	Social Support (Instrumental)	...	...	-.62	...	...	...	...
46*	Venting of Emotions	...	.28	-.55	...	...	...	...
3*	Venting of Emotions	...	.20	-.50	...	.22	...	...
17*	Venting of Emotions	...	.29	-.30	...	...	...	...
18	Religion	...	...	...	.96	...	...	...
7	Religion	...	...	...	.91	...	...	...
60	Religion	...	...	...	.88	...	...	...
48	Religion	...	...	...	.86	...	...	...
50	Humor	...	...	...	...	-.84	...	...
20	Humor	...	...	...	...	-.83	...	...
36	Humor	...	...	...	...	-.82	...	...
8	Humor	...	...	...	...	-.69	...	...
29**	Positive Reinterpretation	.21	...	...	...	-.30	...	-.26
16**	Mental Disengagement	...	.24	...	...	-.26	...	...
53	Alcohol/Drug Use	...	...	...	...	...	.96	...
26	Alcohol/Drug Use	...	...	...	...	...	.96	...
35	Alcohol/Drug Use	...	...	...	...	...	.95	...
12	Alcohol/Drug Use	...	...	...	...	...	.92	...
54	Acceptance	...	...	...	...	...	...	-.67
21	Acceptance	...	...	...	...	...	...	-.54
13	Acceptance	...	...	...	...	...	...	-.50
44*	Acceptance	...	.22	...	...	...	...	-.48
22	Restraint Coping	...	...	...	...	...	...	-.46
41*	Restraint Coping	.21	...	...	...	...	...	-.46
49*	Restraint Coping	.23	...	...	...	...	...	-.43
10	Restraint Coping	...	...	...	...	...	...	.32

Item No.	COPE Subscale	F1	F2	F3	F4	F5	F6	F7
38*	Positive Reinterpretation	...	...	...	...	-.31	...	-.37
59*	Positive Reinterpretation	.23	...	.24	...	...	...	-.34
2	Mental Disengagement	Not included in analysis as initial extracted communality						
15	Suppression of Competing Activities	Not included in analysis as initial extracted communality						
31	Mental Disengagement	Not included in analysis as initial extracted communality						
<i>% of Variance</i>		16.2	9.2	7.1	6.0	4.5	3.5	2.5
<i>Cronbach's alpha</i>		.88	.78	.92	.93	.89	.96	.67
<i>Label</i>		Problem Engagement	Problem Disengagement	Social Support & Venting	Religion	Humor	Alcohol & Drug Use	Accommodation

Factor loadings <.20 have been suppressed to aid interpretation.

* complex variables (loadings >.20 on more than one factor)

** failure to load >.30 on any factor or not included in analysis as initial extracted communality <.20

TABLE 4

Demographic Breakdown of Participants in Study Two

Variable	Category	<i>n</i>	%
Sex	Male	4	15.4
	Female	22	84.6
Place of Birth	Australia	19	73.1
	Other	7	26.9
Age	< 18	2	7.7
	18 - 20	16	61.5
	21 - 25	3	11.5
	26 - 30	3	11.5
	31 - 35	1	3.8
	36 - 40	1	3.8
Employment status	Full time paid work	1	3.8
	Part time paid work	10	38.5
	Full time student	11	42.3
	Social security benefits	4	15.4
Relationship status	De facto	4	15.4
	Not living together	9	34.6
	Single/not in a relationship	13	50.0

Appendix A

COPE

On your answer sheet find the box marked "form." In that box, if you are female, code "1," if you are male, code "2."

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you *usually* do when you are under a lot of stress.

