Psychological Assessment
2006, Vol. 18, No. 3, 278–288

1040-3590/06/$12.00 DOI: 10.1037/1040-3590.18.3.278

Factor Structure of Coping: Two Studies of Mothers With High Levels of Life Stress

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Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to investigate the factor structure of coping in mothers with high levels of life stress. In Study 1, EFA of the Coping Orientation to Problems Experienced (C. S. Carver, M. F. Scheier, & J. K. Weintraub, 1989) in a sample of mothers of full-term or very low birth weight 2-year-old children yielded 7 reliable coping factors. Each factor accounted for significant variance in at least 1 of 6 outcomes measuring maternal–child well-being. In Study 2, CFA was used to cross-validate the EFA model on the basis of the responses of mothers of 2-year-old children with prenatal polysubstance exposure. CFA results revealed a moderately good fit, confirming the factor structure in a 2nd, independent sample of mothers with high levels of life stress.

Keywords: factor analysis, coping, stress, mothers, 2-year-old children

Coping is defined as cognitive and behavioral efforts to manage demands that are appraised as overwhelming or taxing the individual's resources (Folkman & Lazarus, 1991). The process of coping is transactional, involving iterative appraisal and modification of stressors, resources, coping, and outcomes (Lazarus & Folkman, 1984). Coping effectiveness hinges on the characteristics, values, and goals of the individual; the type and phase of the stressful event; and the particular outcomes selected for assessment (Folkman & Moskowitz, 2004). Substantial data indicate that coping plays a central role in adaptation to stressful life events, and a proliferation of coping studies over the past 4 decades has been driven by a search not only for an understanding of variability in adaptation to stress, but also for a way to inform interventions to improve adaptation to specific stressors (Coyne & Racioppo, 2000).

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This study was supported by Grants MCJ-390592 and MC-00127 from the Maternal and Child Health Program, Health Resources and Services Administration, Department of Health and Human Services; Grant NIH-HL-3811193 from the National Institutes of Health; and Grant RO1 07957 from the National Institute on Drug Abuse.

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Maternal coping in particular has aroused great research interest because it is correlated with maternal and child well-being across a wide range of populations (Heinicke, 1995). Maternal coping has been shown to predict quality of maternal–child interactions (Smith Bynum & Brody, 2005), maternal perceptions of the child (Hastings, Allen, McDermott, & Still, 2002), child developmental outcomes (Levy-Shiff, Dimitrovsky, Shulman, & Har-Even, 1998; Veddovi, Gibson, Kenny, Bowen, & Starte, 2004), and maternal psychological distress (Eisengart, Singer, Fulton, & Baley, 2003). In turn, maternal psychological distress predicted quality of maternal parenting behavior (Singer et al., 2003) and child developmental outcomes (Singer et al., 1999). However, despite strong evidence supporting a link between maternal coping and maternal–child outcomes, overly broad classifications of coping and inconsistent results have limited the usefulness of findings. For example, maternal psychological distress was found to be positively correlated with active/problem-focused maternal coping in some studies (Affleck & Tennen, 1991; Affleck, Tennen, & Rowe, 1990, 1991) but negatively correlated with active/problem-focused coping in others (Blankfeld & Holahan, 1996; Thompson, Oehler, Catlett, & Johndrow, 1993). Alternatively, greater maternal psychological distress was predicted by both high approach and high avoidance coping (Atkinson et al., 1995), as well as by greater use of palliative (Thompson et al., 1993), avoidant, and express emotions coping (Barakat & Linney, 1995; Eisengart et al., 2003).

The equivocal findings regarding maternal coping are emblematic of the difficult conceptual and methodological questions that have emerged as investigators have attempted to measure coping and evaluate adaptational outcomes. Research quandaries are due in part to the use of general coping inventories across diverse conditions, despite the contextual and individual nature of coping,

the functional heterogeneity of specific coping strategies within larger coping classifications, and the use of broad-band coping categories (e.g., maladaptive or adaptive) that fail to differentiate among unique coping strategies and thereby limit interventional applicability of findings (Coyne & Racioppo, 2000). Because most coping measures were derived empirically, theoretically relevant dimensions of coping often have been omitted, and items frequently lack clarity in describing the purpose of a coping strategy and implications for outcome (Carver, Scheier, & Weintraub, 1989).

