

COPING AND RESPONSES TO STRESS IN NAVAJO ADOLESCENTS: PSYCHOMETRIC PROPERTIES OF THE RESPONSES TO STRESS QUESTIONNAIRE

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This study tested the factor structure of coping and stress responses in Navajo adolescents and examined the reliability and validity of the Responses to Stress Questionnaire (RSQ; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) with this population. Confirmatory factor analyses revealed that a correlated five-factor model of stress responses using the five factors of the RSQ fit the data well for this group of adolescents. The factor structure of the RSQ did not differ by gender. Internal consistency of the RSQ scales and factors was acceptable, and convergent and discriminant validity were moderate to high. Primary and secondary control engagement coping responses were associated with fewer depressive symptoms in the sample, whereas disengagement coping and involuntary engagement responses were associated with more depressive symptoms. The promising implications for stress and coping research with American Indian adolescents are emphasized. © 2004 Wiley Periodicals, Inc.

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The development of the capacity for effective self-regulation of emotion, cognition, and behavior is a central feature of adolescence. Within the domain of self-regulation, the development of the ability to cope with stress during adolescence is particularly important in relation to mental and physical health as well as other domains of development such as interpersonal and academic functioning (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Further, as coping and self-regulation skills are often included in prevention programs for at-risk youths, understanding the development of coping is essential for prevention-oriented research and community psychology in general (Kelly, 2003). Additionally, understanding the coping of ethnic minority youths has important implications for community-based interventions as community psychology seeks continually to improve the quality of our interventions (Wandersman, 2003).

Research on child and adolescent coping has burgeoned over the last decade, contributing to improved clarity and consensus regarding what constitutes coping for young people and how coping is related to psychological adjustment. In general, coping responses that involve engagement with a source of stress and one's emotional reactions are associated with fewer emotional and behavioral problems, whereas coping responses that involve efforts to disengage from the stressor and one's emotional reactions are typically associated with more problems (Compas et al., 2001). The effects of stress are further mediated and moderated by individual differences in stress reactivity that influence automatic, or involuntary, responses to stress (e.g., Boyce, 1996; Compas, 1987; Compas et al., 2001). However, our understanding of this crucial developmental issue is severely limited by an almost exclusive reliance on middle-class European American samples in prior studies.

Compas and associates (2001) note that an essential next step in research on coping and stress responses in adolescence is an examination of differences and consistencies in nonmajority cultural groups. Examination of ways that models of person-environment interactions may or may not apply across social and cultural groups is paramount in the progress toward understanding stress and coping (Moos, 2002). Thus, although concerns about the impact of stress on the development and mental health of ethnic minority youths have been raised and interest in the potential benefits of certain kinds of coping is growing, research into the coping of diverse youths is scant. In particular, there is an absence of literature on coping with stress of American Indian adolescents. As a consequence, it is unclear whether the findings from research on these important developmental processes that has relied almost exclusively on European American samples can be generalized to adolescents of other ethnic backgrounds and cultures, such as American Indians. Consistent with the charge of community psychologists, research on mental health and well-being of diverse populations is best understood by exploring their social, cultural, historical, and geographic context (Wandersman, 2003). Walters and Simoni (2002) have introduced a theoretical model of stress and coping for American Indian women that identifies cultural factors and coping as buffers of the onslaught of historical and current trauma and discrimination facing native women. This model has not yet been evaluated for adolescents or children but suggests that coping may play a central role in the adjustment of young American Indians.

STRESS AND COPING PROCESSES IN NAVAJO ADOLESCENTS

Current physical and mental health trends in American Indian communities highlight the need to understand the role of stress and coping responses in the development

and maintenance of health problems in this population. For example, American Indian youths are at elevated risk for the development of substance abuse disorders, depression, and suicidality when compared to European American youths (e.g., Beals et al., 1997; Costello, Farmer, Angold, Burns, & Erkanli, 1997; Walker et al., 1996; Yates, 1987; Young, 1988). In addition, public health trends indicate an increase in chronic, lifestyle-related diseases in American Indian communities since the 1950s (Dinges & Joos, 1988). Further, it is well established that American Indians suffer from high rates of poverty, and the link between this excessive lack of resources and poor mental health status is emerging more frequently in the literature (Hobfoll, Jackson, Hobfoll, Pierce, & Young, 2002). Stress and coping processes are hypothesized to play an important role in these physical and mental health outcomes in American Indian populations (Dinges & Joos, 1988; Walters & Simoni, 2002), although there is limited research to back up this assertion.

American Indian children and adolescents are exposed to a variety of chronic stressors. These youths are likely to experience poverty and family disruption, as well as stress specifically associated with being a member of an ethnic minority group in the United States, such as racism, discrimination, transgenerational trauma, and post-colonial oppression (Bechtold, Manson, & Shore, 1994; Duran & Duran, 1995; Gonzales & Kim, 1997; Walters & Simoni, 2002). For adolescents, these types of chronic stresses are often manifested in their day-to-day interactions with peers and family members. Consistent with this idea, American Indian adolescents rank family, relationship, and peer problems among the most stressful events in their lives (Ackerson, Dick, Manson, & Baron, 1990; Manson, Beals, Dick, & Duclos, 1989; Manson, Ackerson, Dick, Baron, & Fleming, 1990). Moreover, interpersonal stress has been identified as a risk factor for suicide in Native American youths (Ross & Davis, 1986; Dinges & Duong-Tran, 1993), and stressful interpersonal and daily life events predict significant variance in patterns of comorbidity of psychological disorders among American Indian and Alaska Native youths (Dinges & Duong-Tran, 1993). Despite the demonstrated relationship between stress and psychopathological processes in American Indian adolescents, few studies have examined coping processes that could potentially mediate or moderate these relationships for these youths and thus serve as the basis for community interventions.

