

Validation of a coping self-efficacy scale in an African context

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My fantastic friends, especially Shan Simmonds and Mandie de Villiers-Schutte who kept me going and inspired me.

I dedicate this dissertation to my brother Abraham Roux van Wyk who sadly passed away during this study.

2. SOLEMN DECLARATION

3. SUMMARY

Validation of a coping self-efficacy scale in a South African context

Keywords: Coping Self-Efficacy Scale (CSE); South Africa; validity; reliability; self-efficacy; coping

Various scales have previously been developed to measure coping strategies (Taylor & Stanton, 2007; Devonport & Lane, 2006; Stapelberg, 1999) or self-efficacy (Carroll et al., 2005; Chen et al., 2001; Tipton & Worthington, 1984); and some of them have been validated in a South African context, but the validation of a coping self-efficacy scale as a single measurement has not been conducted in an African context. Therefore, the aim of this study was to validate Chesney et al.'s 2006 Coping Self-Efficacy Scale (CSE) in an African context.

A multicultural convenience sample of 2 214 South African adolescents and adults, including both male and female participants, participated in this study. Measuring instruments such as the Coping Self-Efficacy Scale (CSE) (Chesney, Neilands, Chambers, Taylor & Folkman, 2006), the Mental Health Continuum – Short Form for adults (MHC-SF) (Keyes et al., 2008), the New General Self-Efficacy Scale (NGSE) (Chen, Gully & Eden, 2001; 2004), the Fortitude Questionnaire (FORQ) (Pretorius, 1998), the Patient Health Questionnaire: Depression Symptoms (PHQ-9) (Kroenke, Spitzer & Williams, 2001) and the General Health Questionnaire (GHQ) (Goldberg & Hillier, 1979) were used in this study. Criterion-related validity of the CSE was established. Construct validity was determined by conducting confirmatory and exploratory factor analyses as well as SEM on the CSE.

Results indicated a Cronbach alpha reliability coefficient of 0.87 and satisfactory inter-item correlations ranging from 0.19-0.21. Criterion-related validity was satisfactory. Confirmatory analysis indicated a good fit and exploratory factor analysis confirmed the

three major factors similar to Chesney et al.'s (2006) findings. Construct validity was further supported by SEM analysis, which confirmed the three-factor structure.

The CSE can be viewed as reliable and valid for use in further research in the African context. Future studies should validate this scale in various population groups, with translated versions of the scale and with randomly selected groups.

4. OPSOMMING

Validering van 'n coping-selfdoeltreffendheidskaal in 'n Suid-Afrikaanse konteks

Sleutelwoorde: Coping Self-Efficacy Scale (CSE); Suid-Afrika; geldigheid; betroubaarheid; selfdoeltreffendheid; coping

Verskeie skale is al ontwikkel om coping-strategieë (Taylor & Stanton, 2007; Devonport & Lane, 2006; Stapelberg, 1999) of selfdoeltreffendheid (Carroll et al., 2005; Chen et al., 2001; Tipton & Worthington, 1984) te meet; sommige daarvan is ook gevalideer in 'n Suid-Afrikaanse konteks, maar die validering van 'n coping-selfdoeltreffendheidskaal as 'n enkele meetinstrument is nog nie in 'n Afrikakonteks gedoen nie. Die doel van hierdie studie was dus om Chesney et al. se 2006 Coping Self-Efficacy Scale (CSE) in 'n Suid-Afrikaanse konteks te valideer.

'n Multikulturele gerieflikheidsteekproef van 2 214 Suid-Afrikaanse manlike en vroulike adolessente en volwassenes het aan hierdie studie deelgeneem. Meetinstrumente wat in hierdie studie gebruik is, sluit in: die Coping Self-Efficacy Scale (CSE) (Chesney, Neilands, Chambers, Taylor & Folkman, 2006), die Mental Health Continuum – Short Form for adults (MHC-SF) (Keyes et al., 2008), die New General Self-Efficacy Scale (NGSE) (Chen, Gully & Eden, 2001; 2004), die Fortitude Questionnaire (FORQ) (Pretorius, 1998), die Patient Health Questionnaire: Depression Symptoms (PHQ-9) (Kroenke, Spitzer & Williams, 2001) en die General Health Questionnaire (GHQ) (Goldberg & Hillier, 1979). Kriteriumverwante geldigheid van die CSE is bepaal. Konstruktorgeldigheid is bepaal deur die toepassing van bevestigende en verkennende faktoranalise sowel as SEM op die CSE.