Then respond to each of the following items by blackening one number on your answer sheet for each, using the response choices listed just below. Please try to respond to each item *separately in your mind from each other item*. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer *every* item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU--not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

- 1 = I usually don't do this at all
- 2 = I usually do this a little bit
- 3 = I usually do this a medium amount
- 4 = I usually do this a lot

1. I try to grow as a person as a result of the experience.
2. I turn to work or other substitute activities to take my mind off things.
3. I get upset and let my emotions out.
4. I try to get advice from someone about what to do.
5. I concentrate my efforts on doing something about it.
6. I say to myself "this isn't real."
7. I put my trust in God.
8. I laugh about the situation.
9. I admit to myself that I can't deal with it, and quit trying.
10. I restrain myself from doing anything too quickly.
11. I discuss my feelings with someone.
12. I use alcohol or drugs to make myself feel better.
13. I get used to the idea that it happened.
14. I talk to someone to find out more about the situation.
15. I keep myself from getting distracted by other thoughts or activities.
16. I daydream about things other than this.
17. I get upset, and am really aware of it.
18. I seek God's help.
19. I make a plan of action.
20. I make jokes about it.
21. I accept that this has happened and that it can't be changed.
22. I hold off doing anything about it until the situation permits.
23. I try to get emotional support from friends or relatives.
24. I just give up trying to reach my goal.
25. I take additional action to try to get rid of the problem.
26. I try to lose myself for a while by drinking alcohol or taking drugs.
27. I refuse to believe that it has happened.
28. I let my feelings out.
29. I try to see it in a different light, to make it seem more positive.
30. I talk to someone who could do something concrete about the problem.

[[Check to see that you have completed exactly 30 items on your IBM sheet;
then turn this page over and continue with the items on the other side.]]

Appendix A (cont'd)

Continue to answer each item with these response choices:

- 1 = I usually don't do this at all
- 2 = I usually do this a little bit
- 3 = I usually do this a medium amount
- 4 = I usually do this a lot

- 31. I sleep more than usual.
- 32. I try to come up with a strategy about what to do.
- 33. I focus on dealing with this problem, and if necessary let other things slide a little.
- 34. I get sympathy and understanding from someone.
- 35. I drink alcohol or take drugs, in order to think about it less.
- 36. I kid around about it.
- 37. I give up the attempt to get what I want.
- 38. I look for something good in what is happening.
- 39. I think about how I might best handle the problem.
- 40. I pretend that it hasn't really happened.
- 41. I make sure not to make matters worse by acting too soon.
- 42. I try hard to prevent other things from interfering with my efforts at dealing with this.
- 43. I go to movies or watch TV, to think about it less.
- 44. I accept the reality of the fact that it happened.
- 45. I ask people who have had similar experiences what they did.
- 46. I feel a lot of emotional distress and I find myself expressing those feelings a lot.
- 47. I take direct action to get around the problem.
- 48. I try to find comfort in my religion.
- 49. I force myself to wait for the right time to do something.
- 50. I make fun of the situation.
- 51. I reduce the amount of effort I'm putting into solving the problem.
- 52. I talk to someone about how I feel.
- 53. I use alcohol or drugs to help me get through it.
- 54. I learn to live with it.
- 55. I put aside other activities in order to concentrate on this.
- 56. I think hard about what steps to take.
- 57. I act as though it hasn't even happened.
- 58. I do what has to be done, one step at a time.
- 59. I learn something from the experience.
- 60. I pray more than usual.

Appendix B

COPE Scales Showing Items in Trait Format:

(Positive Reinterpretation and Growth)

I try to grow as a person as a result of the experience.
 I try to see it in a different light, to make it seem more positive.
 I look for something good in what is happening.
 I learn something from the experience.

(Active Coping)

I concentrate my efforts on doing something about it.
 I take additional action to try to get rid of the problem.
 I take direct action to get around the problem.
 I do what has to be done, one step at a time.

(Planning)

I make a plan of action.
 I try to come up with a strategy about what to do.
 I think about how I might best handle the problem.
 I think hard about what steps to take.

(Seeking of Social Support for Emotional Reasons)

I discuss my feelings with someone.
 I try to get emotional support from friends or relatives.
 I get sympathy and understanding from someone.
 I talk to someone about how I feel.

(Seeking of Social Support for Instrumental Reasons)

I try to get advice from someone about what to do.
 I talk to someone to find out more about the situation.
 I talk to someone who could do something concrete about the problem.
 I ask people who have had similar experiences what they did.

