Coping Patterns of African American Adolescents: A Confirmatory Factor Analysis and Cluster Analysis of the Children’s Coping Strategies Checklist

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The current study examined patterns of coping strategies in a sample of 497 low-income urban African American adolescents (mean age = 12.61 years). Results of confirmatory factor analysis indicated that the 4-factor structure of the Children’s Coping Strategies Checklist (T. S. Ayers, I. N. Sandler, S. G. West, & M. W. Roosa, 1996) was not replicated in the current sample. The final model was a 3-factor model that was invariant across gender. The Active Coping factor and Revised Avoidant Coping factor were highly correlated in the present sample. Results of cluster analyses identified 2 coping groups differing on the frequency of coping use and preferred coping methods. The 1st group was more likely to use avoidant coping and less likely to use social support-seeking coping than the 2nd group, which showed more consistent use across coping strategies. There were no significant differences in the association between stressors and symptoms across the 2 groups. The results highlight the importance of examining factor structures of coping measures with underrepresented groups.

Keywords: coping strategies, African American youth, confirmatory factor analysis, cluster analysis

Improving adaptation to stress has been identified as one of the most promising approaches to preventing the development of problems in young people (Sandler, Wolchik, MacKinnon, Ayers, & Roosa, 1997). Exposure to stressful life experiences increases dramatically during adolescence, and adolescents are expected to manage stressors with increasing independence (Patterson & McCubbin, 1987). In addition, the range of possible responses increases during this developmental period (Compas, Connor, Saltzman, Thomsen, & Wadsworth, 2001). For these reasons, understanding adaptive and maladaptive responses to stressful life experiences during adolescence is especially important.

One of the ways adolescents adapt to stress is coping, which has been defined as “conscious, volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances” (Compas et al., 2001, p. 89). Active coping strategies, support-seeking strategies, and distraction strategies have generally been found to be associated with more positive youth outcomes (Ayers, Sandler, West, & Roosa, 1996; Causey & Dubow, 1992; Compas et al., 2001; Compas, Malcarne, & Fondacaro, 1988; Ebata & Moos, 1991; Herman-Stahl, Stemmler, & Petersen, 1995; Lengua & Sandler, 1996). Avoidance coping strategies, on the other hand, have generally been found to be related to poorer youth outcomes (Ayers et al., 1996; Causey & Dubow, 1992; Ebata & Moos, 1991; Herman-Stahl et al., 1995; Lengua & Sandler, 1996).

Considerable evidence supports the influence of coping in counteracting the effects of stress on adolescents, but that research has been limited to White middle-class samples (Compas et al., 2001). African American children living in inner-city communities face severe and chronic stressors, including economic stressors (Brooks-Gunn, Duncan, & Maritato, 1997; McLoyd, 1998), exposure to community violence (Bell & Jenkins, 1993; Overstreet, 2000; Simons et al., 2002), racial stereotyping (Swanson et al., 2003), and discrimination (Spencer, 1990), that are rare in the lives of children in other communities. Given such disproportionate exposure to stress, it is especially important to understand coping processes in the lives of low-income urban African American youth. However, the extent to which extant coping findings can be generalized to African American, specifically low-income, populations is unclear.

On the one hand, several studies exist that have reported coping findings for low-income urban African American youth that are similar to those found in the broader adolescent population. For example, gender differences that have been reported for predominantly White middle-class samples (Hampel & Petermann, 2006; Tamres, Janicki, & Helgeson, 2002) have also been found for
African American low-income urban youth, with boys reporting more frequent use of avoidant and distraction coping and girls utilizing more support-seeking strategies (Chandra & Batada, 2006; Clark, Novak, & Dupree, 2002; Grant et al., 2000; Tolan et al., 2002).

On the other hand, there is some evidence that African Americans exhibit culturally specific patterns of coping (Daly, Jennings, Beckett, & Leashore, 1995; Scott, 2003; Utsey, Adams, & Bolden, 2000). For example, controlling for socioeconomic status, African American youth use significantly more support seeking and guidance seeking than do White and Latino youth (Jose, Cafasso, & D’Anna, 1994; Rasmussen, Aber, & Bhana, 2004; Tolan et al., 2002). In addition, the chronic nature of stressors in poor urban communities may predict unique patterns of coping (Garbarino, Kostelny, & Dubrow, 1991). Studies focused specifically on inner-city African American children have identified them as “complex copers,” who use a wide range of coping strategies (Ryan-Wenger & Copeland, 1994) and significantly more types of strategies than do White children (Halstead, Johnson, & Cunningham, 1993; Jose et al., 1994).

Some additional studies with low-income urban African American youth have failed to find positive effects for active coping and instead found positive effects for avoidant coping (Dempsey, 2002; Dempsey, Overstreet, & Moey, 2000; Edlynn, Gaylord-Harden, Miller, & Richards, 2006; Grant et al., 2000). One possible explanation for this unique finding is that active strategies have generally been found to be less useful (Compas et al., 2001; Sandler, Tein, & West, 1994) and avoidance coping less detrimental in the context of uncontrollable (Compas et al., 2001) and/or severe stressors (Gonzales, Tein, Sandler, & Friedman, 2001). For example, Luthar and Cicchetti (2000) and Grant (2005) have demonstrated that coping strategies that are effective under optimal conditions can be less effective or even maladaptive in the context of severe and chronic stress.