Another central issue is that complex decisions concerning selection of factor analytic methods and application of analytic procedures have led to inconsistencies in the development of coping scales, as well as difficulty in replicating findings across studies (Floyd & Widaman, 1995). Few investigators have successfully confirmed the construct validity, reliability, and factor structure of instruments commonly used to measure coping (Parker & Endler, 1992). Consequently, although a large volume of coping data has been generated, optimal ways for individuals to cope with particular stressors have not yet been distinguished (Costa, Somerfield, & McCrae, 1996).

Research Goals and Hypotheses

Given the importance of maternal coping and the ambiguity of findings, further research is warranted. Accurate measurement of discrete, clinically relevant, condition-specific maternal coping strategies is a prerequisite to such research. Therefore, we attempted to explore the factor structure of coping in a sample of mothers with high levels of life stress and to develop a model of coping that would have clinical applicability for this applied population. Although coping is best measured within a circumscribed context (Coyne & Racioppo, 2000), investigators conducting exploratory factor analysis (EFA) must be wary of using overly homogeneous samples (Fabrigar, Wegener, MacCallum, & Strahan, 1999). To make certain that our sample would encompass participants facing high, but varying, levels of life stress, we used a sample of mothers whose 2-year-old children were born either at full-term or at very low birth weight (VLBW; 1,500g). Mothers of 2-year-olds are likely to experience a high level of life stress, because children typically exhibit both negativism and clingy demandingness at this developmental stage (Greenspan, 1989). Life stress is even higher for mothers of children born at VLBW, because decreasing birth weight is associated with significantly increasing risk of mortality and serious adverse developmental outcomes (Singer et al., 1999). Mothers worry about their VLBW children's survival and potential long-term disabilities and must contend with economic hardship, disruption of work and household routines, and the daily hassles of caring for a child with chronic illness, neurological deficits, or developmental delays (Goldberg & DiVitto, 1995). About one third of mothers of VLBW children suffer increased parenting stress and clinically significant psychological distress (Singer et al., 1999). Whereas maternal psychological distress has global harmful consequences for children's development (Field, 1995), VLBW children are even more vulnerable to these negative effects (Singer et al., 1996; Singer et al., 2003).

We decided to use the Coping Orientation to Problems Experienced (COPE; Carver et al., 1989), a widely used self-report coping inventory, as a starting point in our exploration of maternal coping, for several reasons. First, it is theoretically and empirically grounded, founded on models of behavioral self-regulation (Carver & Scheier, 1981) and stress and coping (Lazarus & Folkman, 1984), as well as a comprehensive review of coping research findings. Second, the COPE has been used previously to evaluate maternal coping in high-risk maternal–child populations (e.g., Eisengart et al., 2003; McIntosh, Stern, & Ferguson, 2004). Third, it includes an ample number of multidimensional, conceptually distinct subscales that we judged to be relevant to coping in mothers with high levels of life stress. Fourth, extensive psychometric data are available to support the construct validity and test–retest reliability of the COPE (Parker & Endler, 1992).

One caveat to the availability of these psychometric data is that efforts to verify the factor structure of the COPE with confirmatory factor analysis (CFA) have been only partially successful. In one study (Clark, Bormann, Cropanzano, & James, 1995), CFA of the COPE revealed a moderate fit for 15-factor and 13-factor models in a sample of undergraduates. A marginal fit for 12- and 14-factor CFA models was found in another sample of undergraduates (Cook & Heppner, 1997). Hasking and Oei (2002) submitted COPE data from two samples to CFA and reported an acceptable fit for a 14-factor model in community drinkers but a poor fit for the same model in alcohol-dependent participants. Finally, CFA failed to confirm the factor structure of the COPE in a sample of drug-using patients on methadone maintenance (Belding, Iguchi, Lamb, Lakin, & Terry, 1996). However, we decided that the lack of confirmatory evidence for the factor structure of the COPE underscored the difficult challenges in replicating findings in coping research and was not a barrier to using the instrument.

Our second goal was to provide evidence of criterion-related validity for our coping model. We planned to conduct a series of separate multiple linear regression analyses to determine whether the EFA-derived coping factors would explain significant variance in maternal outcomes, controlling for biological and social risk factors, including neonatal medical risk, multiple birth, and maternal race and social class. To identify outcomes salient to maternal and child well-being, we took into account Crnic and Acevedo's (1995) recommendation that variables associated with quality of maternal psychological functioning, maternal–child interactions, and child development may serve as appropriate measures of maternal coping effectiveness. We were guided by an ecological model of parenting (Bornstein, 2002) that linked contextual factors, maternal psychological status, maternal–child interactions, and child development. We selected the following six measures of maternal coping effectiveness on the basis of data supporting their associations with maternal and child well-being: sense of parenting competence (Cutrona & Troutman, 1986), maternal attachment to the child (Bornstein, 2002; Field, 1995), maternal perception of child demandingness (Goldberg & DiVitto, 1995), parenting stress (Heinicke, 1995), maternal depression (Field, 1995), and maternal psychological distress (Singer et al., 1997; Singer et al., 1999, 2003).