(Suppression of Competing Activities)

I put aside other activities in order to concentrate on this.
 I focus on dealing with this problem, and if necessary let other things slide a little.
 I try hard to prevent other things from interfering with my efforts at dealing with this.
 I keep myself from getting distracted by other thoughts or activities.

(Religion)

I put my trust in God.
 I seek God's help.
 I try to find comfort in my religion.
 I pray more than usual.

(Acceptance)

I get used to the idea that it happened.
 I accept that this has happened and that it can't be changed.
 I accept the reality of the fact that it happened.
 I learn to live with it.

(Mental Disengagement)

I turn to work or other substitute activities to take my mind off things.
 I daydream about things other than this.
 I sleep more than usual.
 I go to movies or watch TV, to think about it less.

Appendix B (cont'd)

(Focus on and Venting of Emotions)

I get upset and let my emotions out.

I get upset, and am really aware of it.

I let my feelings out.

I feel a lot of emotional distress and I find myself expressing those feelings a lot.

(Behavioral Disengagement)

I admit to myself that I can't deal with it, and quit trying.

I just give up trying to reach my goal.

I give up the attempt to get what I want.

I reduce the amount of effort I'm putting into solving the problem.

(Denial)

I say to myself "this isn't real."

I refuse to believe that it has happened.

I pretend that it hasn't really happened.

I act as though it hasn't even happened.

(Restraint Coping)

I force myself to wait for the right time to do something.

I make sure not to make matters worse by acting too soon.

I restrain myself from doing anything too quickly.

I hold off doing anything about it until the situation permits.

(Alcohol/Drug Use) *

I use alcohol or drugs to make myself feel better.

I try to lose myself for a while by drinking alcohol or taking drugs.

I drink alcohol or take drugs, in order to think about it less.

I use alcohol or drugs to help me get through it.

(Humor) *

I laugh about the situation.

I make jokes about it.

I kid around about it.

I make fun of the situation.

* Note: Exploratory scales, not included in the published version of COPE

Each scale total is computed as an unweighted sum of responses to the four items that make up that scale. The "trait" version of the COPE, in the form we currently are using it, is on the following two pages.

Appendix C

Correspondence from Carver, Scheier, & Weintraub dated January, 1989

Thank you for your interest in our measure of coping styles and strategies. The instrument is more fully described in the following article:

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.

The COPE is made up of the following scales:

1. Active coping: Taking action, exerting efforts, to remove or circumvent the stressor.
2. Planning: Thinking about how to confront the stressor, planning one's active coping efforts.
3. Seeking Instrumental Social Support: Seeking assistance, information, or advice about what to do.
4. Seeking Emotional Social Support: Getting sympathy or emotional support from someone.
5. Suppression of Competing Activities: Suppressing one's attention to other activities in which one might engage, in order to concentrate more completely on dealing with the stressor.
6. Religion: Increased engagement in religious activities
7. Positive Reinterpretation and Growth: Making the best of the situation by growing from it, or viewing it in a more favorable light.
8. Restraint Coping: Coping passively by holding back one's coping attempts until they can be of use.
9. Acceptance: Accepting the fact that the stressful event has occurred and is real.
10. Focus on and Venting of Emotions: An increased awareness of one's emotional distress, and a concomitant tendency to ventilate or discharge those feelings.
11. Denial: An attempt to reject the reality of the stressful event.
12. Mental Disengagement: Psychological disengagement from the goal with which the stressor is interfering, through daydreaming, sleep, or self-distraction.
13. Behavioral Disengagement: Giving up, or withdrawing effort from, the attempt to attain the goal with which the stressor is interfering.
- [14. Alcohol/Drug Use: Turning to the use of alcohol or other drugs as a way of disengaging from the stressor.]
- [15. Humor: Making jokes about the stressor.]