Variability in the range of coping strategies used and differing patterns of effectiveness (Steward et al., 1998) call into question the suitability of dominant coping measures for low-income urban African American youth (Scott, 2003; Steele et al., 1999; Utsey et al., 2000). Some studies have demonstrated use in developing coping behaviors used by low-income urban adolescents. In a sample of low-income urban African American and Latino American youth (Tolan et al., 2002), as fewer factors were identified in their sample. Rasmussen et al. (2004) also failed to replicate the factor structure of the Ways of Coping Scale (WOC; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) in a sample of African American and Latino adolescents due to low reliability scores on three subscales.

Prelow, Michaels, Reyes, Knight, and Barrera (2002), however, generally found similarity across ethnic groups for the Children’s Coping Strategies Checklist (CCSC; Ayers et al., 1996) in a low-income sample of adolescents. However, this study focused only on the items from the Active and Avoidant Coping factors and did not examine the four-factor model of the CCSC for invariance across groups (Ayers et al., 1996). Gonzales et al. (2001) replicated the four-factor model of the CCSC in a low-income sample of adolescents that included African Americans. The three ethnic groups in that sample, however, were analyzed as a homogenous group, and the model was not tested for invariance across groups.

Taken together, these results suggest that questions remain about the applicability of dominant coping measures with urban African American adolescents. Even the measure that has demonstrated the greatest invariance across ethnicity (CCSC) has not been fully tested with a low-income urban African American sample.

Another limitation to the coping literature on African American youth is that a considerable proportion of such research has been framed in a “race comparative paradigm” (McLoyd & Randolph, 1985). Race comparative studies have provided meaningful information about the measurement equivalence of instruments across ethnic groups (see Prelow et al., 2002). Nevertheless, the race comparative paradigm has historically promoted a proclivity in researchers to explain ethnic differences as deficits in African American children (McLoyd, 1990). For example, Munsch and Wampler (1993) found that White students used problem-solving support, a noted adaptive strategy, significantly less than African American children did and explained that White students are perceived as more competent and less likely to need help.

Another problem with race comparative studies is that they ignore variability within ethnic groups. Because individuals are likely to use more than one type of coping strategy during stressful situations, the identification of groups of individuals based on multivariate profiles of coping can be particularly informative (Tolan et al., 2002). Such person-based approaches can provide insight on findings with particular ethnic groups that differ from mainstream findings or corroborate findings from variable-based analyses (Masten, 1999). Despite the utility of methods such as cluster analysis in identifying and describing groups, these methods are used substantially less frequently than variable-based approaches in psychological research (Henry, Tolan, & Gorman-Smith, 2005; Masten, 1999).

Two studies have used person-centered approaches to examine coping behaviors used by low-income urban adolescents. In a sample of African American and Latino adolescents from inner-city neighborhoods, Tolan et al. (2002) assessed dispositional coping with the A-COPES (Patterson & McCubbin, 1987). With a comparable sample of adolescents, Rasmussen et al. (2004) assessed coping with exposure to community violence using a modified version of the WOC (Folkman et al., 1986). Both research teams found that groups of youths were generally distinguishable from one another on the basis of frequency of use of all coping strategies (i.e., low, average, and high copers).

Cluster analysis studies of coping in adults have also yielded clusters that differ on the level of use of multiple coping strategies (Gaudreau & Blondin, 2004; Smith & Wallston, 1996), but adult studies, generally, have also found evidence of clear coping typologies (e.g., a cluster that preferred to use active strategies rather than avoidant strategies; Kaluza, 2000). This pattern might reflect an enhanced ability of adults to match particular coping strategies.
to particular types of stressors (Compas et al., 2001; Rasmussen et al., 2004).

Purpose of the Current Study

The present study had two primary purposes. The first purpose was to assess the factor structure of a widely used measure of coping, the Children’s Coping Strategies Checklist (CCSC; Ayers et al., 1996), and its relation to psychological symptoms in a sample of low-income urban African American adolescents. Compared to other measures of children’s coping, the authors of the CCSC (Ayers et al., 1996) have provided some of the strongest evidence of construct validity (Compas et al., 2001). The second purpose was to utilize cluster analysis to classify adolescents on the basis of their coping patterns and to determine whether coping groups differed on key correlates and outcomes of coping (i.e., stressors and psychological symptoms).

The paucity of research on coping in African American adolescents limits the ability to make specific predictions (Tolan et al., 2002); therefore, the present study sought to answer the following questions: Does the hypothesized four-factor coping model of the CCSC (Ayers et al., 1996) replicate in a sample of low-income urban African American adolescents? Does the factor structure predict psychological outcomes in the current sample? What are patterns of coping strategies within the current sample? Do the derived coping groups differ on stressful experiences and internalizing and externalizing symptomatology?