To formulate specific hypotheses about relationships between coping factors derived by EFA of the COPE (Carver et al., 1989) and these six outcome variables, controlling for biological and social risk factors, we reviewed literature on stress and coping in mothers of healthy and high-risk children. Data revealed that avoidant and emotion-focused coping strategies were consistently associated with greater maternal distress (Barakat & Linney, 1995;

Eisengart et al., 2003; Levy-Shiff et al., 1998; Thompson et al., 1993). Therefore, we hypothesized that avoidant and emotion-focused coping factors would explain significant variance in maternal psychological distress, maternal depression, and parenting strain. Because research (Affleck & Tennen, 1991; Affleck et al., 1990, 1991; Brodsky, 2000; Christian & Barbarin, 2001; Pearce & Axinn, 1998) indicated that religion coping was associated with positive maternal–child outcomes, we hypothesized that coping factors that incorporated religion would explain significant variance in adaptive outcomes. As studies (Singer et al., 1997; Singer, Arendt, Minnes, Farkas, & Salvator, 2000; Singer, Arendt, et al., 2002) linked maternal substance use with poorer maternal–child outcomes, we hypothesized that coping factors that involved substance use would explain significant variance in maladaptive outcomes.

Extant research data regarding active/problem-focused and seeking social support coping were inconsistent. Findings indicated that greater use of active coping predicted greater sense of parenting efficacy and sense of mastery (Hastings et al., 2002; Levy-Shiff et al., 1998), more positive perceptions of the child (Hastings et al., 2002; Smith Bynum & Brody, 2005), and better quality parent–child relationship (Smith Bynum & Brody, 2005), but also greater maternal psychological distress (Affleck et al., 1990, 1991). Greater use of seeking social support predicted greater maternal sense of mastery (Hastings et al., 2002), but also greater maternal psychological distress (Cheng & Tang, 1995; Veddovi et al., 2004) and lower levels of maternal care-giving behaviors (Levy-Shiff et al., 1998). Therefore, we were not able to hypothesize specific relationships between our outcome variables and coping factors that involved active, problem-focused, or seeking social support strategies, but rather we formulated two general hypotheses about the predictive value of the coping factors. We hypothesized that all EFA-derived coping factors conjointly would explain significant variance in all outcome variables. Further, we hypothesized that each of the EFA-derived coping factors would account for significant unique variance in at least one of the outcome variables.

Temporal proximity is important to consider in coping research, because stressors, coping, and outcomes affect one another reciprocally and constantly shift over the course of a stressful event (Lazarus & Folkman, 1984). For that reason, we used coping and outcome data collected concurrently at 24 months postpartum, a distinctly stressful time, when the severity and permanence of VLBW-related disabilities first become evident and psychological distress tends to increase for mothers of the most compromised VLBW children (Singer et al., 1999).

Our third research goal was to cross-validate our results in an independent sample of mothers with high levels of life stress. Therefore, in Study 2, we conducted a CFA of our EFA-derived coping model, using data collected from a sample of socioeconomically disadvantaged mothers of 2-year-old children with prenatal polysubstance exposure (Singer, Arendt, et al., 2002; Singer, Salvator, et al., 2002). Hardships associated with ethnic minority status and lower social class, as well as adversities related to maternal substance use (e.g., higher rates of maternal psychological distress and poorer child outcomes), contributed to high levels of life stress for this sample of mothers (Singer et al., 2000).