Resultate het 'n Cronbach-alpha-betroubaarheidskoëffisient van 0.87 en bevredigende interitemkorrelasies van 0.19-0.21 aangedui. Kriteriumverwante geldigheid was bevredigend. Bevestigende faktoranalise het 'n goeie passing aangedui en verkennende faktoranalise het die drie hoof-faktore bevestig in ooreenstemming met Chesney et al.

(2006) se bevindinge. Konstruktiewaldigheid is verder ondersteun deur SEM-analise, wat die driefaktorstruktuur bevestig het.

Die CSE kan dus as betroubaar en geldig beskou word vir gebruik in verdere navorsing in die Suid-Afrikaanse konteks. Toekomstige studies kan hierdie skaal verder valideer in verskeie bevolkingsgroepe, met vertaalde weergawes van die skaal en met ewekansig geselekteerde groepe.

5. PREFACE

5.1 Article format

For the purposes of this mini-dissertation, which is part of the requirements for a professional master's degree, the article format as described by General Regulation A13.7 of the North-West University was chosen.

5.2 Selected journal

The selected journal for submission of the current manuscript is the *South African Journal of Psychology*. The manuscript as well as the reference list has been styled to the journal's specifications.

5.3 Letter of consent

The letter of consent from the co-authors in which they grant permission that the manuscript *Validation of a Coping Self-Efficacy Scale in a South African context* may be submitted for the purposes of a mini-dissertation by the first author, Mabet M. van Wyk, appears on the next page.

5.4 Page numbering

In the mini-dissertation, page numbers run through the whole document. For submission in the above-mentioned journal, manuscript numbering will be according to the requirements and thus start on the title page of the manuscript.

Letter of consent

We, the undersigned hereby give permission that the manuscript *Validation of a Coping Self-Efficacy Scale in a South African context* may be submitted by Mabet M. van Wyk for the purposes of a mini-dissertation in partial fulfilment of a master's degree.

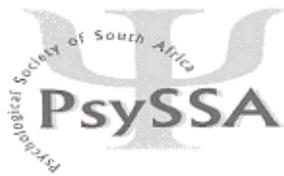
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Prof. Q.M. Temane
Co-supervisor

6. MANUSCRIPT

Validation of a coping self-efficacy scale in a South African context

6.1 Instruction to authors: South African Journal of Psychology



Instructions to authors

Submitting a manuscript

SAJP is a peer-reviewed journal publishing empirical, theoretical and review articles on all aspects of psychology. Articles may focus on South African, African or international issues. Manuscripts to be considered for publication should be e-mailed to sajp@up.ac.za. Include a covering letter with your postal address, email address, and phone number. The covering letter should indicate that the manuscript has not been published elsewhere and is not under consideration for publication in another journal. An acknowledgement of receipt will be e-mailed to the author (within seven days, if possible) and the manuscript will be sent for review by three independent reviewers. Incorrectly structured or formatted manuscripts, or manuscripts not edited for language, will not be accepted into the review process.

Only one article per author will be published per calendar year. Exceptions to this rule will be at the sole discretion of the editor (with his or her associate editors) in the case of an exceptional article that needs to be published, a special issue where the specific article will make a significant contribution, in writing or responding to a *riposte*, etc.

Authors must please quote the manuscript number in ALL correspondence to the editor.

Revised articles

Where authors are invited to revise their manuscripts for resubmission, it is crucial that the editor be notified (by e-mail) **within three weeks** of the author's intention to resubmit. Author(s) must then submit the revised manuscript **within six weeks from the date of their expressed intention to do so and resubmit within three months**. All articles where this procedure was not followed will automatically be disqualified and removed from the process. Should an author wish to resubmit this article after a longer period, it will be treated as a completely new submission and a new article number will be allocated.

Manuscript structure

- The manuscript should be no longer than 20 pages (5 000 words).
- **First page:** The full title of the manuscript, the name(s) of the author(s) together with their affiliations, and the name, address, and e-mail address of the author to whom correspondence should be sent.
- **Second page:** The abstract, formatted as a single paragraph, and no longer than 300 words. A list of at least six keywords should be provided alphabetically below the abstract, with semi-colons between words.
- **Subsequent pages:** The text of the article should be started on a new page. The introduction to the article does not require a heading.
- **Concluding pages:** A reference list, followed by tables and figures (if any). Each table or figure should be on a separate page. Tables and figures should be numbered consecutively and their appropriate positions in the text indicated. Each table or figure should be provided with a title (e.g. Figure 1: Frequency distribution of critical incidents). The title should be

placed at the top for tables and at the bottom for figures. The appropriate positions in the text should be indicated.