Research on coping processes in nonmajority cultural groups suffers from several limitations. First, few studies have used theory-based and empirically validated measurement tools to examine cross-cultural differences and similarities in coping. Second, studies of individuals in other cultures and ethnic groups have tended to adopt conceptualizations and measures developed and validated by using primarily middle-class European American samples without testing their applicability to nonwhite groups (e.g., Greco, Brickman, & Routh, 1996; Jose et al., 1998). As a result, few measures of coping have been adequately validated or normed with nonwhite populations, and we are aware of none that has been validated for use with American Indian adolescents. Although using existing measures is a useful starting point, the applicability of these measures to nonwhite youths must be determined (Dana, 1998). The equivalence of the factor structure and the psychometric properties of measurement tools must be demonstrated across cultural groups (Hui & Triandis, 1985; Knight & Hill, 1998; van de Vijver & Leung, 1997).

Recent studies suggest that principal factors for coping in adolescents reflect primary control or active coping (e.g., problem solving, seeking of support), secondary control or accommodative coping (e.g., distraction, acceptance), and disengagement

coping (e.g., avoidance, withdrawal). In addition, Connor-Smith, Compas, Wadsworth, Thomsen, and Saltzman (2000) identified two broad types of involuntary or automatic responses to stress—involuntary engagement (e.g., emotional reactivity, physiological reactivity, intrusive thoughts) and involuntary disengagement (e.g., escape, cognitive interference, emotional numbing). The Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) contains both effortful coping responses as well as involuntary stress responses and is therefore an ideal candidate for assessing stress responses among diverse adolescents. Recent research has shown that the RSQ is reliable and valid for use with multiple populations and multiple stressors. Its applicability for use with nonwhite and American Indian adolescents has yet to be demonstrated. In this study, we examined the RSQ's utility for use with Navajo adolescents with a sample of adolescents living on the Navajo Nation reservation.

NAVAJO CULTURE AND STRESS RESPONSES

There are reasons to hypothesize that similarities in coping factors exist between Navajo and European American adolescents. On the basis of anthropological and psychological research on norms and values in Navajo culture, the concepts of both primary and secondary control may be central to understanding coping strategies used by American Indian youths (Dinges & Joos, 1988). Although autonomy is identified as a value in Navajo culture, it is accompanied by an emphasis on cooperation, consensus, and acceptance (Dehyle & LeCompte, 1999; Lamphere, 1977). Living a harmonious life that values group solidarity, working well with others, and practicing self-control are identified as positive traits and indications of success (White, 1998; Duda, 1980; Quintero, 1995). Therefore, secondary control coping strategies that reflect efforts to adapt oneself to the stressor, including strategies such as acceptance and cognitive restructuring, may be particularly important for Navajo youths. In addition, because stress and psychological symptoms are often interpreted as evidence that one's life has become out of balance with the Navajo way of life, coping strategies that aim to restore harmony and balance are also likely to be used (Rieckmann, Wadsworth, & Dehyle, in press). For example, relying on spiritual resources such as ceremonial prayer and burning of cedar or sweet grass are likely to be coping strategies recommended to a young person by a medicine person or hand trembler (Reichard, 1950). This seeking of guidance serves to solve the problem and restore physical, emotional, and spiritual balance, goals reflective of primary control strategies such as problem solving and emotional regulation. Further research has begun to suggest that a problem-solving orientation and effective coping are associated with a stronger sense of ethnic identity (Dubow, Pargament, Boxer, & Tarakeshwar, 2000) and higher self-esteem (Mullis & Chapman, 2000). As yet, we are aware of no empirical studies that specifically link Navajo values and concepts with coping.

GENDER AS A POTENTIAL MODERATOR OF STRESS RESPONSES

Some studies have shown gender differences in coping and social support usage, although drawing definitive conclusions about this issue would be premature (cf., Compas et al., 2001). Nonetheless, there are data to suggest that girls may engage in more emotional expression and other primary control coping strategies, whereas boys tend to engage in more avoidant and disengagement coping strategies (e.g., Herman

& McHale, 1993; Roecker, Dubow, & Donaldson, 1996; Whitesell, Robinson, & Harter, 1993). However, these gender differences in strategy endorsement do not always translate into differences in models of relations between coping and other variables (Wadsworth & Compas, 2002). Presumably, this finding may be explained if boys and girls engage in or experience various activities or behaviors at a different rate but are affected similarly by these activities or behaviors when they do engage in them. We are aware of no studies that include gender as a moderator of coping and stress responses in American Indians. Therefore, we do not necessarily anticipate that gender will moderate our models. However, we believe that it is important to test for this possibility in the current study because the issue of gender differences in coping has not been adequately addressed in the literature.

CULTURAL MEASUREMENT EQUIVALENCE

Smith (2003) outlines the importance of examining the cross-cultural equivalence of an assessment instrument before using it with a nonmajority cultural group. He states that "Evidence of equivalence includes similar distributions of data, similar reliability and internal consistency coefficients, and similar factor structures and validity coefficients" (p. 103). Smith identifies several levels of equivalence, including functional, conceptual, and metric cross-cultural equivalence, in the assessment of individuals in nonmajority groups. *Functional equivalence* demands that the construct being measured serves the same function and is associated with the same behaviors in majority and nonmajority groups. In the current study, this means that Navajo adolescents use the kinds of strategies and responses measured on the RSQ to cope with stress and that their coping responses are related to self-reported psychiatric symptoms (i.e., depressive symptoms), as previous literature on European Americans has suggested. We test this by ensuring that Navajo adolescents endorse a wide variety of responses on the RSQ and by examining the associations of the RSQ with depressive symptoms. *Metric equivalence* requires that the measure show similar psychometric properties and structure across cultural groups. In the current study, this means that our factor structure must not vary according to cultural group and that the measure must have reliability and validity similar to those of the index samples when used with our Navajo sample. *Conceptual equivalence* requires that the stimuli on the assessment instrument have similar meaning across cultural groups. Conceptual equivalence is best ensured at the design stage, as we attempted to do: the measure was reviewed in advance by a Navajo expert (K. White, personal communication, 1999), and items were modified to be culturally appropriate on the basis of this review. There are few guidelines for testing cultural equivalence analytically. For this we relied on prior studies of the cross-cultural measurement equivalence of coping measures, which suggest that demonstrating factor invariance is an essential step (e.g., Prelow, Tein, Roosa, & Wood, 2000).