Study 1: EFA of the COPE

Method

Participants and Procedure

The sample ($N = 199$) comprised a subset of participants in a longitudinal study (Singer et al., 1999) of maternal and child outcomes after the birth of a VLBW infant. Participants for that study were recruited prospectively from the newborn nurseries and neonatal intensive care units at three hospitals in a four-county region in Ohio. Our sample included three groups of mothers: 77 mothers of high-risk (HR) VLBW children, 43 mothers of low-risk (LR) VLBW, and 79 mothers of healthy full-term (FT) 2-year-old children. Maternal groups differentiated severity of neonatal medical risk, with mothers of HR VLBW infants representing the greatest level of risk, mothers of LR VLBW infants representing a middle level, and mothers of FT infants representing the lowest level. HR VLBW infants were preterm, weighed $<$ 1,500 g at birth, required supplemental oxygen for $>$ 28 days, and had radiologically documented evidence of bronchopulmonary dysplasia, a neonatal respiratory condition that is the leading cause of chronic lung disease in children (Bancalari, 2001) and that has detrimental effects above and beyond those of VLBW (Short et al., 2003). LR VLBW infants were preterm, weighed $<$ 1,500 g at birth, required oxygen supplementation for $<$ 14 days, and had no radiologic evidence of bronchopulmonary dysplasia. FT infants were $>$ 36 weeks gestational age, weighed $>$ 2,500 g at birth, and had no medical illnesses or birth anomalies. Multiple birth (i.e., birth of twins, triplets, or quadruplets versus birth of a singleton infant) occurred in 16% ($n = 12$) of mothers of HR VLBW infants, 40% ($n = 17$) of mothers of LR VLBW infants, and 5% ($n = 4$) of mothers of FT infants. Exclusionary criteria included infant congenital malformations; maternal psychiatric or physical disorders, mental retardation, or human immunodeficiency virus; maternal illicit drug use during pregnancy; and residence $>$ 2 hr driving distance from the test site.

Because preterm birth and VLBW occur three times more frequently among socioeconomically disadvantaged women compared with middle class women (Hughes & Simpson, 1995), a partial stratification sampling strategy was used to ensure that there were no group differences in race or social class. Middle and higher social class mothers of VLBW infants were actively recruited. For each HR VLBW infant enlisted in the study, a LR VLBW infant of the same race and social class and the next born FT infant of the same race and social class were recruited. Fifty-three percent ($n = 106$) of the sample was African American. Mean social class was 3.57 ($SD = 1.10$), as determined by the Hollingshead Two-Factor Index of Social Position (Hollingshead, 1957), a composite measure of occupation and education with a range of categories from 1 (highest) to 5 (lowest). Sixty percent of the sample was in the socioeconomically disadvantaged range (i.e., Hollingshead Categories 4–5). Mothers who consented to participate were given $25 and were mailed packets of self-report questionnaires at 1, 8, 12, 24, and 36 months postpartum, with dates corrected for preterm birth. Coping and outcome data from the 24-month questionnaires were used for the current study. Demographic data were obtained from mothers and from hospital records.

Measures

Maternal coping. Maternal coping was assessed with the COPE (Carver et al., 1989), a self-report questionnaire consisting of 60 items yielding 15 subscales that assess conceptually distinct, theoretically derived dimensions of coping. Respondents use a 4-point Likert-type scale, ranging from 1 (*I usually don't do this at all*) to 4 (*I usually do this a lot*), to indicate the way they cope with stressful situations. Subscales include Acceptance, Active, Alcohol–Drug Disengagement, Behavioral Disengagement, Denial, Focus on and Venting of Emotion, Humor, Mental Disengagement, Planning, Positive Reinterpretation and Growth, Restraint, Seeking Social Support for Emotional Reasons, Seeking Social Support for

Instrumental Reasons, Suppression of Competing Activities, and Turning to Religion. Carver et al. (1989) reported internal consistency coefficients from .45 to .92 and test–retest reliability from .46 to .86. The COPE can be worded to assess either dispositional coping (*How I usually cope with things*) or situational coping (*How I coped with a specific situation*). For the current study, mothers were instructed to answer with regard to how they had coped since the time they had completed the previous questionnaires (i.e., at 12 months' child-corrected age, 1 year prior). Mothers were not asked specifically how they had coped with parenting.

Parenting Stress Index. The Parenting Stress Index (PSI; Abidin, 1986), a self-report inventory that assesses the degree and source of stress in parent–child systems, was used to assess maternal attachment, sense of competence, depression, perception of child demandingness, and parenting stress. The PSI yields 13 scale scores measuring levels of stress arising from difficulties in specific parenting realms, as well as 4 summary scores measuring Parent Domain Stress, Child Domain Stress, Total Parenting Stress, and Life Stress. The Attachment scale was used to measure maternal feelings of emotional bonding with the child, and the Sense of Competence scale was used to measure maternal self-confidence in knowledge and skills required to parent the child successfully. These two scales were reverse-coded to reflect positive attributes, rather than stress arising from problems in these realms. The Depression scale was used to measure maternal feelings of guilt, unhappiness, withdrawal, and dissatisfaction with self and life situation, but it is not synonymous with a diagnosis of clinical depression (Abidin, 1986). The Demandingness scale was used to assess the mother's perception of the child as putting too many demands on her, such as frequently requiring help, complaining of numerous minor problems, physically hanging on her, or not being compliant. The Total Parenting Stress summary score was used to evaluate overall maternal parenting stress.