Method

Participants

Participants in the present study were part of a larger study examining the impact of stressful life experiences on low-income urban youth. Seven urban public schools were selected for participation on the basis of high percentages of low-income students. Students were classified as low-income on the basis of eligibility for free or reduced school lunch programs. The average percentage of low-income students across the seven participating schools was 90%.

A total of 671 African American adolescents participated in the larger study. The sample in the present study included all African American adolescents who responded to all of the measures used in the current study: coping strategies, stressful life experiences, and psychological symptoms. The current sample included 498 adolescents (mean age = 12.61 years, SD = 0.99; 57% female, 43% male). Thirty-seven percent of the students were enrolled in the sixth grade (53% female, 47% male), 31% were enrolled in the seventh grade (56% female, 44% male), and 32% were enrolled in the eighth grade (64% female, 36% male). There was a significantly higher proportion of males in the excluded group (51%) than in the final sample (42%). $\chi^2(1, N = 671) = 4.28, p = .04$; however, no differences in age or grade were observed. The adolescents in the final sample used significantly more distracting action coping ($M = 12.37, SD = 3.40$) than did the excluded adolescents ($M = 11.77, SD = 3.31$), $t(669) = 2.01, p = .04$. There were no significant differences between the two groups on the remaining coping subscales, stress levels, or psychological symptoms.

Procedures

The schools that agreed to participate in the present study did so after being recruited by a standard procedure that included introductory phone calls to school principals, letters describing the goals and procedures of the study, and meetings between school administrators and research team members. Meetings were held with students and classroom teachers to describe the project, explain confidentiality, answer questions, and distribute parent consent forms. Consent forms were also mailed directly to some parents (at the recommendation of school administrators). Participation rates did not vary across the two distribution methods. Parent consent forms described the larger project, the voluntary nature of participation, and the confidentiality of the data collected. Parents were invited to contact Kathryn E. Grant and/or school administrators if they had questions and/or wished to see copies of the measures.

School administrators were given the option of selecting “active” or “passive” consent procedures. Administrators for six of the seven schools selected passive consent. Thus, parents were advised that their children would be invited to participate in the project if they did not return the consent form. Students whose parents did not return consent forms were given a description of the purpose of the study, assurance that participation was voluntary, and assurance of confidentiality. Students who agreed to participate in the study completed assent forms prior to data collection. The participation rate was approximately 90% for those in attendance on the day of survey administration. Consistent with typical absence rates in participating schools, approximately 10% of students were absent on the days surveys were administered.

Surveys were administered in school classrooms during regular class time at the convenience of participating teachers. Surveys were administered by clinical psychology doctoral students, and efforts were made to ensure that at least one of the two administrators was African American, which was achieved in approximately 94% of the administrations. Questionnaires were read aloud by research assistants to ensure that students with varying reading levels kept pace with the administration, and students were given assistance if they had difficulty understanding any of the questions. Completion of the measures examined in the present study took approximately 50 min.

Measures

Demographics. A one-page questionnaire was used to obtain information regarding participants’ age, gender, grade, and race/ethnicity.

Coping strategies. Adolescent coping was assessed using the Children’s Coping Strategies Checklist (CCSC; Program for Pre-

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1 Participation rates for students attending the one school in which active consent procedures were used (i.e., parents were required to return a consent form stating they gave permission for their child to participate in the study) were much lower (approximately 50%). It was not possible to compare nonparticipants (due to consent forms not being returned in active consent schools or absence/refusal in passive consent schools) with participants. Results of prior research conducted with a similar sample (Maton & Zimmerman, 1992) suggest that nonparticipants experience more stressors and psychological symptomatology than do participants.
The CCSC is a 52-item self-report measure of coping strategies used in childhood and adolescence. The 52 items are categorized into ten subscales. Consistent with the CCSC manual, youth were provided with the following prompt to introduce the constructs of stress and coping:

When faced with a problem, kids do different things in order to solve the problem or to make themselves feel better. Below is a list of things kids may do when faced with a problem. For each item, select the response that best describes how often you do the behavior when you have a problem. There are no right or wrong answers, just say how often you do each thing in order to solve the problem or to make yourself feel better.

Children were not provided with a time frame for reporting their coping behaviors. The frequency of the use of coping strategies during stressful situations was rated using a 4-point scale (1 = never to 4 = most of the time). Scores for each dimension are derived by taking the mean of the subscale scores for the subscales that compose that dimension, with higher scores indicating greater use of the strategy. Results of confirmatory factor analysis of the 10 subscales have suggested that a four-factor model is the best fit for the data (Ayers et al., 1996). The four factors are Active Coping, Distraction, Avoidance, and Support-Seeking Strategies. Test–retest reliability coefficients (test-retest 1 week) for the subscales have ranged from .49 to .73 (Program for Prevention Research, 1999). For the current sample, internal consistencies, as measured by Cronbach’s alpha, for the 10 subscales ranged from .55 to .69 and were comparable to those reported by Ayers et al. (1996). The average interitem correlations for the subscales ranged from .23 to .37. It is important to note that the number of items on subscales ranges from four to five; thus, some subscales contain fewer items than the minimum needed for satisfactory internal consistency for coping measures (Skinner, Edge, Altman, & Sherwood, 2003).