CURRENT STUDY

The current study examined the factor structure and psychometric properties of the RSQ (Connor-Smith et al., 2000) with a large sample of Navajo adolescents. First, we used confirmatory factor analysis (CFA) to determine whether a correlated five-factor model of the RSQ would best define the pattern of associations among the scales and factors with this sample of adolescents. Next, we compared the factor structure by gender to determine whether gender moderates the pattern of associations among

stress responses. We then computed coefficient alpha as an index of internal consistency reliability and examined convergent and discriminant validity by using a multitrait-multimethod matrix. Finally, we examined the concurrent validity of the RSQ by examining the ways in which the five factors of the RSQ were associated with depressive symptoms in these adolescents.

METHOD

Sample

The sample consisted of 332 Navajo adolescents (57% female) aged 13 to 18 years old ($M = 16.6$, $SD = 1.0$), living on the Navajo Nation. The participants attended public schools and represented a stratified random sample by grade and gender. The mean socioeconomic status (SES) of the participating students estimated by Hollingshead's (1975) nine-point parental employment scale (1 = lowest level) was 3.2, reflecting that the average parent in this sample, if employed, was employed in a profession such as clerical worker or craftsperson. Researchers met with students and sent home consent forms to be signed by parents. All participants completed the RSQ in reference to current interpersonal peer stressors. Students who returned signed consent forms and completed the questionnaires were given coupons for meals at local fast food restaurants.

Measures

Responses to Stress Questionnaire. The Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) was used to assess the ways that the adolescents coped with and responded involuntarily to interpersonal peer stress. The RSQ was revised in consultation with K. White (personal communication, 1999) of the Navajo Nation to reflect common strategies used by Navajo youths to cope with stress. He reviewed the language and content of the RSQ to ensure that it was appropriate and applicable for use with this population and suggested minor changes in wording where necessary. The first portion of the RSQ contains a short list of stressors that prompts adolescents to think about interpersonal stressors they have encountered in the previous 6 months. The second section of the RSQ assesses the adolescents' responses to those kinds of stressors. Examples of the interpersonal peer stress include "Being teased or hassled by other kids" and "Asking someone out and being turned down."

The second portion of the RSQ contains 57 items that ask the respondents to report the ways they responded during the last 6 months to the stressors they encountered. Items are tailored to the particular domain of stress (interpersonal peer) referred to in the RSQ, but the stems of the items are identical to those of all previous versions of the RSQ. The RSQ contains 19 parcels of three items each that aggregate further into five factors: primary control engagement coping, secondary control engagement coping, disengagement coping, involuntary engagement, and involuntary disengagement (Connor-Smith et al., 2000). The first three factors reflect voluntary coping processes; the latter scales reflect involuntary responses that occur under stress. Sample items from each scale are presented in Table 1. Internal consistency, test-retest reliability, and construct and criterion validity have been shown to be good to excellent in other, primarily Caucasian samples (Connor-Smith et al., 2000).

Ways of Coping Checklist. The Ways of Coping Checklist (WCCL; Folkman & Lazarus, 1988) was used as an additional measure of the coping responses of the adolescents.

Table 1. Sample Items from the Responses to Stress Questionnaire

<i>Factor and Scale</i>	<i>Sample Item</i>
<i>Primary control engagement coping</i>	
1. Emotional expression	I let someone or something know how I feel (check all that you talked to): parent, teacher, friend, God, brother/sister, stuffed animal, pet
2. Emotional regulation	I keep my feelings under control when I have to, then let them out when they won't make things worse
3. Problem solving	I try to think of different ways to change the problem or fix the situation. Write one plan you thought of
<i>Secondary control engagement coping</i>	
4. Acceptance	I realize that I just have to live with things the way they are
5. Cognitive restructuring	I think about the things that I am learning from the situation, or something good that will come from it
6. Distraction	I keep my mind off problems with other kids by (check all that you do): exercising, playing video games, seeing friends, doing a hobby, watching TV
7. Positive thinking	I tell myself that everything will be all right
<i>Disengagement coping</i>	
8. Avoidance	I try to stay away from people and things that make me feel upset or remind me of the problem
9. Denial	When something goes wrong with my other kids, I say to myself, "This isn't real"
10. Wishful thinking	I deal with the problem by wishing it would just go away, that everything would work itself out
<i>Involuntary engagement</i>	
11. Emotional arousal	When problems with other kids come up, I get upset by things that don't usually bother me
12. Impulsive action	When I am having trouble getting along with other kids, I can't control what I say or do
13. Intrusive thoughts	When I'm having problems getting along with other kids, I can't stop thinking about the problems when I try to sleep, or I have bad dreams about them
14. Physiological arousal	When I have problems with other kids, I feel it in my body (check all that apply): my heart races, I feel hot or sweaty, my breathing speeds up, my muscles get tight
15. Rumination	When problems with other kids come up, I can't stop thinking about how I am feeling
<i>Involuntary disengagement</i>	
16. Cognitive interference	My mind goes blank when I have problems with other kids; I can't think at all
17. Emotional numbing	When problems with other kids happen I don't feel anything at all; it's like I have no feelings
18. Escape	I just have to get away when I have problems with other kids; I can't stop myself
19. Inaction	I just freeze when I have a problem with another kid; I can't do anything

It is a widely used measure of coping in adults and has established acceptable reliability and validity with adult samples. The WCCL has eight scales, six of which correspond to areas covered by the RSQ: (1) Social Support and Planful Problem Solving correspond to Primary Control Engagement Coping; (2) Accepting Responsibility and

Positive Reappraisal correspond to Secondary Control Engagement Coping; and (3) Distancing and Escape/Avoidance correspond to Disengagement Coping. The remaining WCCL scales, Self-Control and Confrontive Coping, have no obvious counterparts on the RSQ and were therefore not included in analyses.