The Brief Symptom Inventory. The Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983) is a widely used 53-item self-report questionnaire that yields nine psychiatric symptom dimensions and three global indices of psychological distress. The Global Severity Index is the most sensitive of these indices (Derogatis & Melisaratos, 1983) and was used in the current study to measure clinically significant maternal psychological distress. A square-root transformation of the Global Severity Index was used for statistical analyses to correct the skewed distribution, but original scores are reported in the tables.

Results

Group Differences in Maternal Coping

The study design ensured that there were no group differences in maternal race or social class, but groups differed in severity of neonatal medical risk and occurrence of multiple birth. Therefore, multivariate analysis of variance was used to explore the effects of neonatal medical risk and multiple birth on maternal coping. No significant group differences were found, and accordingly, coping data from all three maternal groups were combined for subsequent analyses. Previous findings (Spear, Leef, Epps, & Locke, 2002) that parental coping was not correlated with severity of infant medical illness provided additional support for our decision to combine coping data across groups.

Principal Components Analysis (PCA) of COPE Items

Carver et al. (1989) used PCA as an extraction method with an oblique rotation, to allow for correlation among factors. Although Floyd and Widaman (1995) recommended using principal axis factoring for EFA, we attempted to replicate the methodology of Carver and colleagues and therefore chose PCA as our extraction method. For the present study, both oblique and orthogonal rotation methods were run, and structures were found to be equivalent. That is, the two methods yielded the same number of factors with the same items and comparable sizes of factor loadings on each factor and explained the same percentage of total variance. Only results of the orthogonal (i.e., varimax) rotation are reported here, because this rotation method tends to yield more generalizable solutions (Stevens, 1996).

Unconstrained PCA of COPE items indicated 16 eigenvalues $>$ 1 and generated a Scree plot that did not break distinctly but instead leveled off gradually at about the seventh factor, giving no definitive indication of how many components should be retained. Results were uninterpretable, with low factor loadings and theoretically discordant items loading together on some factors. Another PCA was run, restricting extraction to 11 factors, in an attempt to replicate exactly Carver et al.'s (1989) original analysis, but again, loadings were low and factors were not interpretable.

Next, all 60 COPE items were submitted to three additional PCA runs, forcing extraction of eight, seven, and six factors, respectively, because, as noted earlier, the Scree plot had leveled off at about the seventh factor. After rotation, the seven-factor solution was retained preliminarily because it fit the data best, was meaningfully interpretable, and comprised all major theoretical dimensions of coping, including active/problem focused, avoidant, and emotion focused (Lazarus & Folkman, 1984), as well as additional coping methods tested empirically, including religion (Christian & Barbarin, 2001), humor (Eisengart et al., 2003), seek social support (Affleck et al., 1990, 1991), and substance use (Hasking & Oei, 2002).

PCA was run twice again, and items with factor loadings $<$ .50 or cross-loadings $>$ .3 on a second factor were dropped each time, following Floyd and Widaman's (1995) recommendation. As shown on Table 1, the final model comprised 41 items loading on seven factors and accounted for 60% of the total variance. The first factor was named Problem-Solving and contributed about 16% of the variance. The second factor was named Religion and contributed about 8% of the variance. The third factor, named Seek Social Support, also contributed about 8%. The fourth and fifth factors were named Humor and Avoidant, respectively, and each one contributed about 7% of the variance. The sixth and seventh factors, named Substance Use and Express Emotions, each contributed about 6% of the variance.

Items were unit weighted and summed to compute factor scores (Floyd & Widaman, 1995). Means and standard deviations for the seven factors are shown in Table 2. Cronbach's alpha coefficients ranged from .92 to .73 (see Table 2). Factor intercorrelations were low, with most $<$ .2 (see Table 3). One exception was a moderate correlation between Express Emotions and Seek Social Support.