The scales listed above emerged from a factor analysis of the items as listed in the instrument below, with the following exceptions: (1) All of the social support items loaded on a single factor. We still see merit in examining them as separate scales, at this stage. (2) Planning and Active Coping loaded on a single factor. We still see merit in examining them as separate scales, at this stage. (3) Scales 14 and 15 were developed after the other scales and are not reported in the article in which the COPE is to be published. We know less about them than the other scales and regard them as more exploratory.

Scales 1, 2, 5, 7, and 8 measure tendencies that presumably should be adaptive in circumstances in which active coping efforts yield good outcomes. Scales 3, 4, and 6 measure tendencies that are less explicitly associated with active coping, but there is evidence to suggest that they should also be adaptive.

Appendix D

Instructions

This study is investigating coping behaviours. You will have a separate page with 15 concept definitions, and this booklet with items. Each of the following items corresponds to one of the concept definitions. Your task is to judge to which concept you think the item best belongs, then write the letter pertaining to that concept beside the item. For example, if there were the following concept definitions:

- A. Motor Cars
- B. Italian Foods
- C. Pets

and the items below, you would fill out the questionnaire as follows (depending, of course, to which concept you think the item belongs):

Concept Assignment	Item
<u> B </u>	1. Pasta
<u> A </u>	2. Holden
<u> C </u>	3. Cat

You can only assign one concept letter for each item.

Please take a moment to read through the Concept Definitions. If you are unclear about these instructions, please ask questions now.

Concept Assignment	Item
<u> </u>	1. I talk to someone who could do something concrete about the problem.
<u> </u>	2. I get used to the idea that it happened.
<u> </u>	3. I daydream about things other than this.
<u> </u>	4. I try to grow as a person as a result of the experience.
<u> </u>	5. I get upset and let my emotions out.
<u> </u>	6. I try to get emotional support from friends or relatives.
<u> </u>	7. I give up the attempt to get what I want.
<u> </u>	8. I seek God's help.
<u> </u>	9. I restrain myself from doing anything too quickly.
<u> </u>	10. I focus on dealing with this problem, and if necessary let other things slide a little.

Appendix D (cont'd)

Concept

Assignment	Item
_____	11. I think about how I might best handle the problem.
_____	12. I discuss my feelings with someone.
_____	13. I accept that this has happened and that it can't be changed.
_____	14. I use alcohol or drugs to make myself feel better.
_____	15. I pretend that it hasn't really happened.
_____	16. I take additional action to try and get rid of the problem.
_____	17. I laugh about the situation.
_____	18. I admit to myself that I can't deal with it, and quit trying.
_____	19. I look for something good in what is happening.
_____	20. I try to find comfort in my religion.
_____	21. I say to myself "this isn't real."
_____	22. I let my feelings out.
_____	23. I talk to someone to find out more about the situation.
_____	24. I use alcohol or drugs to help me get through it.
_____	25. I make a plan of action.
_____	26. I hold off doing anything about it until the situation permits.
_____	27. I go to movies or watch TV, to think about it less.
_____	28. I kid around about it.
_____	29. I take direct action to get around the problem.
_____	30. I pray more than usual.
_____	31. I put aside other activities in order to concentrate on this.
_____	32. I reduce the amount of effort I'm putting into solving the problem.
_____	33. I get sympathy and understanding from someone.
_____	34. I drink alcohol or take drugs, in order to think about it less.
_____	35. I force myself to wait for the right time to do something.
_____	36. I learn to live with it.
_____	37. I learn something from the experience.
_____	38. I try to get advice from someone about what to do.
_____	39. I feel a lot of emotional distress and I find myself expressing those feelings a lot.
_____	40. I think hard about what steps to take.