Stressful life experiences. Stressors were assessed using the Urban Adolescent Life Experiences Scale (UALES; Allison et al., 1999). Respondents rate the frequency with which they have experienced each stressor on a scale ranging from 1 to 5, with higher numbers indicating greater frequency of exposure. UALES items were generated by low-income urban, predominantly African American youth (Allison et al., 1999). Independent raters identified UALES items that assess major life events and daily hassles and items that assess controllable and uncontrollable stressors. Interrater reliability for major life events and daily hassles was .90. Interrater reliability for controllable and uncontrollable stressors was .94. Test–retest reliability of the UALES was .84 in a pilot study of 6th through 12th graders (Allison et al., 1999). The original measure includes positive and negative events. In the present study, the measure was shortened to include only the 111 negative events, as positive events have not been shown to predict psychological problems (Siegel & Brown, 1988). The modified version of the UALES used in the present study had a test–retest reliability of .80.

Psychological symptoms. Internalizing and externalizing symptoms were assessed using the Internalizing and Externalizing subscales of the Youth Self-Report (YSR; Achenbach, 1991; Achenbach & Edelbrock, 1987). The YSR includes 119 behavior items, which the adolescent rates on a 3-point scale as indicative of himself or herself during the past 6 months. Normative data for the YSR are based on a nationally representative sample of non-referred children and adolescents, with separate norms for boys and girls. Reliability and validity are well-established for the YSR (Achenbach, 1991). In the current sample, internal consistency reliabilities for both the Internalizing (α = .88) and Externalizing (α = .88) subscales were good. The average interitem correlation for both subscales was .20.

Results

Descriptives

Data screening analyses were conducted to detect univariate and multivariate outliers. No univariate outliers were found as defined by scores three standard deviations from the mean score (Tabachnick & Fidell, 1983). Using the critical value of Mahalanobis distance, χ²(12) > 32.91, p < .001, one multivariate outlier was identified and subsequently dropped from the final analyses.

Intraclass correlation coefficients (ICC) were computed to assess for school-level effects on the observed variables. Results demonstrated that most of the ICC values were negative, suggesting more variability within schools than between schools. The ICC for cognitive decision making coping and the Aggression subscale of the YSR were .02 and .05, respectively, indicating that school-level effects for these variables were minimal. The value for the YSR subscale Anxious–Depressed was .13, suggesting that 13% of the variance in Anxious–Depressed scores was due to school effects.

The means, standard deviations, and correlations for all variables are presented in Table 1. The most frequently used coping strategy was cognitive avoidance (M = 2.74, SD = 0.70), and the least frequently used strategy was physical release of emotion (M = 1.89, SD = 0.73). T-tests indicated that boys used significantly more physical release of emotion (M = 2.17, SD = 0.72) than girls used (M = 1.68, SD = 0.68), t(495) = 7.75, p < .001. Boys also used significantly more distracting action (M = 2.55, SD = 0.71) than girls did (M = 2.41, SD = 0.65), t(495) = 2.20, p < .05.

Correlational analyses revealed that stressful life experiences and psychological symptoms were correlated across measures; however, fewer than half of the correlations between coping subscale scores and scores for stressor and symptoms scales reached significance, and those that did were generally small in magnitude. Internalizing symptoms were positively associated with seeking understanding, distracting actions, and the two support-seeking strategies. Externalizing symptoms were negatively related to direct problem-solving strategies. Both controllable and uncontrollable stressors were positively associated with physical release of emotions, distracting actions, and the two support-seeking strategies. No evidence emerged for a differential pattern of correlations for particular types of coping strategies with particular types of stressors.

Confirmatory Factor Analysis to Test Model Fit

All confirmatory factor analyses were conducted with the EQS Structural Equations Program Version 6.1 (Bentler, 1995) using maximum likelihood estimation procedures. To establish fit, the following indexes were used for all tests: chi-square/degrees of
In the first step of the analyses, the 10 subscales (observed variables) were used to replicate the hypothesized four-factor model (Ayers et al., 1996), shown in Figure 1. The four coping factors were allowed to correlate with one another. To test the model, each variable was allowed to load on only one factor, and one variable loading in each factor was fixed to 1.0. The remaining factor loadings, residuals, and correlations among latent factors were freely estimated. The zero-order correlation matrix for the observed variables is presented in Table 1.