Multiple Regression Analyses

To test our hypotheses that the PCA-derived factors would contribute significant variance to each of the six outcome variables, over and above that contributed by biological and social risk factors, we tested six separate hierarchical regression models. For each regression model, one of the outcome variables was used as a criterion; neonatal medical risk (i.e., maternal group), maternal race, social class, and multiple birth were entered in a block on Step 1; and the seven coping factors were entered in a block on

Table 1
Item-Level Principal Components Analysis (PCA) of the COPE

COPE items (Intended COPE scale)	PCA loadings on coping factors (F1–F7)						
	F1	F2	F3	F4	F5	F6	F7
39. I think about how I might best handle the problem. (Planning)	**.79**	.13	.11			−.19	
56. I think hard about what steps to take. (Planning)	**.73**						.16
58. I do what has to be done, one step at a time. (Active)	**.72**	.14	.10		−.21		
59. I learn from the experience. (Positive Reinterpretation)	**.71**	.15			−.21		
38. I look for something good in what is happening. (Positive Reinterpretation)	**.70**	.17	.18	.15			
41. I make sure not to make matters worse by acting too soon. (Restraint)	**.67**						−.11
32. I try to come up with a strategy about what to do. (Planning)	**.66**			.20	−.26		.26
29. I try to see it in a different light, to make it seem more positive. (Positive Reinterpretation)	**.65**		.26	.14			
44. I accept the reality of the fact that it happened. (Acceptance)	**.62**	.16	.15		−.24		
42. I try hard to prevent other things from interfering with my efforts at dealing with this. (Suppress Competing Activities)	**.61**	.10			.19		.26
25. I take additional action to try to get rid of the problem. (Active)	**.60**		−.10	.24			.27
10. I restrain myself from doing anything too quickly. (Restraint)	**.59**						
49. I force myself to wait for the right time to do something. (Restraint)	**.55**	.22		.21	.10		
54. I learn to live with it. (Acceptance)	**.52**		.17	−.10		−.14	−.12
5. I concentrate my efforts on doing something about it. (Active)	**.51**	.14	.13	.10	−.17		.15
18. I seek God's help. (Turning to Religion)	.17	**.91**					
7. I put my trust in God. (Turning to Religion)	.16	**.89**					
48. I try to find comfort in my religion. (Turning to Religion)	.26	**.85**					
60. I pray more than usual. (Turning to Religion)	.19	**.85**					
52. I talk to someone about how I feel. (Seek Social Support—Emotional)	.17		**.83**			−.11	.16
11. I discuss my feelings with someone. (Seek Social Support—Emotional)	.20		**.77**			−.16	.16
34. I get sympathy and understanding from someone. (Seek Social Support—Emotional)			**.72**	.15	.12		.10
23. I try to get emotional support from friends or relatives. (Seek Social Support—Emotional)	.20	.23	**.71**	.10			.27
4. I try to get advice from someone about what to do. (Seek Social Support—Instrumental)	.12		**.71**				.12
50. I make fun of the situation. (Humor)				**.86**			
20. I make jokes about it. (Humor)				**.85**	.14		
8. I laugh about the situation. (Humor)	.13	.16	.10	**.80**			
36. I kid around about it. (Humor)			.18	**.79**			
40. I pretend that it really hasn't happened. (Denial)			−.13		**.80**	.14	.10
16. I daydream about things other than this. (Mental Disengagement)					**.67**	.11	
27. I refuse to believe that it has happened. (Denial)	−.12			.17	**.66**	.27	
37. I give up the attempt to get what I want. (Behavioral Disengagement)					**.60**		
57. I act as though it hasn't even happened. (Denial)	−.14				**.59**		
12. I use alcohol or drugs to make myself feel better. (Alcohol–Drug Disengagement)			.12			**.82**	
35. I drink alcohol or take drugs in order to think about it less. (Alcohol–Drug Disengagement)					.13	**.81**	
26. I try to lose myself for a while by drinking alcohol or taking drugs. (Alcohol–Drug Disengagement)	−.15		−.12		.25	**.80**	.11
53. I use alcohol or drugs to help me get through it. (Alcohol–Drug Disengagement)			−.15		.25	**.70**	.11
3. I get upset and let my emotions out. (Focus on and Ventilate Emotions)			.21				**.74**
28. I let my feelings out. (Focus on and Ventilate Emotions)	.20		.19				**.73**
17. I get upset and am really aware of it. (Focus on and Ventilate Emotions)		−.11		.12			**.70**
46. I feel a lot of emotional distress, and I find myself expressing those feelings a lot. (Focus on and Ventilate Emotions)			.23	−.13			**.68**

Note. Significant loadings are in boldface. For ease of interpretation, loadings < 1 are not reported. COPE = Coping Orientation to Problems Experienced scale; F = factor; F1 = Problem-Solving; F2 = Religion; F3 = Seek Social Support; F4 = Humor; F5 = Avoidant; F6 = Substance Use; F7 = Express Emotions.