- Authors are requested to pay attention to the proportions of illustrations, tables, and figures, so that they can be accommodated in a single (136mm) column after reduction, without wasting space.

Manuscript format

- The manuscript should be an MS Word document in 12-point Times Roman font with 1.5 line spacing. There should be no font changes, margin changes, hanging indents, or other unnecessarily complex formatting codes.
- The SAJP referencing style should be adhered to. The referencing style of the SAJP is similar to those used by the British Psychological Society and the American Psychological Association. The American Psychological Association (APA, ver. 5) style guidelines and referencing format should be adhered to.
- Headings should start at the left margin, and should not be numbered. All headings should be in **bold**. Main headings should be in **CAPITAL LETTERS**.
- The beginning of paragraphs is indicated by indenting the paragraph's first line using the tab key on your keyboard, except when the paragraph follows a main or secondary heading.
- Indents are only used for block quotes.
- In the reference list, the first line of each reference starts at the margin; and subsequent lines for each reference are indented.

Language

Manuscripts should be written in English. **As the SAJP does not employ a full-time or dedicated language editor, it is compulsory that manuscripts should be accompanied by a declaration that the language has been properly edited, together with a letter by a certified language specialist, stating the name and address of the person who undertook the language editing. Failure to do so will result in the manuscript being returned to the author. Should the editor not be satisfied with the quality of language usage, in spite of the evidence that the language has been edited, she or he reserves the right to send the article to the a language editor of the Journal's choice and invoice the author(s).**

6.2 Validation of a coping self-efficacy scale in a South African context

Validation of a coping self-efficacy scale in a South African context

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Abstract

The aim of this study was to validate the Coping Self-Efficacy Scale (CSE) in a South African context. The Coping Self-Efficacy Scale was validated in a cross-sectional survey design. A multicultural convenience sample (N=2214) completed the CSE and other measures that are closely linked to coping, self-efficacy and psychological well-being. Results indicated a Cronbach alpha reliability coefficient of 0.87 and satisfactory inter-item correlations ranging from 0.19-0.21. Significant correlations between the CSE and other measures of self-efficacy as well as positive and negative psychological functioning indicated good criterion-related validity. Construct validity was supported by confirmatory and exploratory factor analysis. Three major factors similar to Chesney et al.'s (2006) findings were extracted, namely Use problem-focused coping, Stop unpleasant emotions and thoughts and Get support from friends and family. Construct validity is further supported by SEM analyses. The English version of the CSE therefore has good reliability and validity in a South African multicultural context.

Keywords: South Africa; coping; Coping Self-Efficacy Scale (CSE); reliability; self-efficacy; validity

Various scales have been developed to measure coping strategies (Taylor & Stanton, 2007; Devonport & Lane, 2006; Stapelberg, 1999) or self-efficacy (Carroll et al., 2005; Chen et al., 2001; Tipton & Worthington, 1984), and some of them have been validated in a South African context. Chesney et al. (2006) developed a scale that combines coping and efficacy components, namely the Coping Self-Efficacy Scale (CSE). The current study focuses on the validation of this scale in a South African context.

Chesney et al. (2006) investigated the psychometric properties of the CSE – a 26-item measure of perceived ability to cope effectively with life's challenges – and found that it could also assess changes in CSE over time in intervention research. The CSE was originally developed in collaboration with Bandura to investigate the efficacy of a Coping Efficacy Training (CET) intervention in reducing psychological distress and increasing positive mood in people coping with chronic illness (Chesney et al., 2006). Three factors showing good reliability and validity were revealed, namely: Use Problem-Focused Coping (PFC), Stop Unpleasant Thoughts and Emotions (SUE), and Get Support from Friends and Family (SFF). The CSE can also be used to evaluate the outcomes of therapy and/or other healthcare interventions in an African context, but in order to do so it has to be validated in this context.