Depressive Symptoms. Three measures of depressive symptoms were obtained from the adolescents and were used as manifest indicators of the latent depressive symptoms variable. (1) A checklist that contained the DSM-IV diagnostic criteria for Major Depressive Disorder was developed. The number of symptoms endorsed on this checklist was used as the first indicator of depressive symptoms. (2) The adolescents completed the Minnesota Multiphasic Personality Inventory—Adolescent Version (MMPI-A; Butcher et al., 1992). The depression content scale from the MMPI-A has been shown to have promising convergent and discriminant validity (e.g., Arita & Baer, 1998), and this scale was therefore used as the second indicator of depressive symptoms. (3) The Children's Depression Inventory (CDI; Kovacs, 1985) is the most widely used self-report of depressive symptoms for children and adolescents. This measure has well-established reliability and validity and has been shown to discriminate effectively between depressed and nondepressed adolescents. The overall CDI depression score was used as the third indicator of depressive symptoms.

Data Analysis

Data-Analytic Strategy. To be consistent with the prior work assessing the psychometrics of the RSQ (Connor-Smith et al., 2000), as well as the majority of prior studies assessing cross-cultural equivalence of coping and clinical measures (e.g., Floyd & Widaman, 1995; Prelow et al., 2000), we used a factor-analytic approach to ensure structural equivalence of the measure. In addition, a first-order CFA was conducted by using three-item parcels and higher-order latent factors, the recommended approach for coping measures (e.g., Hudek-Knežević, Kardum, & Vukmirović, 1999), especially in a measure with such a large number of scales based on so few items apiece. In addition, to form further links with these prior studies, we also used the MTMM approach to validity estimation. There are limitations of both of these types of approaches, and alternative measurement strategies were considered. However, we believe that the ability to make comparisons with prior work by using similar statistical analyses (e.g., Connor-Smith et al., 2000) outweighs the benefits that would be gained by using an alternative strategy such as Rasch Measurement Modeling. Rasch Measurement Modeling and other Item Response Theory (IRT) applications such as Differential Item Functioning Analysis could be used to highlight areas in which Navajo adolescents endorsed items differently than other adolescents did. Prior work has shown that CFA and IRT methods produce similar results in investigations of factorial invariance (Reise, Widaman, & Pugh, 1993).

Confirmatory Factor Analysis

To examine the factor structure of the RSQ, we used AMOS Structural Modeling software, version 4.0 (Arbuckle & Wothke, 1999), to test whether a correlated five-factor model fit the data for this sample by using maximal likelihood Confirmatory Factor Analyses (CFA). Multiple indices were used to assess the fit of the data to the hypothesized models. Chi-square tests that compare the covariance matrix of the

observed variables with the matrix implied by the specified model are reported (Hu & Bentler, 1995). Bentler's (1990) comparative fit index (CFI) is provided as an estimate of the extent to which the sample variance and covariance were reproduced by the specified model; values greater than .95 indicate a well-fitting model (Bollen & Long, 1993). Steiger's (1990) root mean square error of approximation (RMSEA) is also provided as an estimate of the population discrepancy of the models; values less than or equal to .06 indicate a good fit. Second, we tested for invariance of factor loadings across gender by comparing a model in which factor loadings were constrained to be equal across the two groups (constrained model) with a model in which the factor loadings were free to vary by group (unconstrained). If the two models did not differ when compared by using a χ^2 difference test, the similarity of the models was interpreted as support for equality of factor loadings by gender.

Multitrait–Multimethod Analyses. Convergent and discriminant validity correlations of the scales of the RSQ with similar scales from the Ways of Coping Checklist were computed. Convergent validity correlations were examined to determine whether they were significantly different from zero (Byrne & Goffin, 1993). Next, we examined the percentage of convergent validity correlations that exceeded the magnitude of discriminant validity coefficients to determine whether low, moderate, or high discriminant validity was present. Finally, the differences between the hypothesized convergent and discriminant validity correlations were further tested by using the Fisher's z transformation for comparing correlations (Howell, 1997).

Structural Equation Modeling. Concurrent validity was examined by testing a structural model containing the five RSQ factors as predictors of a latent depressive symptoms variable with three manifest indicators. Fit was assessed as with the CFA, using χ^2 , CFI, and RMSEA. Moderation by gender was also tested as earlier, by comparing models with factor loadings constrained and unconstrained by gender.

RESULTS

Factor Structure of RSQ

First we confirmed a correlated five-factor model containing the three voluntary and two involuntary factors of the RSQ on the entire sample, and then separately by gender. Figure 1 contains the correlated five-factor model. The model fit the data well, when analyzed for the whole sample taken together [$\chi^2(127) = 294.32$, $CFI = .95$, $RMSEA = .06$, when analyzed separately by gender with a group invariant model (constrained) [$\chi^2(268) = 482.05$, $CFI = .93$, $RMSEA = .049$], and when analyzed separately by gender with factor loadings estimated separately by gender (unconstrained) [$\chi^2(254) = 475.05$, $CFI = .93$, $RMSEA = .051$]. The chi-square difference test comparing the gender invariant model with the gender comparison model was nonsignificant [$\chi^2(14) = 7.0$, ns], indicating that the model fit equally well for boys and girls.

Reliability

The internal consistency reliabilities (Cronbach's alphas) for the 19 scales and five factors of the RSQ are summarized in Table 2. Internal consistencies of the 19 scales