The test of the four-factor model resulted in an improper solution due to the constraint of an error variance at the lower bound. A removal of constraints revealed a negative error variance on the Distancing Actions subscale of the Distraction factor. Although negative error variance likely reflects model misspecification (Bollen, 1989), a number of other potential causes should be ruled out (Chen, Bollen, Paxton, Curran, & Kirby, 2001). Following procedures outlined in Chen et al. (2001), it was determined that the negative error variance was not due to structural underidentification (Bollen, 1989; Davis, 1993), univariate or multivariate outliers (Bollen, 1987), or empirical underidentification (Kenny, 1979; Rindskopf, 1984). It was concluded that the cause of the improper solution was misspecification of the model.2

An examination of the standardized factor loadings assisted in determining where the lack of fit in the model occurred. The negative error variance for the Distancing Actions subscale was associated with a value for the factor loading larger than 1.00 (λ = 1.04). Further, when compared to other standardized factor loadings in the model, the factor loading for the Physical Release of Emotion subscale on the Distraction Coping factor was markedly lower (λ = 0.54). Therefore, the two subscales on the Distraction Coping factor, Physical Release of Emotions and Distracting Actions, were targeted for restructuring. Alternative models were tested and a three-factor model, omitting Physical Release of Emotions and placing Distracting Actions on the Avoidant Coping factor, was most conceptually sound and resulted in the best fit, $\chi^2(24) = 27.32, p = .29; CFI = .99; SRMR = .02$, and evenly distributed factor loadings. However, the correlation between the Active Coping factor and Avoidant Coping factor was .90 ($p < .05$), indicating that the variables shared 81% of their variance. Therefore, when controlling for measurement error, the two concepts had more than 4 times as much in common as they had distinct from one another.

To further explore the high intercorrelation between the factors, a random intercept factor analysis was conducted with the revised

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Table 1

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<td>14. Daily hassles</td>
<td>.11</td>
<td>.06</td>
<td>.09</td>
<td>.13**</td>
<td>.18**</td>
<td>.20**</td>
<td>.15**</td>
<td>.12**</td>
<td>.13**</td>
<td>.20**</td>
<td>.39**</td>
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<td>.93**</td>
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<td>15. Major life events</td>
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<td>.05</td>
<td>.04</td>
<td>.14**</td>
<td>.12**</td>
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<td>.73**</td>
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<td>16. Controllable stressors</td>
<td>.22**</td>
<td>.14**</td>
<td>.15**</td>
<td>.21**</td>
<td>.26**</td>
<td>.27**</td>
<td>.15**</td>
<td>.14**</td>
<td>.21**</td>
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<td>17. Uncontrollable stressors</td>
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<td>.07</td>
<td>.06</td>
<td>.12**</td>
<td>.13**</td>
<td>.07</td>
<td>.06</td>
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<td>0.63</td>
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<td>0.68</td>
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<td>0.70</td>
<td>0.72</td>
<td>0.67</td>
<td>9.59</td>
<td>9.62</td>
<td>35.08</td>
<td>19.58</td>
<td>16.61</td>
<td>11.85</td>
<td>24.07</td>
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</table>

*p < .05. **p < .01.

2 The current study utilized confirmatory factor analytic (CFA) procedures to respecify the model rather than exploratory factor analytic (EFA) procedures. In situations where there is sufficient theoretical and empirical basis to specify the model, CFA is a better approach than EFA because CFA allows for focused hypotheses testing (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Identifying higher order categories that reflect the distinctions between lower order categories of coping is important and requires a priori model testing (Skinner et al., 2003). Measures of child coping developed with EFA have been difficult to interpret because EFA requires a post hoc inference of meaning of factors, resulting in scales that are difficult to label, minimally related to coping constructs, and nonreplicable (Ayers et al., 1996; Skinner et al., 2003). Further, EFA procedures increase the likelihood of chance findings and a wide range of solutions for the factor pattern, both of which affect cross-validation (Fabrigar et al., 1999).
three-factor model (Maydeu-Olivares & Coffman, 2006)\(^3\). The random intercept factor analysis constituted an extra factor with loadings of 1.0 on all the indicator variables, thus controlling for individual differences in the tendency to rate items (and thereby subscales) high or low. Consistent with Maydeu-Olivares and Coffman (2006), the variances of the four coping factors were fixed to 1.0 for identification. The random intercept factor analysis resulted in a good fit, \(\chi^2(24) = 27.46, p = .24; \text{CFI} = .99; \text{SRMR} = .02\), and evenly distributed factor loadings. The fit indexes for the random intercept three-factor model were almost identical to the factor loadings for the original three-factor model. Again, the correlation between the Active Coping factor and

\[\text{Figure 1. Four-factor model of the Children’s Coping Strategies Checklist.}\]

\(\text{We thank an anonymous reviewer for the suggestion to conduct a random intercept factor analysis to assess for potential response bias.}\)
Avoidant Coping factor was .90 ($p < .05$), suggesting that any potential response bias was not distorting the results of the factor analysis. The final model is presented in Figure 2.

**Tests of Invariance Across Participant Gender**

A series of multigroup confirmatory factor analyses in EQS were used to conduct all tests of measurement invariance. Invariance was examined by using the following levels: configural invariance, weak invariance, strong invariance, strict invariance, and complete structural invariance (Vandenberg & Lance, 2000).