Extensive studies have been conducted on coping (Taylor & Stanton, 2007; Chesney et al., 2006; Devonport & Lane, 2006). Coping is defined by Lazarus and Folkman (1984) as behavioural or cognitive efforts to manage all the demands that are appraised as taxing or exceeding the person's resources, i.e. stressful demands. Stress and coping theory defines stress as a relationship between the environment and a person that is perceived as significant, taxing and exceeding the person's resources for coping, therefore endangering well-being (Chesney et al., 2006; Folkman, Lazarus, Gruen & Delongis, 1986). This theory involves a two-type appraisal process called cognitive appraisal, whereby a person evaluates whether a specific encounter with the environment is relevant to that person's well-being, and if so, in what way (Devonport & Lane, 2006; Folkman, Lazarus, Gruen & Delongis, 1986). During primary appraisal, the implications of the stressor on well-being is considered by for instance evaluating the stakes in the encounter. Secondary appraisal is an

evaluation of coping options and the asking of ‘What can I do?’ (Chesney et al., 2006; Devonport & Lane, 2006; Folkman, Lazarus, Gruen & Delongis, 1986). An important aspect of secondary appraisal is the evaluation concerning the extent to which the person can control the outcome of the situation which is contributed to by self-efficacy, which in turn influences the coping strategies (Chesney et al., 2006). Self-efficacy has been defined by Bandura (1997) as the levels of confidence people have in their ability to execute a course of action or to attain particular performance outcomes. Thus, secondary appraisal entails a judgment that an outcome is controllable through coping – it reflects the belief in one’s ability to perform certain coping behaviour (Chesney et al., 2006; Devonport & Lane, 2006). This is coping self-efficacy. Coping involves two important functions: one is emotion-focused coping – regulating emotional responses to stressful events – and the second is problem-focused coping – dealing with and/or changing the problem that is causing the stressful event (Chesney et al., 2006; Devonport & Lane, 2006; Folkman, Lazarus, Gruen & Delongis, 1986).

Efficient coping with life’s challenges is important for psychological well-being (Wissing & Van Eeden, 2002). Du Toit (1999) found that constructive coping has a direct effect on psychological well-being. Taylor and Standton (2007) indicate that coping has great intervention potential as well as an important impact on stress-related health outcomes, both mental and physical. According to Folkman and Moskowitz (2004), there are problems with the measurement of changes in coping that are intervention-associated. The CSE focuses on changes in people’s confidence in their ability to cope – which, according to Bandura’s self-efficacy theory (2007), is an important prerequisite to changing coping behaviour.

Very few coping scales have already been validated in an African context – especially in the field of positive psychology. Stapelberg and Wissing (1999) validated the COPE (Carver et al., 1989) for a Setswana-speaking group and suggested that a shorter version of the COPE, namely the Setswana-COPE (S-COPE), which has an emic factor pattern, be used in a South African context. The S-COPE still needs to be further validated. Wissing and Van Eeden (2002) indicated that the Coping Strategy Indicator (CSI) of Amirkhan

(1990, 1994) showed acceptable reliability and construct validity in a multicultural sample. Van der Walt, Potgieter, Wissing and Temane (2008) validated the N-COPE, which is based on the Setswana-COPE (S-COPE) (Stapelberg & Wissing, 1999) and the Africultural Coping Systems Inventory (ACSI) (Utsey, Adams & Bolden, 2000). It was found that the N-COPE showed promise but needed further validation and refinement. The above-mentioned coping scales, however, only measure preferred/typical coping strategies, and not whether they are experienced as efficient.

Very few self-efficacy scales have been validated in an African context. Wissing and Van Eeden (2002) found that the Generalized Self-efficacy Scale (GSE) of Tipton and Worthington (1984) showed construct validity for their specific group but warned that interpretations had to be made with caution. Van Straten, Temane and Wissing (2008) validated the Community Collective Efficacy Scale (CCES) of Carroll, Rosson and Zhou (2005) in an African context and found good reliability ($\alpha = 0.72$) and validity. The New General Self-Efficacy Scale (NGSE) of Chen, Gully and Eden (2001) was also validated in the 2008 Van Straten et al. study, and an internal reliability of 0.74 was obtained.

Although other coping and self-efficacy scales have been validated in an African context, the validation of a coping self-efficacy scale (as a single measure) has not been conducted in a South African context. What is new about the CSE (Chesney et al., 2006) is that it combines the two constructs of coping and self-efficacy and thus measures the experienced effectiveness of specific coping strategies.

As there are no other coping self-efficacy scales available for the validation of the CSE, other measures that are closely linked to coping and self-efficacy will be used to validate the CSE in this study. Other indices of psychological well-being will include measures of mental health, social support, self-efficacy, depression and general health.