**Concept
Assignment**

Item

- | | |
|-------|---|
| _____ | 41. I act as though it hasn't even happened. |
| _____ | 42. I sleep more than usual. |
| _____ | 43. I make jokes about it. |
| _____ | 44. I try hard to prevent other things from interfering with my efforts at dealing with this. |
| _____ | 45. I concentrate my efforts on doing something about it. |
| | |
| _____ | 46. I try to see it in a different light, to make it seem more positive. |
| _____ | 47. I make sure not to make matters worse by acting too soon. |
| _____ | 48. I turn to work or other substitute activities to take my mind off things. |
| _____ | 49. I ask people who have had similar experiences what they did. |
| _____ | 50. I accept the reality of the fact that it happened. |
| | |
| _____ | 51. I just give up trying to reach my goal. |
| _____ | 52. I keep myself from getting distracted by other thoughts or activities. |
| _____ | 53. I try to come up with a strategy about what to do. |
| _____ | 54. I make fun of the situation. |
| _____ | 55. I get upset, and am really aware of it. |
| | |
| _____ | 56. I do what has to be done, one step at a time. |
| _____ | 57. I try to lose myself for a while by drinking alcohol or taking drugs. |
| _____ | 58. I put my trust in God. |
| _____ | 59. I refuse to believe that it has happened. |
| _____ | 60. I talk to someone about how I feel. |

Thank you for your time!

Appendix E

Information Letter to Participants

My name is Kathleen Donoghue and I am an Honours student in psychology at Edith Cowan University, conducting this research under the supervision of Dr Greg Dear from the school of psychology. If you require any further information about the research project please contact me on 0439 956 673 or by E-mail at kaijadee@bigpond.com or Dr Dear on 6304 5052 or by E-mail at g.dear@ecu.edu.au.

The purpose of this study is to examine a questionnaire that measures the ways that people attempt to cope with stressful situations.

You will be asked to sort items into the categories to which you think they best belong.

This task will take approximately 10 to 15 minutes of your time.

Confidentiality

You will not be required to provide your name or identify yourself in any manner. Once collected, the information will be stored in a locked cabinet in Room 30.28 of the University. There will be no way in which to identify any particular participant's response.

Voluntary Participation

Your participation in this study is entirely voluntary. You are free to withdraw from this study at any time. Your participation or non-participation in this study is in no way related to your course requirements or assessment.

Ethics

This project has been approved by the Faculty of Community Services, Education, & Social Sciences Ethics Sub Committee and complies with guidelines set out by the Edith Cowan University Committee for the Conduct of Ethical Research.

Concerns about the interviewer's conduct or any aspect of the research should be directed to the Head of School of Psychology:

Dr Craig Speelman
Edith Cowan University
6304 5724
c.speelman@ecu.edu.au

Please sign the Informed Consent document before proceeding with the sorting task.

Appendix F

Informed Consent

I (the participant) have read the Information Letter to Participants.

Any questions I have asked have been answered to my satisfaction.

I agree to participate in the study on the understanding that I can withdraw my participation at any time.

I agree that the research data gathered for this study may be published provided my name is not used.

.....
Participant

.....
Date

Appendix G

Demographic Information

1. Age (in years) at last birthday _____
2. Gender male / female
3. Relationship Status (tick the option that best describes your current circumstance)

_____	married
_____	de facto
_____	in a relationship but not living in the same household
_____	separated/divorced (and not in a current relationship)
_____	not in a current relationship
4. Employment status (tick the option that best describes your current circumstance)

_____	full-time paid employment (more than 30 hours per week)
_____	part-time paid employment (less than 30 hours per week)
_____	full-time student (with or without some part-time work as well)
_____	receiving Centrelink benefit (sole parent, unemployment, etc)
_____	no paid employment (and not receiving Centrelink benefits)
5. Were you born in Australia? Yes / No

Appendix G

Instructions for Authors:

INTRODUCTION

Submission of a paper to *Anxiety, Stress, and Coping* will be taken to imply that it represents original work not previously published, that it is not being considered elsewhere for publication, and that if accepted for publication it will not be published elsewhere in the same form, in any language, without the consent of editor and publisher. It is a condition of the acceptance by the editor of a typescript for publication that the publisher automatically acquires the copyright of the typescript throughout the world. It will also be assumed that the author has obtained all necessary permissions to include in the paper items such as quotations, figures, tables, results of government-sponsored research etc.