As recommended by Cheung and Rensvold (2002), the $\Delta$CFI was used to test between-groups invariance, with a value of $\Delta$CFI $\leq - .01$ indicative of invariance. Configural invariance was examined by assessing overall model fit in each group. For both males, $\chi^2(24) = 10.05, p = .99$; CFI = 1.00; SRMR = .01, and females, $\chi^2(24) = 31.87, p = .07$; CFI = .99; SRMR = .02, the three-factor model resulted in good fit and did not require respecification for either group. The initial model, with all parameters free to vary across the two samples, resulted in $\chi^2(48) = 46.44, p = .35$; CFI = 1.00; SRMR = .02. Weak invariance was examined by constraining the factor loadings to be equal across both gender

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*Figure 2.* Final three-factor model of the Children’s Coping Strategies Checklist. The Physical Release of Emotions subscale was omitted, and the Distracting Actions subscale loaded on the Avoidant Coping factor.
groups. The simultaneous solution with the factor loadings con-
strained produced $\chi^2(54) = 57.29, p = .35; CFI = .99; SRMR =
.04$. The $\Delta$CFI = .01, suggesting that the underlying factor structure
was invariant across gender.

Strong invariance was tested by examining the invariance of the
latent mean structures. The multigroup model showed good fit for
both groups, $\chi^2(60) = 75.07, p = .09; CFI = .99; SRMR = .04$.
An examination of the three-factor intercepts (representing the
latent mean values of Active, Avoidant, and Support-Seeking
Coping) for the female group demonstrated that factor intercepts
were not significant. These findings suggested that there were no
significant mean differences across gender for active, avoidant, or
support-seeking coping. Strict invariance was tested by constrain-
ing the residual variances. The results demonstrated that the
$\Delta$CFI < .01, with $\chi^2(72) = 98.43, p = .02; CFI = .99; SRMR =
.06$. Complete invariance was tested by constraining all parameters
to be equal across groups. The simultaneous solution produced
$\chi^2(75) = 103.96, p = .01; CFI = .99; SRMR = .05$. The $\Delta$CFI <
.01, indicating no significant difference between the models, sug-
forgetting that the variance and covariance patterns were consistent
across groups.

**Cluster Analysis to Identify Coping Groups**

Standard cluster analytic procedures were used to classify ado-
lescents into coping groups on the basis of their pattern of coping
behavior across the nine remaining coping subscales (i.e., exclud-
ing the Physical Release of Emotion subscale). Due to the high
correlation between coping factors described above, the variables
were person-mean centered prior to the analyses to emphasize
pattern differences across individuals. All of the coping subscales
were measured on the same scale (range of 0–4). First, agglom-
erative hierarchical cluster analysis was conducted to establish the
number of clusters in the sample. Then, k-means cluster analysis
procedures were used to group individuals. For the hierarchical
procedures, solutions for two-clusters through seven-clusters were
tested using Ward’s (1963) method with squared Euclidean dis-
ances, as proposed by Milligan and Sokol (1980). An examination of
the agglomeration schedule, dendrogram, and percentages of
individuals in each cluster for each solution indicated that a two-
cluster solution provided the most interpretable pattern and max-
imized the homogeneity of individuals within clusters and the
heterogeneity of individuals between clusters. Using the two-
cluster solution and initial cluster centers obtained from the hier-
archical analysis, a k-means cluster analysis was computed to
reassign observations on the basis of the minimization of distances
between each observation and cluster centers.

Although the selection of two clusters was conducted by evalu-
ating the agglomeration schedule and other procedures above,
confidence was assessed through the Breckenridge (2000) valida-
tion procedure. Replication analyses or cross-validation proce-
dures are the recommended method of validating cluster solutions
(Mandara, 2003). Consistent with these procedures, the current
sample was randomly divided into two subsamples (ns = 245 and
252). Next, hierarchical cluster analysis using Ward’s method and
squared Euclidian distances was conducted on Sample A. An
examination of the agglomeration schedule, dendrogram, and per-
centages of individuals in each cluster for each solution indicated
that a two-cluster solution best represented the data. A k-means
cluster analysis (MacQueen, 1967; Steinley, 2006) was computed
using two clusters. Then, a hierarchical cluster analysis was re-
peated with Sample B, and the results again indicated a two-cluster
solution. Next, a k-means cluster analysis, using two clusters, was
conducted on Sample B, followed by a second k-means cluster
analysis on Sample B, using the cluster centers from Sample A.
Finally, as suggested by Milligan and Cooper (1986) and Steinley
(2004), the cluster memberships from the two k-means cluster
analyses with Sample B were compared for agreement using
Hubert and Arabie’s (1985) adjusted Rand index. The similarity
between the two clusters was .78, indicating moderate agreement
(Steinley, 2004). The $2 \times 2$ contingency table is presented in Table
2. As a further test of the validity of the solution, a k-means cluster
analysis was conducted with Sample A using the cluster centers
obtained from Sample B. The agreement between these two solu-
tions, as demonstrated by the Hubert-Arabie adjusted Rand index,
was .70, again indicative of moderate agreement. Thus, based on
the findings from the Breckenridge validation procedure, the two-
factor solution obtained with the full sample was retained.