Validation of a scale is a process which involves several components – reliability and validity have to be determined by using different methods in different contexts and with different groups. Paunonen and Ashton (1998) indicated five psychometric properties that

provide an indication of cross-cultural applicability of scales, namely scale means, variances, reliability, criterion-related validity and factor structure. The reliability and internal homogeneity of the CSE will be analysed by determining Cronbach alpha coefficients and analysis of inter-item and item-total correlations. Criterion-related validity will be explored through correlation coefficients with the other measuring instruments (cf. Foxcroft & Roodt, 2005). The construct validity of the CSE will be determined by making use of factor analysis and structural equation modelling (SEM) methods. Findings in various groups will be explored.

The specific aim of this study was thus to validate the Coping Self-Efficacy Scale (CSE) in a South African context.

METHOD

Design and Participants

A cross-sectional survey design was implemented. A multicultural convenience sample (N=2214) of South Africans participated in this study, consisting of three different multicultural sub-groups including both male and female participants. The sub-samples were large enough to do factor analysis. Group one consisted of 1 480 students (male=749; female=661) with 8.7% between 16 and 20 years, 53.4% between 21 and 25 years, 29.6% between 26 and 30 years, 6.2% between 31 and 35 years, and 2% 36+ years. Group two consisted of another sample of 549 students (male=333; female=209) between the ages of 16 and 46, with a mean age of 21 and a standard deviation of 3.74. Group three consisted of 200 adults (male=126; female=74) with a mean age of 35.9 years, and a standard deviation of 12.5. Disparities in numbers are because of incomplete information.

Measuring Instruments

Coping Self-Efficacy Scale (CSE) (Chesney, Neilands, Chambers, Taylor & Folkman, 2006). The scale is a 26-item measure of a person's confidence or perceived self-efficacy in performing coping behaviours when facing life challenges or threats and can also be used to assess changes in coping self-efficacy (CSE) over time (Chesney et al., 2006).

Participants are asked ‘When things aren’t going well for you, or when you’re having problems, how confident are you that you can do the following:’ after which they are required to rate the extent to which they believe they could perform behaviours important to adaptive coping such as ‘Keep from getting down in the dumps’, ‘Take your mind off unpleasant thoughts’ and ‘Get friends to help you with the things you need’. The anchors of the 11-point scale are 0 (‘Cannot do at all’), 5 (‘Moderately certain can do’) and 10 (‘Certain can do’). The total CSE score is determined by summing the item ratings (Chesney et al., 2006). Chesney et al. (2006) reported a 13-item reduced form of the CSE with three factors: Use problem-focused coping (6 items, $\alpha = 0.91$), Stop unpleasant emotions and thoughts (4 items, $\alpha = 0.91$) and Get support from friends and family (3 items, $\alpha = 0.80$). The internal consistency and test-retest reliability was found to be strong for all three factors (Chesney et al., 2006). For the purpose of this study, the 26-item scale was used for validation in a South African context, as advised by Chesney (personal communication).

Measures for criterion-related validity

Measures selected for criterion-related validity are based on the availability of already validated scales in an African context and previous findings that high levels of psychological well-being and social support are related to more constructive coping strategies (Hobfoll et al., 1994; Wissing & Van Eeden, 2002), whereas symptoms such as depression and somatic symptoms are related to lower levels of constructive coping strategies and lower levels of self-efficacy (Keyes, 2002; Wissing et al., 2008).

Mental Health Continuum – Short Form for adults (MHC-SF) (Keyes et al., 2006, 2008). The MHC-SF requires participants to indicate how often they have experienced 14 different states of being in the past month – 0 (‘Never’), 1 (‘Once or twice’), 2 (‘About once a week’), 3 (‘2 or 3 times a week’), 4 (‘Almost every day’) or 5 (‘Every day’). The different states include: ‘Happy’, ‘Confident to think or express your own ideas and opinions’ and ‘That people are basically good’. This instrument consists of three sub-scales to indicate mental health, namely Emotional well-being (EWB), Psychological well-being (PWB) and Social well-being (SWB). Keyes et al. (2008) found an internal reliability score

of 0.74 for the total MHC-SF in a study done with Setswana-speaking South Africans. A Cronbach alpha of 0.82 was obtained in the current study.

New General Self-Efficacy Scale (NGSE) (Chen, Gully & Eden, 2001; 2004). The NGSE was designed to measure General Self-Efficacy as defined by Eden et al. (2001) as ‘one’s belief in one’s overall competence to effect requisite performance across a wide variety of achievement situations’ (p. 75). The 8-item measure is rated on a 5-point scale with anchors 1 (‘Strongly disagree’) and 5 (‘Strongly agree’). Participants are asked to indicate the extent to which the statements such as ‘I will be able to achieve most of the goals that I have set for myself’ apply to them. The internal consistency reliability of the scale ranges from 0.85 to 0.90 (Scherbaum et al., 2006). Chen et al. (2001; 2004) report stability coefficients ranging from $r=0.62$ to $r=0.65$ as well as a unidimensional factor structure. Van Straten et al. (2008) found good internal reliability ($\alpha = 0.74$) in a South African context, and a Cronbach alpha reliability index of 0.81 was found in the current study.