SUBMISSION OF MANUSCRIPTS

Contributors should send manuscripts in triplicate to the Editors: for North America, Krys Kaniasty, Department of Psychology, Indiana University of Pennsylvania, Indiana, PA 15705, USA; rest of the world, Professor Reinhard Pekrun, Institute of Educational Psychology, University of Munich, Leopoldstr. 13, D-80802 München, Germany.

FORMAT OF MANUSCRIPTS

Manuscripts should be typed according to the guidelines in the Publication Manual of the American Psychological Association (4th edition, 1994), however, please follow the present Instructions for Authors in cases of contradiction with the APA guidelines.

Title page: This should contain the title of the paper, a short running title, the name and affiliations of each author and, as a footnote, the full postal address of one author who will be responsible for correspondence, reprints and proofs. Abbreviations in the title should be avoided.

Abstract: This should not exceed 150 words and should be presented on a separate sheet, summarizing the significant coverage and findings.

Key words: Abstracts should be accompanied by up to six key words or phrases that between them characterize the contents of the paper. These will be used for indexing and data retrieval purposes.

TEXT HEADINGS

According to APA guidelines, papers begin with text directly. However, all subsequent headings in the text should be set over to the left-hand margin, and the text should begin on the next line. Type first level (sectional) headings all in capitals. For second level headings, the first letter of each main word should be a capital. For third level headings only the first letter of the first word should be a capital. Underline second and third level headings.

FIRST LEVEL HEADINGS

Second Level Text Headings

Third level text headings

FIGURES

All figures should be numbered with consecutive arabic numerals, have descriptive captions and be mentioned in the text. Figures should be kept separate from the text but an approximate position for each should be indicated in the margin. It is the author's responsibility to obtain permission for any reproduction from other sources.

Preparation: Figures must be of a high enough standard for direct reproduction. They should be prepared in black (India ink) on white card or tracing paper, with all lettering and symbols included. Axes of graphs should be properly labelled and appropriate units given. Photographs intended for halftone reproduction must be high quality glossy originals of maximum contrast. Redrawing or retouching of unsuitable figures will be charged to authors.

Size: Figures should be planned so that they reduce to 12.5 cm column width. The preferred width of submitted drawings is 12-25 cm, with capital lettering 4 mm high, for reduction by one-

half. Photographs for halftone reproduction should be approximately twice the desired size.

Captions: A list of figure captions should be typed on a separate sheet and included with the typescript.

COLOR

Whenever the use of color is an integral part of the research or when the work is generated in colour, the journal will publish the illustrations without charge to the author, but for ease of cross-referencing to the text a black-and-white print or line illustration must also be supplied. Reprints in colour will carry a surcharge; please write to the publisher (Publications Department) for details.

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Tables should be clearly typed with double spacing, presented on separate sheets. Number tables with consecutive arabic numerals and give each a clear descriptive heading. Avoid the use of vertical rules in tables. Table footnotes should be typed below the table, designated by superior lower-case letters. Indicate in the text margin an approximate position for each table.

REFERENCES

References should be indicated in the text with the author's name and year of publication in parentheses. If there are two authors, both names should be given. If there are more than two authors, all should be given on the first occasion, and then the first author "et al." should be used subsequently. Use "and" between author names mentioned in the text and an ampersand (&) when mentioned in parentheses and in the reference section. The full list of references should be given in alphabetical order on a separate sheet, with titles of books and journals given in full. Generally, the APA guidelines should be followed for the references.

Examples:

Bandura, A. (1988). Self-efficacy conception of anxiety. *Anxiety, Stress, and Coping, An International Journal*, 1, 77-98.

Smith, A.A., & Braun, B.B. (Eds.), (1987). *Computer anxiety*. Berlin: Fear Press.

Zelig, Z.Q. (1991). A personal report of self-transformation experiences. In W.X. Allen & Z.Q. Zelig (Eds.), *Advances in observation methods* (Vol. 8, pp. 1-149). Orlando, FL: Universal Problems.

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