For the k-means analysis with the entire sample, there were no
differences in gender distribution, $\chi^2(1) = 0.20, p = .65$, or grade
distribution, $\chi^2(2) = 0.95, p = .62$, within groups. The means for
both clusters on the nine coping subscales are presented in Figure
3. The first cluster, characterizing 41% of the participants ($n =
206$), demonstrated a strong reliance on avoidant strategies, as
evidenced by a significant difference between the mean of
avoidant actions and cognitive avoidance in comparison to the
means of other coping variables ($p < .001$), and means for these
variables were more than half a standard deviation higher than the
sample means. Further, the group demonstrated relatively low
levels of support-seeking coping strategies, with the means for
both emotion-focused support seeking and problem-focused sup-
port seeking significantly lower than the means for the remaining
coping variables ($p < .001$) and more than half a standard devi-
ation lower than the sample mean. Thus, the first cluster was
labeled self-reliant avoidant copers. The second cluster, labeled
diversified copers, characterized 59% ($n = 291$) of the partici-
ants. Overall, this group showed a moderate use of all coping
strategies with fewer significant differences among strategies. The
two clusters did not differ from one another on three of the four
active coping variables. However, Cluster 1 used significantly less
cognitive decision-making ($p = .001$) than did Cluster 2. Cluster 1
also used significantly less social support-seeking ($p < .001$)
and significantly more avoidant strategies ($p < .001$) than did
Cluster 2.

Table 2

<table>
<thead>
<tr>
<th>Cluster from Subsample B</th>
<th>Cluster from Subsample A × B</th>
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<tbody>
<tr>
<td>1</td>
<td>129</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
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</table>

*Note.* A × B refers to clusters derived from Subsample B using cluster centers from Subsample A. Hubert-Arabie adjusted Rand index = .78.
Tests of Group Differences

As suggested by Milligan (1996), external criterion analysis was used to test for differences across coping groups on stress and psychological symptoms. Stressors (total stress, daily hassles, major life events, controllable and uncontrollable stressors) and psychological symptoms (internalizing and externalizing) were examined as dependent measures in a series of 3 (coping group) × 2 (gender) multivariate analyses of variance (MANOVAs).

Relation of coping group to stressful experiences. The MANOVA for stressful experiences resulted in a significant multivariate effect of coping group, with Wilks’ $\lambda = .97$, $F(4, 488) = 3.50, p = .008, \eta^2 = .03$. Univariate tests showed a difference in major life events, $F(1, 491) = 5.88, p = .01, \eta^2 = .01$, with Cluster 2 experiencing major life events more frequently ($M = 78.41, SD = 18.51$) than Cluster 1 ($M = 74.77, SD = 13.31$).

Relation of coping group to psychological functioning. The MANOVA for internalizing and externalizing symptomatology resulted in a nonsignificant multivariate effect of coping group, with Wilks’ $\lambda = .99$, $F(2, 492) = 1.67, p = .19, \eta^2 = .01$, suggesting no differences between the groups on levels of symptomatology.

Relation of stressors to psychological functioning within coping groups. Finally, correlations between stressors and symptoms were examined for possible differences between groups. Correlations between each of the stressor variables and each of the psychological outcome variables were significant in both clusters. Cohen, Cohen, West, and Aiken’s (2002) test for differences in the strength of correlations revealed no significant differences between clusters.

Discussion

To our knowledge, the present study is the first to examine the psychometric properties of the CCSC in an African American low-income urban sample. The original four-factor model of coping was not confirmed in the current sample, inconsistent with prior research (Ayers et al., 1996; Gonzales et al., 2001; Sandler et al., 1994). The primary reason for this finding was the inability of the Physical Release of Emotions subscale to load on its original factor (Distracting Actions). A revised three-factor model of coping, omitting Physical Release of Emotions and loading Distracting Actions on the Avoidant Coping factor, yielded a significantly better fit to the data. The Physical Release of Emotions subscale includes the following items: “go bicycle riding,” “play sports,” “go skateboard riding or roller skating,” and “do some exercise.” In the present sample, the mean for this subscale was significantly lower than for all other subscales.
distracting coping activities that can be done inside (e.g., reading, watching television, listening to music). Additional cross-validation analyses are warranted to test these hypothesized interpretations.

The derived three-factor model of coping demonstrated both factorial and structural invariance across gender, suggesting that coping strategies were organized along the same dimensions for male and female adolescents in the current sample. Although there is substantial evidence of gender differences in the use of particular coping strategies (Clark et al., 2002; Grant et al., 2000; Tolan et al., 2002), existing factor analytic studies have found no evidence that coping strategies cluster differently to form different factors for African American boys and girls (Tolan et al., 2002). Additionally, tests of invariance of latent mean structures demonstrated that males and females did not differ with regard to the three latent coping factors: Active, Avoidant, and Distraction Coping. We are unaware of existing studies on youth coping that examined the invariance of latent mean structures across gender. Additional research is warranted to replicate the findings of the current study.