The Fortitude Questionnaire (FORQ) (Pretorius, 1998). This 20-item questionnaire measures on a 4-point scale ranging from 1 (‘Does not apply’) to 4 (‘Applies very strongly’). Participants are asked to rate the extent to which statements like ‘I always feel positive’ or ‘My friends give me the moral support I need’ apply to them and/or their situation. This questionnaire provides a quantitative index of psychofortigenic factors or ‘Fortitude’. It is designed to measure the extent to which a person is able to handle stress, and has the strength to handle the situation. This scale includes three subscales: a) an evaluation of the self and own abilities (S); b) an evaluation of social support from family members (FA); and c) an evaluation of social support from friends and the social environment in general (FR) (Pretorius, 1998). Pretorius reported Cronbach alpha coefficients ranging from 0.74 to 0.82 for the sub-scales and a coefficient of 0.85 for the full scale. Heyns et al. (2003) found all the relevant indices of validity satisfactory. In the current study, a Cronbach alpha of 0.86 was found.

Patient Health Questionnaire: Depression Symptoms (PHQ-9) (Kroenke, Spitzer & Williams, 2001). The PHQ-9 is a 9-item, self-administered scale used to measure

depression severity which scores each of the DSM-IV criteria as 0 ('Not at all') to 3 ('Nearly every day'). Participants are asked to rate how often they have been bothered by any of the following problems over the last two weeks with the problems being, for example: 'Little interest/pleasure in doing things' and 'Thoughts that you would be better off dead/of hurting yourself in some way'. At the end of the scale, participants are asked to indicate how difficult these problems, if checked off, have made it for them to do their work, take care of things at home or get along with other people. Kroenke et al. (2001) found excellent test-retest reliability as well as internal reliability of the PHQ-9, with a Cronbach alpha of 0.86. Wissing et al. (2008) reported Cronbach alphas of 0.78 and 0.79 in a South African context, and in the current study, the Cronbach alpha reliability index of 0.77 was obtained.

General Health Questionnaire (GHQ) (Goldberg & Hillier, 1979). This 28-item scale was designed with the aim of detecting symptoms of mental disorder. The GHQ consists of 4 sub-scales, including Somatic Symptoms (SS), Anxiety and Insomnia (AI), Social Dysfunction (SD) and Severe Depression (DS). Ratings are done on a 4-point scale with anchors 1 ('Not at all'), 2 ('No more than usual'), 3 ('Rather more than usual') and 4 ('Much more than usual') although they actually fluctuate throughout the measure. Participants are asked 'Have you recently?' followed by, for example: 'Been feeling perfectly well and in good health?' Cronbach alphas from 0.82 to 0.86 were reported by Goldberg and Hillier (1979). Wissing et al. (1999) indicated the applicability of the GHQ in a South African context by reporting a Cronbach alpha of 0.91 for the total scale. In the current study, a Cronbach alpha of 0.89 was obtained.

Procedure

This study forms part of the project Psychosocial Health and Biomarkers in an African context (FORT 3) (Wissing, 2008). Most of the criterion-related questionnaires that were used formed part of the FORT 3 project and had already been validated in an African context. The first step of the procedure was to obtain consent from the different institutions to make sure they were willing to participate in the study. Secondly, the questionnaires were completed by the different groups of participants under the supervision of people who

had undergone training in the administration of psychometric tests, and who, in turn, were supervised by registered psychologists. The questionnaires were only administered after informed consent letters had been obtained from the participants.

The Ethics Committee of the North-West University approved this study. The approval number for this project is NWU-00002-07-A2. Informed consent was obtained from all participants prior to their participation and all personal information was treated confidentially.