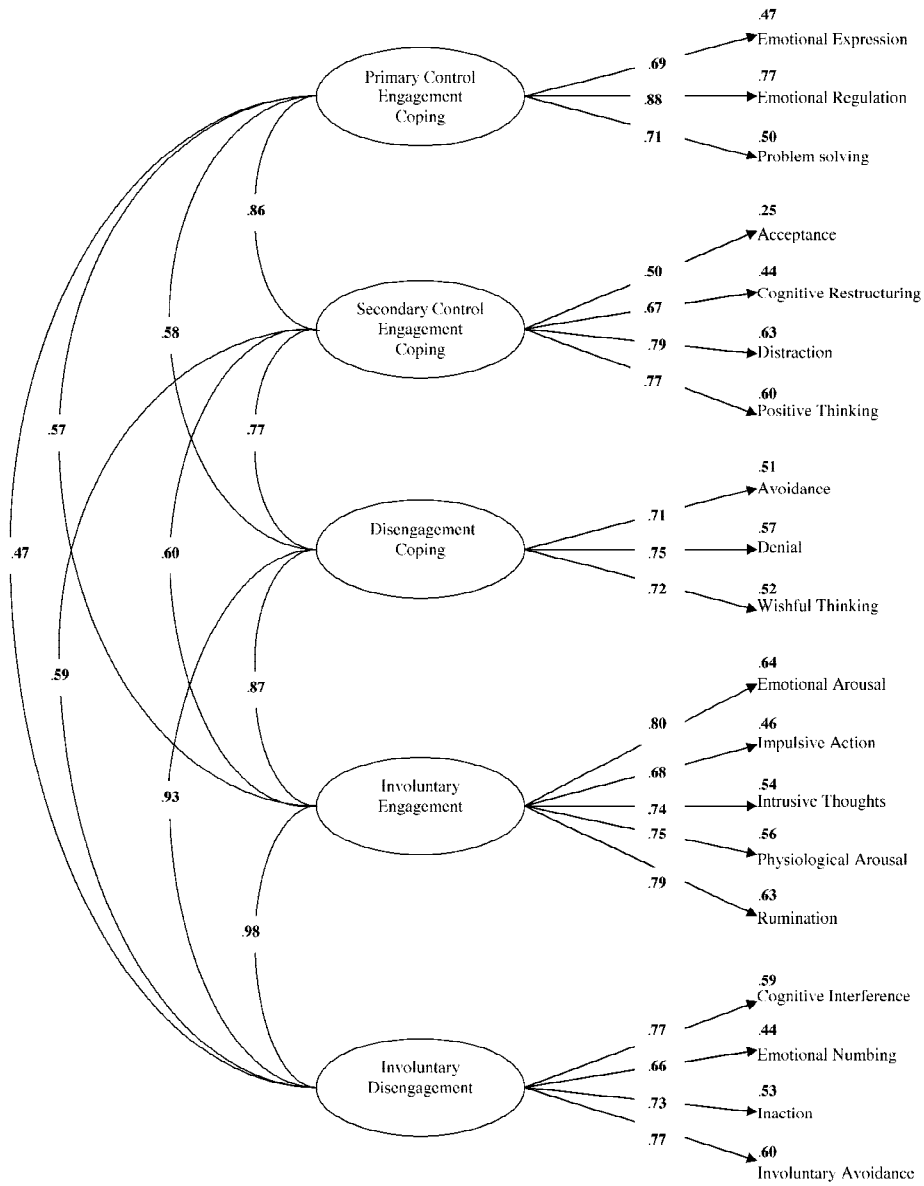


Figure 1. Confirmatory factor analysis (CFA) of correlated five-factor model of responses to stress. Note. Results from CFA using unconstrained factor loadings are shown.

(three-item parcels) ranged from .48 to .76, and internal consistencies of the five factors ranged from .79 to .88. These levels are highly comparable to those reported from the original three samples used to validate the RSQ (Connor-Smith et al., 2000).

Validity

Discriminant and Convergent Validity. The convergent and discriminant correlations between the RSQ factors and the WCCL scales (Folkman & Lazarus, 1988) are presented in

Table 2. Internal Consistency Reliabilities of Responses to Stress Questionnaire Factors and Scales

<i>Factor and Scale</i>	<i>Coefficient Alpha</i>
1. Primary control engagement coping	.82
Emotional expression	.67
Emotional regulation	.55
Problem solving	.63
2. Secondary control engagement coping	.80
Acceptance	.56
Cognitive restructuring	.51
Distraction	.61
Positive thinking	.58
3. Disengagement coping	.79
Avoidance	.54
Denial	.54
Wishful thinking	.66
4. Involuntary engagement	.88
Emotional arousal	.64
Impulsive action	.68
Intrusive thoughts	.65
Physiological arousal	.57
Rumination	.76
5. Involuntary disengagement	.84
Cognitive interference	.67
Emotional numbing	.48
Escape	.55
Inaction	.61

Note. Numbers in boldface signify factor scores.

Table 3. Correlations based on raw scores (simple sums of item responses) are presented first; correlations based on proportional scores are presented second. Proportional scores are often recommended for use when examining coping responses because of the tendency of individuals to report using either many coping responses of all

Table 3. Convergent and Discriminant Validity Correlations Among Responses to Stress Questionnaire Factors and Ways of Coping Checklist Scales

	<i>Raw Scores</i>			<i>Proportional Scores</i>		
	<i>Primary Control</i>	<i>Secondary Control</i>	<i>Disengagement</i>	<i>Primary Control</i>	<i>Secondary Control</i>	<i>Disengagement</i>
Social support	.42***	.29***	.25***	.29***	-.03	-.22***
Planful problem solving	.46***	.44***	.29***	.33***	.09	-.20***
Accepting responsibility	.28***	.39***	.34***	-.02	.11*	-.07
Positive reappraisal	.34***	.36***	.28***	.13*	.13*	-.17**
Distancing	.20***	.38***	.48***	-.24***	.05	.32***
Escape/avoidance	.11*	.23**	.53***	-.39***	-.32***	.31***

Note. Numbers in boldface indicate hypothesized convergent correlations.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

types or very few responses overall. When scales are computed as proportions of the total amount of responses on a measure (e.g., proportionally the amount of problem solving the adolescent reported using compared to the amount of coping he or she reported overall), greater specificity in associations among variables is achieved. For example, as can be seen in Table 3, the nonproportional raw scores are highly intercorrelated with each other. However, when both the WCCL scales and the RSQ factors are correlated by using proportional scores, much more specificity is found among the relations between variables. These more precise relations are much more consistent with the theorized relations among the factors and scales. To provide the reader with a sense of how raw and proportionally scored variables compare, we present the convergent and discriminant analyses for both.