Step 2. As can be seen in Table 4, the coping factors conjointly contributed significant variance to each of the criterion variables. In addition, examination of the beta weights indicated that each of the seven coping factors accounted for significant unique variance in at least one of the six outcome variables, controlling for the contribution of biological and social risk factors, as well as for that of the other coping factors.

Discussion

EFA of the COPE (Carver et al., 1989) yielded a seven-factor model that explained 60% of the total variance in a sample of mothers whose 2-year-old children had been born either FT or VLBW. Reliability for the factors was good to very good. Low to moderate factor correlations provided preliminary evidence that

Table 2
Coping Factors: Means ± Standard Deviations, Range, and Internal Consistency Coefficients for Study 1

Coping factor	*M* ± *SD*	Range	α
Problem-Solving	40.78 ± 8.03	17–65	.91
Religion	12.04 ± 3.78	4–16	.92
Seek Social Support	13.65 ± 3.37	5–20	.85
Humor	7.28 ± 2.61	4–16	.86
Avoidant	7.25 ± 2.43	5–17	.73
Substance Use	4.47 ± 1.44	4–13	.82
Express Emotions	9.94 ± 2.83	4–16	.74

the factors represented distinct dimensions of coping in this sample of mothers. Although results did not support the original factor structure of the COPE, the seven-factor model was conceptually congruent with it. Four of the seven factors (i.e., Religion, Humor, Substance Use, and Express Emotions) comprised items identical to those on the four corresponding COPE subscales (i.e., Turning to Religion, Humor, Alcohol–Drug Disengagement, and Focus on and Ventilation of Emotions), indicating good stability for these factors across diverse samples. The remaining three factors (i.e., Problem-Solving, Seek Social Support, and Avoidant) were theoretically comparable to the remaining scales of the COPE. The Problem-Solving factor of the seven-factor model incorporated items from the COPE subscales Acceptance, Active Coping, Planning, Positive Reinterpretation, Restraint, and Suppression of Competing Activities. Conceptually, the Problem-Solving factor, as well as the associated COPE scales, may be considered coping strategies that consist of mental or behavioral effort directed toward solving or ameliorating a problem. The Avoidant factor of the seven-factor model comprised items from the COPE subscales Denial, Mental Disengagement, and Behavioral Disengagement. These coping methods all involve strategies to withdraw from or avoid a stressor. The seven-factor model Seek Social Support factor included five of the eight items from the COPE subscales Seeking Social Support for Emotional Reasons and Seeking Social Support for Instrumental Reasons. These coping strategies all entail interaction with another person to gain assistance, information, or emotional support.

Evidence for the criterion-related validity of the model was provided, as results of the regression analyses were consistent with previous findings and supported our hypotheses about relationships between coping factors and outcomes. Greater Avoidant and Express Emotions coping were significantly related to greater maternal psychological distress, maternal depression, and parenting strain. Religion coping was positively associated with maternal attachment to the child and negatively associated with maternal perception of child demandingness, parenting stress, and maternal depression. Greater Substance Use was significantly related to lower sense of parenting competence and lower maternal attachment to the child. In addition to our main hypothesized findings, significant results were as follows: Problem-Solving coping was negatively related to parenting stress and maternal depression. Greater use of Seek Social Support coping was associated with lower maternal psychological distress. Humor coping was negatively correlated with maternal perceptions of child demandingness. Greater use of Avoidant coping was associated with lower sense of parenting competence and greater maternal perception of child demandingness. Express Emotions coping was negatively correlated with sense of parenting competence.

Study 2: CFA of the Seven-Factor Coping Model

Method

Participants and Procedures

The sample included 350 mother–infant dyads who were participants in a longitudinal study of the developmental sequelae of prenatal polysubstance use (Singer et al., 2000, Singer, Arendt, et al., 2002; Singer, Salvator, et al., 2002). Eighty percent ($n = 289$) of the sample was African American. Mean social class, as determined by the Hollingshead Two-Factor Index of Social Position (Hollingshead, 1957), was 4.81 ($SD = 0.44$). Ninety-eight percent ($n = 343$) of the sample was in the socioeconomically disadvantaged range (i.e., Hollingshead Categories 4–5). No data on multiple birth were available.