The finding that the coping factors (including active and avoidant strategies) were positively correlated is new to coping research (Lapp & Collins, 1993; Vitaliano, Mauro, Russo, & Becker, 1987); other studies with children and adolescents have demonstrated significant positive intercorrelations between active and avoidant (Ayers et al., 1996; Dempsey, 2002; Grant et al., 2000) or engagement and disengagement coping (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000), even though research has demonstrated that such strategies show different relations to outcomes (Compas et al., 2001). Most measures of coping, including the measure used in the current study, assess coping behaviors in terms of “frequency of use,” and highly stressed populations show a tendency to use comparable levels of several different types of coping strategies rather than a preference for particular types of strategies, regardless of the effectiveness or ineffectiveness of the strategies (Dempsey, 2002; Pearlman & Schooker, 1978).

Although prior research has demonstrated high correlations between active and avoidant coping, the correlations in the current study were even higher than those reported in other studies of the CCSC (Ayers et al., 1996; Gonzales et al., 2001; Sandler et al., 1994), and thus we examined the distinctiveness of the constructs in the present sample. One possible explanation for why active and avoidant coping appear to be especially related in the present sample is that dangerous neighborhoods require youth to avoid a number of risky situations in order to maintain physical and mental health (Grant et al., 2000). Thus, particular avoidance strategies (e.g., avoiding particular places) might also represent active strategies in the context of urban poverty.

Coping Patterns and Their Relation to Stressors and Psychological Outcomes

Results of cluster analysis yielded two coping groups—self-reliant avoidant copers and diversified copers. Self-reliant avoidant copers were characterized by high levels of avoidant coping strategies, moderate levels of active coping, and low levels of support-seeking coping. Diversified copers showed moderate use of all coping strategies, with very few differences among strategies. The two clusters did not differ from one another in their use of active coping, with the exception of cognitive decision-making. Self-reliant avoidant copers used significantly less social support-seeking and significantly more avoidant strategies than did diversified copers.

Analysis of associations among coping clusters, stressors, and psychological symptoms revealed that diversified copers reported experiencing major life events more frequently than did self-reliant avoidant copers. The two groups did not differ on internalizing or externalizing symptoms. Although this pattern of findings could be suggestive of a weaker link between major events and symptoms for diversified copers, no significant differences in the strength of associations between stressors and symptoms emerged across groups. These results suggest that both clusters bring relatively equivalent strengths and weaknesses to coping with the stressors of urban poverty. Further, they are consistent with the idea that youth may not yet have developed specific coping strategies for managing particular types of stressful life experiences (Erickson, 1968; Rasmussen et al., 2004).

Limitations, Strengths, and Conclusions

The current study contributes to the literature in a number of ways. First, the current study may be the only study to date to examine the factor structure of the CCSC within one ethnic group. Thus, it is among a handful of studies to provide information regarding the heterogeneity of a particular population, specifically urban, low-income African American adolescents. Second, both variable-centered and person-centered analyses were used to investigate the applicability of a widely used coping measure (i.e., the CCSC) to this population. Finally, use of confirmatory factor analysis is an improvement over previous studies that have used exploratory factor analytic procedures, which increases the likelihood of chance findings.

Although there are a number of strengths, the current study has some limitations. First, the generalizability of the findings are limited to African American adolescents that reside in urban, low-income neighborhoods, as African American adolescents who reside in middle- to high-income neighborhoods may rely on different patterns of coping strategies due to the lower number of stressors experienced. Second, all measures were collected via adolescent report. Due to the variability obtained, it does not appear that the problem of shared method variance affected the results. Nonetheless, future research would benefit from inclusion of multiple informants (e.g., parents, teachers) to ensure a broader perspective on the variables examined. Additionally, the current study utilized Ward’s (1963) method to generate start values for the k-means clustering analysis. Although recommended (Milligan & Sokol, 1980), start values generated from Ward’s method may produce a clustering result that is locally optimal, rather than globally optimal, for a given data set (MacQueen, 1967). Steinley (2003) found that a multiple random starting strategy, which conducts the k-means analysis several times with different start values, outperforms all methods. Programs that perform these analyses are not easily accessible at the present time, but future cluster analysis research may benefit from the use of such programs (Steinley, 2003, 2006). The present study was also limited by its cross-sectional design. There is a need for additional prospective research to further examine the complex ways in which...
stressors, coping, and symptoms are related to one another over time in similar samples.

Results suggest there are unique ways in which coping strategies on the CCSC cluster together in low-income urban African American youth, underscoring the importance of studies that examine the relevance of existing coping measures for populations that are poorly represented in the coping literature. Future research should continue to investigate the complex ways in which demographic characteristics of various populations, as well as environmental influences, may impact the validity of items that assess coping strategies and their factor structures.

References


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