Raw scores. The correlations represent both convergent validity between scales that represent similar constructs on the RSQ and WCCL (monotrait-heteromethod) and discriminant validity between scales that represent different constructs on the two measures (heterotrait-heteromethod). We used criteria outlined by Byrne and Goffin (1993) for examining the Campbell and Fiske model of convergent and discriminant validity. The first criterion is to examine each convergent validity coefficient to determine whether it is significantly different from zero. The result was that six of the six (100%) convergent validities (mean $r = 0.44$) were statistically significant, suggesting a high degree of convergent validity. The second criterion involves evaluating the percentage of convergent validity correlations that exceed the magnitude of discriminant validity coefficients. In 21 of the 24 comparisons (88%), convergent validity coefficients were higher than discriminant values (mean $r = 0.28$). According to Byrne and Goffin, 6% to 33% of violations constitute moderate discriminant validity; therefore, with 12% of violations, our data show moderate discriminant validity.

Results showed that the Primary Control Engagement Coping factor on the RSQ was more highly correlated with Social Support and Planful Problem Solving than with the other scales that represented different constructs on the WCCL. Secondary Control Engagement Coping was correlated with Accepting Responsibility and Positive Reappraisal but was also highly correlated with Planful Problem Solving and Distancing. Disengagement Coping on the RSQ was more highly correlated with Distancing Coping and Escape/Avoidance than the other scales that represented different constructs on the WCCL.

A final test of convergent and discriminant relations was conducted by comparing correlations by using Fischer's z transformation (Howell, 1997). To reduce the number of comparisons, we calculated the mean of the hypothesized convergent correlations and the mean of the discriminant correlations for each of the three RSQ coping factors. For Primary Control Engagement Coping, the mean of the convergent ($r = 0.44$) correlations was significantly higher than the mean of the discriminant correlations ($r = 0.28$), $z = 1.97$, $p < .05$. The means of the convergent ($r = 0.38$) and discriminant ($r = 0.32$) correlations for Secondary Control Engagement Coping were not significantly different, $z = 0.73$, ns. The mean convergent ($r = 0.51$) correlations for Disengagement Coping were significantly greater than the mean discriminant ($r = 0.22$) correlations, $z = 5.72$, $p < .05$.

Proportional scores. An examination of the percentage of convergent validity coefficients that were significantly different from zero determined that six of the six (100%) of the convergent validities (mean $r = 0.23$) were statistically significant, suggesting

a high degree of convergent validity by using proportional scores. For the second criterion, 35 of the 36 (97%) convergent validity validities were higher than discriminant values (mean $r = -0.12$). According to Byrne and Goffin (1993), less than 5% of violations constitutes high discriminant validity; therefore, with 3% of violations, our data show high discriminant validity by using proportional scores.

Results showed that, as with raw scores, the Primary Control Engagement Coping factor on the RSQ was correlated with Social Support and Planful Problem Solving. However, unlike in the earlier results, Primary Control Engagement Coping was either not related to or negatively related to scales that represented different constructs on the WCCL. One exception was Positive Reappraisal, which was modestly correlated with Primary Control Engagement Coping. Secondary Control Engagement Coping was correlated with Accepting Responsibility and Positive Reappraisal and was either unrelated to or negatively correlated with unrelated constructs. Positive Reappraisal was the exception again. Disengagement Coping on the RSQ was more highly correlated with Distancing Coping and Escape/Avoidance and unrelated or negatively related to the other scales that represented different constructs on the WCCL.

A final test of convergent and discriminant relations was conducted by comparing mean correlations using Fischer's z transformation (Howell, 1997). The difference between the mean of the convergent ($r = 0.31$) and discriminant correlations ($r = -0.11$) for Primary Control Engagement Coping was significant, $z = 4.61$, $p < .05$. The means of the convergent ($r = 0.12$) and discriminant ($r = -0.04$) correlations for Secondary Control Engagement Coping were not significantly different, $z = 1.72$, ns. The mean convergent ($r = 0.32$) correlations for Disengagement Coping were significantly greater than the mean discriminant ($r = -.20$) correlations, $z = 5.72$, $p < .05$.

Structural Equation Model Predicting Depressive Symptoms. To examine the degree to which the RSQ factors predict a theoretically related construct, we constructed a model in which the five RSQ factors predict a latent variable containing three manifest indicators of depressive symptoms. The model is presented in Figure 2. This model fit the data very well: nonsignificant chi-square and fit indices indicated an excellent fit [$\chi^2(10) = 17.857$, $CFI = .99$, $RMSEA = .049$]. A model containing factor loadings constrained to be equal across genders [$\chi^2(25) = 34.41$, ns] was compared with a model in which factor loadings were free to vary by gender [$\chi^2(20) = 26.99$, ns] in order to test for moderation by gender. The difference chi-square was nonsignificant [$\chi^2(5) = 7.41$, ns], indicating that gender does not moderate the association between responses to stress and depressive symptoms in this sample.

Squared multiple correlations indicated that the model explained 37% of the variance in depressive symptoms. As can be seen in Figure 2, primary and secondary control coping were both associated with fewer depressive symptoms, whereas disengagement coping and involuntary engagement both predicted more depressive symptoms. These patterns of association between responses to stress factors and depressive symptoms are consistent with findings of the majority of prior studies using the RSQ. In general, primary and secondary control coping tend to be associated with fewer psychological problems such as depressive symptoms, whereas disengagement coping and both involuntary stress responses factors tend to be associated with more psychological problems. Involuntary disengagement responses were not associated with depressive symptoms in this study.