Data Analysis

Descriptive statistics and reliability indices were determined by using Statistica (version 8) and SPSS (version 16). Reliability and internal homogeneity was explored through Cronbach alpha coefficients as well as inter-item and item-total correlations. Confirmatory factor analysis was utilised to assess the validity of the measuring instrument (cf. Clark & Watson, 1995). Criterion-related validity was determined by establishing correlations with other scales (cf. Foxcroft & Roodt, 2005) while construct validity was further explored through a confirmatory factor analysis as well as via testing in Structural Equation Modelling (SEM). Exploratory factor analysis was also conducted. The Root Mean Square Error of Approximation (RMSEA) was used, as it estimates the overall amount of error and is a function of the fitting function value relative to the degrees of freedom, and should be 0.05 or less according to Browne and Cudeck (1993). McCullem, Brown and Sugarawa (1996) indicated that RMSEA values of 0.08 to 0.10 show a mediocre fit, and those greater than 0.10 a poor fit. Hu and Bentler (1999) recommend a point estimate value for RMSEA indices lower than 0.06. The Jöreskog Goodness of Fit Index (GFI) will also be reported. The GFI shows the relative amount of variance and co-variance found in the sample predicted by estimates of the population, but the index may be influenced by large numbers of participants in the sample. Usually a GFI above 0.9 reflects a good model (Hu & Bentler, 1999; Williams & Holahan, 1994).

RESULTS

Descriptive Statistics and Reliability Indices of the Coping Self-Efficacy Scale

Descriptive statistics and reliability coefficient for the CSE are reported in Table 1 and for the criterion measures in Table 2. The Cronbach alpha reliability coefficient for the total CSE was 0.87 for group1, 0.86 for group 2 and 0.87 for group3. In Table 2, the Cronbach alpha reliability coefficients are reported for all the other scales, namely the MHC, NGSE, FORQ and PHQ for each of the sub-groups. Psychometric characteristics are similar across the three groups. The average inter-item correlations, a measure of internal consistency according to Clark and Watson (1995), showed values ranging from 0.19-0.21 for the CSE, which falls within the recommended average inter-item range of 0.15-0.50 (Clark & Watson, 1995).

[Table 1]

[Table 2]

Criterion-Related Validity

Correlation coefficients of the CSE with other scales measuring self-efficacy and positive as well as negative psychological functioning were used to determine criterion-related validity. All the correlations reported in Table 3 are statistically significant. The CSE, as expected, correlated positively with the positive measures, i.e. NGSE, FORQ and MHC-SF, and negatively with the negative measures, such as the PHQ and GHQ.

[Table 3]

Construct Validity

Confirmatory and exploratory factor analysis of the CSE were determined by making use of a principal components factor analysis as reported in Table 4. Three major factors were extracted from all three groups – which supports Chesney et al.'s (2006) findings. These three factors are: Use problem-focused coping, Stop unpleasant emotions and thoughts and

Get support from friends and family. Structural Equation Modelling (SEM) was also used to determine construct validity as reported in Table 5. The Root Mean Square Error of Approximation (RMSEA) was 0.06 for Group1, 0.05 for Group2 and 0.06 for Group3. According to Brown and Cudeck (1993), the RMSEA should be 0.05 or less for a good fit, but Hu and Bentler (1999) recommend a point estimate value for a RMSEA index of 0.06 and lower as indicative of a good fit. According to the latter, the findings from all three groups support the construct validity of the CSE as hypothesised by Chesney et al. (2006). It is also taken into account that Chen, Curran, Bollen, Kirby and Paxton (2008) found that there was little empirical support for 0.05 as an absolute cut-off value, and therefore 0.06 is taken as an index of a good fit in line with Hu and Bentler's (1999) recommendation. For group 1 a GFI above 0.9 was shown which reflects a good model (Hu & Bentler, 1999; Williams & Holahan, 1994). For groups 2 and 3 the GFI index showed a moderate fit. [Table 4 and Table 5]

DISCUSSION

The aim of this study was to explore the reliability and validity of the CSE in a South African context. Findings showed that the CSE manifested good reliability and validity in three different sub-groups, indicating that the measure can be used to measure coping self-efficacy in these South African contexts.

The psychometric properties of the CSE in the current study complied with standards for reliability and validity as indicated by the literature (cf. Clark & Watson, 1995; Browne & Cudeck, 1993; Hu & Bentler, 1999). As far as the descriptive statistics are concerned, this study's means are not comparable to Chesney et al.'s, because they made use of the shortened version of the CSE while the longer full-scale version of 26-item CSE was implemented in the current study as suggested by Chesney. However, the currently found means and standard deviations are in line with those found by Wissing et al. (in preparation) in other South African groups.