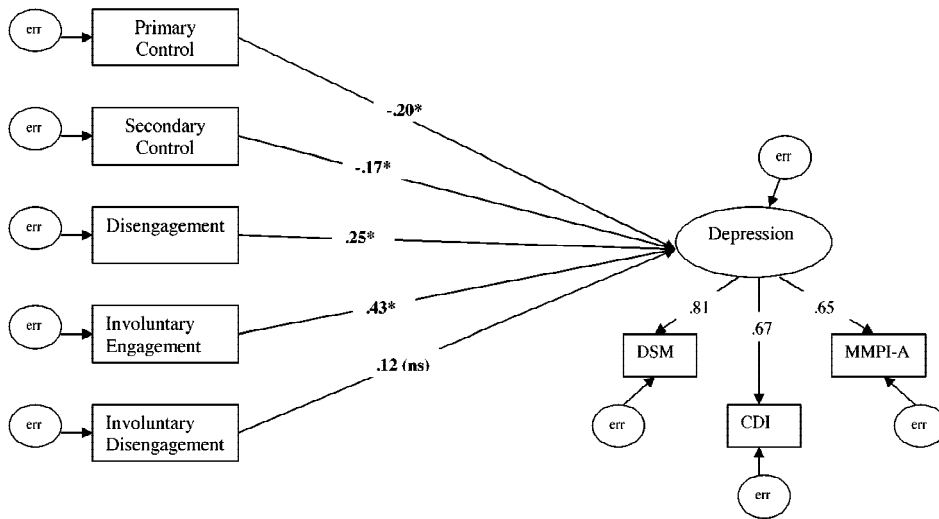


Figure 2. Structural equation model (SEM) of associations between responses to stress and depressive symptoms. *Note.* Results from SEM using unconstrained factor loadings are shown. DSM, Diagnostic and statistical manual of mental disorders; CDI, Children’s Depression Inventory; MMPI–A, Minnesota Multiphasic Personality Inventory—Adolescent Version; ns, not significant.

DISCUSSION

The current study examined the assessment of coping and involuntary stress responses in an understudied group of adolescents. Specifically, we tested the psychometric properties of a theory-based, empirically validated measure of coping and stress responses, the RSQ (Connor-Smith et al., 2000), by examining reliability and several forms of validity in a large sample of Navajo adolescents. The results indicate that the performance of the measure with Navajo adolescents was comparable to its performance with the original samples with which it was validated. Furthermore, the analyses indicated that the overall factor structure was equivalent across genders. Thus, these data suggest that the stress responses of male and female Navajo adolescents can be characterized by three categories of effortful coping—primary control engagement coping, secondary control engagement coping, and disengagement coping—and two categories of involuntary stress responses: involuntary engagement and involuntary disengagement.

Factor Equivalence Across Cultural Groups

Demonstrating factor equivalence across cultures is important in determining the usefulness of empirically validated measures such as the RSQ with minority groups (Knight & Hill, 1998). The RSQ factor structure was replicated with this sample of Navajo youths. If our measure had not demonstrated factorial equivalence across diverse groups of individuals, for example, then we would have been left with the important question of whether the construct was even appropriate to measure this population. If, for example, there were aspects of Navajo culture that would encourage a wider or more restricted range of coping strategies, then the RSQ may not have

performed adequately with this population. On the basis of our consultations and reviews of research and writings about Navajo culture, we expected that the RSQ would capture a wide range of coping that Navajo youths could be expected to enact in response to stress. For example, the Navajo values of cooperation, consensus, and interconnectedness (Lamphere, 1977; Dehyle & LeCompte, 1999) suggest that acceptance, emotional expression, problem solving, and emotional regulation should be strategies employed by Navajo youths. Therefore, we expected to find factorial equivalence. Indeed, the Navajo youths in this sample endorsed a wide range of strategies reflecting all five factors found on the RSQ. Therefore, the range of responses found on the RSQ represent a solid starting point for assessing stress responses in American Indian youths. Factorial equivalence answers only one part of the applicability question (functional and conceptual equivalence)—that what the measure covers captures at least a portion of the construct for a particular group. The additional reliability and validity analyses address whether the construct as measured by the RSQ is appropriate for these adolescents (metric equivalence).

The factor structure of the RSQ has now been confirmed on four different samples of youths of different ages and sociocultural backgrounds (this is the first primarily nonwhite sample) who were coping with three different types of stress. This confirmation suggests that the basic structure of responses to stress as measured by the RSQ may not be culture dependent and that the RSQ can be used to assess coping and involuntary stress responses in Navajo youths. That adolescents from cultures with very different belief systems and from different socioeconomic backgrounds appear to cope with stress in a manner consistent with this model is encouraging; we believe, therefore, that the RSQ does not simply identify another idiosyncratic method of assessing coping and adaptation.

American Indian adolescents are at high risk for development of a host of psychological and academic problems that can contribute to subsequent adult problems as well. The different and unique stressors and strengths found in many American Indian groups call for specific and targeted interventions to treat and prevent problems and bolster natural strengths. It is very likely that a culturally sensitive, community-based approach to intervention will be most successful (Martinez & Eddy, 2003; Wandersman, 2003). Coping skills often constitute a major portion of the skills taught and fostered in such interventions, and it is, therefore, essential to gain understanding of ways American Indian adolescents cope with the stress in their lives (e.g., Sandler, Wolchik, MacKinnon, Ayers, & Roosa, 1997). The RSQ may, therefore, serve as a useful tool for prevention scientists and other community psychologists concerned with American Indian populations, such as the Navajo.

Reliability and Validity of the RSQ

The second step in validating the RSQ for use with Navajo adolescents is to determine whether the measure performs reliably and shows adequate validity for use with this population. The study demonstrated that the RSQ coping and involuntary factors have reasonable internal consistency and that the coping factors have high convergent validity with this sample of Navajo adolescents. In addition, discriminant validity of coping on the RSQ appears to be moderate if analyses using raw scores are considered and excellent if analyses using proportional scores are considered.

The only factor that did not show consistently strong discriminant validity in analyses using raw scores was secondary control coping. Although secondary control

coping was strongly associated with accepting responsibility and positive reappraisal from the WCCL as expected, it was also correlated with WCCL problem solving and distancing. This correlation was likely due to overall response biases (i.e., the tendency for an individual to provide consistently high or consistently low levels of responses across all areas of a self-report measure). Proportional scoring would eliminate such a reporting artifact and appears to have done so. In the analyses involving proportional scores, neither problem solving nor distancing from WCCL was significantly correlated with secondary control coping. However, even with proportional scoring, secondary control coping showed weak discriminant validity, in part because the correlations between proportionally scored secondary control coping and accepting responsibility and positive reappraisal were significant but quite small.

The ability of the RSQ factors to predict depressive symptoms in Navajo adolescents is an important test of concurrent validity (Groth-Marnat, 1990). Coping is often assumed to be central in determining whether stress contributes to positive growth and development or to psychological problems (Compas, Connor, Harding, Saltzman, & Wadsworth, 1999). A large, mainly cross-sectional literature supports this idea, showing moderate associations between coping and psychological symptoms (Compas et al., 2001). In general, engagement strategies such as those reflected in primary and secondary control coping tend to be associated with fewer psychological problems in adolescents (e.g., Wadsworth & Compas, 2002; Weisz, McCabe, & Dennig, 1994). In theory, these strategies are probably efficacious because they are effective in either solving a problem or changing the way an individual thinks about a problem—core principles in the cognitive and behavioral treatment of depression, for example (e.g., Clarke, Lewinsohn, & Hops, 1990). Similarly, disengagement strategies such as wishful thinking and avoidance are often associated with more depressive symptoms (e.g., Herman & McHale, 1993), perhaps because these strategies are unlikely to change anything about a stressor or the individual's adaptation fundamentally, so the stressor and its power to evoke distress remain unchanged. That this same pattern was found in the present analyses supports the idea that the RSQ not only is reliable and discriminantly valid in this population but shows promising concurrent criterion validity as well.

Involuntary disengagement responses were not associated with depressive symptoms in these adolescents, a finding that is not entirely consistent with those of the few limited studies that have examined involuntary stress responses. In Connor-Smith and colleagues' (2000) study, involuntary disengagement responses were associated with internalizing symptoms in a sample of college students coping with interpersonal peer stress. Conversely, there was no association between involuntary disengagement and internalizing of symptoms in male adolescents coping with family conflict or female adolescents coping with economic strain in Connor-Smith and coworkers' study. These latter adolescents were participating in a study of adjustment to economic hardship and, therefore, may be more sociodemographically similar to the adolescents in the current sample. They may, therefore, constitute a better comparison group than the more affluent college students. In addition, given the extremely limited research available on the association between involuntary stress responses and psychological adjustment, future studies should address the relative relations among the RSQ involuntary factors and psychological outcomes. It will be especially important to determine whether the association between involuntary disengagement responses and depressive symptoms is moderated by culture or ethnicity.

Limitations and Future Directions

The RSQ likely captures many of the stress responses experienced by Navajo adolescents. However, there may be additional, culture-specific strategies and responses that would be applicable for Navajo adolescents responding to interpersonal stress that this instrument does not contain. Religion-oriented strategies such as prayer and culture-specific strategies such as speaking with a medicine person were included on this version of the RSQ but were not heavily emphasized throughout the measure. Strategies reflecting reliance on spirituality and prayer as a means to cope with stress may be particularly relevant for Navajo adolescents and for adolescents in other nonmajority cultures (e.g., Rieckmann et al., in press). Therefore, although we recommend using the RSQ in research with Navajo adolescents, we also recommend providing such youths with the opportunity to supplement their responses to this questionnaire with additional strategies not covered in the measure. Providing this opportunity would aid in establishing strong conceptual equivalence of the measure in addition to the equivalence established in this study.

Although the associations among coping and depressive symptoms beg for interpretation that comments on the role of coping and involuntary stress processes in the development or maintenance of depressive symptoms in this population, we refrain from such speculation for two reasons. First, we included associations with depressive symptoms as a test of concurrent validity; we believe that this is currently the appropriate level of analysis, and that it would be problematic to use depressive symptoms as both a validity indicator and a correlate of depressive symptoms. Second, because these data are cross-sectional, interpretations about directionality or causality would be untenable. Now that this study has established that the RSQ appears to possess reasonably sound psychometrics with Navajo adolescents, we recommend that it be used in future studies to examine these very important and interesting questions.

Convergent and discriminant validity analyses were conducted only with the effortful coping factors from the RSQ, not with the involuntary stress response factors. Future research should employ physiological and experimental means to assess convergence of bodily responses with the RSQ involuntary factors. Preliminary findings with Caucasian samples (e.g., Connor, 1998) are promising in this regard, showing associations between physiological reactivity on stroop tasks and involuntary engagement responses.

Confirmatory factor analyses and MTMM validity analyses were used to establish functional, conceptual, and metric cross-cultural equivalence of the RSQ. These are the standard analytical techniques used in coping research (e.g., Prelow et al., 2000). However, it is important to keep in mind that factor solutions are only suggestive, that multiple alternative models are always possible, and that model fit is never perfect. In addition, CFA requires interval or ratio data, and although the RSQ response scale ranges from 1 to 4 with equal intervals, different participants may have interpreted the scale differently. Thus, newer techniques such as those based on Item Response Theory, which fit each individual participant to the statistical model, may prove useful in the future for investigators interested in cross-cultural measurement validation. For example, Rasch modeling could be used to validate the scale of the measure and to examine in-depth issues of item bias that could assist in revisions of the Navajo RSQ, especially with regard to the involuntary disengagement factor.

CONCLUSIONS

The basic structure of coping and involuntary stress responses is now being identified for European American adolescents (e.g., Ayers, Sandler, West, & Roosa, 1996; Connor-Smith et al., 2000; Walker, Smith, Garber, & Van Slyke, 1997). Given the potential stressors affecting minority youths, it is essential that research on coping and stress responses with diverse populations keep pace with research on European American adolescents. As the role of coping continues to be defined cross-culturally, we will gain greater appreciation for and understanding of both differences and similarities in mechanisms of adaptation. Identifying adaptive and maladaptive strategies for coping with stress can inform health and mental health interventions in minority populations at risk for the development of psychopathological conditions. Research must focus on development of interventions that allow for the enhanced cognitive and interpersonal coping skills that, in turn, assist the individual in management of the greater community context (Moos, 2002). However, before such crucial studies can take place, more research that examines basic measurement issues to determine the applicability of measures such as the RSQ for diverse populations is needed.

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