The criterion-related validity of the scale is supported by meaningful positive correlations with other indexes of psychological well-being (NGSE, FORQ, MHC), and by meaningful negative correlations with depression and symptoms (PHQ, GHQ). Construct validity was supported by confirmatory factor analysis that explained an equal amount of variance as found in Chesney et al.'s (2006) research. Although exploratory factor analysis extracted more than three factors, the scree plot clearly indicated that there were only three main factors similar to those of Chesney and colleagues. The construct validity of the CSE was further confirmed by SEM, but further research is indicated in view of the fact that the GFI showed only a moderate fit in the case of groups 2 and 3. As the RMSEA is the most often used index of fit, and in view of the other psychometric properties found, construct validity of the CSE can be assumed to be supported by findings in the current study.

It is therefore concluded that findings support the reliability and validity of this English version of the CSE for use in similar multicultural groups of adolescents and adults in the South-African context, but it is also suggested that the construct validity of this measure be further explored for applicability in the various specific language and cultural groups. The fact that the scale combines coping strategies and the subjectively evaluated effectiveness thereof renders it more valuable than coping scales that only assess either coping strategies or self-efficacy beliefs. A validated scale may add value in contexts where mental and physical health, as well as academic or work performance are evaluated and the dynamics between them explored. This measure may also be valuable in the assessment of outcomes of interventions to enhance positive mental health and constructive coping behaviours.

Limitations of the study are that groups were not randomly selected. Therefore, conclusions based on findings from these convenience samples need to be considered with care. Further research can be conducted on the validity of this scale for specific language and socio-demographic groups, and the validity of translated versions of the scale explored. As a next step norms can be established for this scale in representative randomly selected groups of participants.

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Table 1: Descriptive statistics and Reliability indices for the CSE in various sub-groups

Group	Mean	SD	Range min-max	Average inter-item correlation	Range of inter-item correlation	Cronbach α
1 (N=1480)	173.62	33.88	54-260	0.21	0.31-0.53	0.87
2 (N=549)	171.67	35.51	33.91-260	0.19	0.24-0.57	0.86
3 (N=185)	159.00	38.64	50.96-260	0.21	0.23-0.58	0.87

Table 2: Descriptive statistics of criterion measures

Scale		Group 1	Group 2	Group 3
MHC	M	47.97	46.19	42.99
	SD	10.36	11.65	10.43
	α	0.82	0.82	0.73
NGSE	M	31.89	32.90	30.15
	SD	4.44	4.43	6.44
	α	0.81	0.81	0.84
FORQ	M	61.07	61.34	61.77
	SD	8.96	9.79	10.87
	α	0.86	0.87	0.89
PHQ	M	8.77	10.50	9.23
	SD	5.20	5.61	5.5
	α	0.99	0.86	0.76

Note. MHC-SF = Mental Health Continuum – Short form, NGSE = New General Self-Efficacy Scale, FORQ = Fortitude Questionnaire, PHQ-9 = Patient Health Questionnaire: Depression Symptoms

Table 3: Criterion-related validity correlations: Total Group (N=2214)

	1	2	3	4	5	6
CSE	1.00					
NGSE	0.43**	1.00				
FORQ	0.47**	0.41**	1.00			
MHC-SF	0.49**	0.37**	0.47**	1.00		
PHQ	-0.27**	-0.20**	-0.27**	-0.30**	1.00	
<u>GHQ</u>	<u>-0.29**</u>	<u>-0.20**</u>	<u>-0.28**</u>	<u>-0.29**</u>	<u>0.63**</u>	1.00

Note. CSE = Coping-Self-Efficacy Scale, NGSE = New General Self-Efficacy Scale, FORQ = Fortitude Questionnaire, MHC-SF = Mental Health Continuum – Short form, PHQ-9 = Patient Health Questionnaire: Depression Symptoms, GHQ = General Health Questionnaire

**= $p < 0.01$

Correlations were tested between the different groups but no significant difference was found therefore the total group was used.

Table 4: Principal Components Factor Analysis for the CSE measure

	CFA		EFA	
	N of factors	% Var. Expl.	N of factors	% Var. Expl.
Group 1	3	35%	3/5*	30.5%/43.9%
Group 2	3	34.46%	3/8*	34.46%/55.44%
Group 3	3	36.68%	3/9*	24.1%/64.1%

*Note. In all instances more factors were extracted, but the scree plot indicated the presence of only three major factors.

Table 5: Construct Validity of the CSE as determined by Structural Equation Modelling (SEM)

	RMSEA	GFI
Group 1	0.06	0.91
Group 2	0.05	0.84
Group 3	0.06	0.88

Note. RMSEA= The Root Mean Square Error of Approximation ;

GFI= Jöreskog Goodness of Fit Index