Mothers were recruited from a large, urban county teaching hospital between June 1994 and October 1996. Maternal exclusionary criteria included age < 19 years, psychiatric history, low IQ, HIV-positive status, chronic medical illness, or heroin use. Infant exclusionary criteria were fetal alcohol syndrome, Down syndrome, or medical illness. On agreement to participate in the study, women signed a consent form approved by the Institutional Review Boards of participating hospitals. Mother–infant dyads were assessed at infant birth and at 6.5, 12, and 24 months postpartum. Data from the 24-month collection were used in this study. Participants were given $35 for participation in the study. Transportation costs were reimbursed, and lunch was provided. A combination of bioassay and maternal self-report data was used to detect maternal prenatal substance use. Maternal urine samples obtained before or after labor and delivery and infant urine and meconium collected at birth were analyzed for cocaine, marijuana, alcohol, and associated metabolites. (For a more detailed description of drug and alcohol testing methods, see Singer, Arendt, at al.,

Table 3
Coping Factors: Intercorrelations for Study 1

Coping factor	1	2	3	4	5	6	7
1. Problem-Solving	—						
2. Religion	.34**	—					
3. Seek Social Support	.31**	.10	—				
4. Humor	.21*	.06	.20**	—			
5. Avoidant	−.18*	−.05	−.01	.12	—		
6. Substance Use	−.17*	−.04	−.07	.08	.39**	—	
7. Express Emotions	.16*	−.08	.58**	.07	.07	.08	—

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

Table 4
Hierarchical Regression: Differential Predictive Value of Seven Coping Factors, Controlling for Maternal Race and Social Class, Multiple Birth, and Child Neonatal Medical Risk

Criterion variables	$R^2\Delta$ for Step 1[a]	$R^2\Delta$ for Step 2[b]	β for coping factors (F1–F7)						
			F1	F2	F3	F4	F5	F6	F7
Sense of parenting competence[c]	.12	.25**	.23**	.09	.10	.08	−.13†	−.23**	−.22**
Attachment to child[c]	.10	.18**	.11	.14*	.02	.00	−.05	−.33**	−.03
Child demandingness	.09	.15**	−.14†	−.16*	−.04	−.15*	.23**	.08	.13
Total parenting stress	.10	.23**	−.15*	−.23**	−.08	−.11	.19**	.09	.22**
Maternal depression	.02	.25**	−.15*	−.24**	−.06	−.10	.20**	.12	.21**
Clinically significant psychological distress	.06	.20**	.15	−.10	−.22**	−.13†	.24**	.00	.38**

Note. F1 = Problem-Solving; F2 = Religion; F3 = Seek Social Support; F4 = Humor; F5 = Avoidant; F6 = Substance Use; F7 = Express Emotions. [a] Step 1 = social class, race, singleton/multiple birth, and neonatal medical risk. [b] Step 2 = all coping factors (F1–F7). [c] Scores are reverse coded. * $p < .05$. ** $p < .01$. † $p < .06$.

2002.) Drug tests indicated that 310 of the mothers (89%) had used at least one substance during pregnancy. One hundred seventy-eight (51%) had used cocaine, 258 (76%) had used alcohol, and 103 (30%) had used marijuana. Two hundred thirty-five (67%) had used two or more substances.

CFA

A CFA was used to cross-validate the seven-factor coping model derived from EFA of the COPE (Carver et al., 1989) in Study 1. In assessing CFA, a nonsignificant chi-square test indicates a better fit (Hu & Bentler, 1998). However, chi-square tests are sensitive to sample size and model complexity, resulting in over-rejection of adequate models, and thus additional fit statistics should be used (Floyd & Widaman, 1995). The root-mean-square error of approximation (RMSEA), comparative fit index (CFI), and Tucker–Lewis Index (TLI) were selected to evaluate our seven-factor model, because these indices have been shown to be the most sensitive to model misspecification (Hu & Bentler, 1998). For RMSEA, values ≤ .06 indicate a good fit (Floyd & Widaman, 1995). For CFI and TLI, values ≥ .9 indicate a very good fit (Bentler & Bonett, 1980).

Results

Prior to fitting the CFA model, we examined correlations among the seven coping factors and the 19 COPE (Carver et al., 1989) items that had been deleted because of low factor loadings or cross-loadings on more than one factor during the EFA procedure in Study 1. All of the deleted items were found either to have a weak correlation with a single factor or to be correlated moderately to highly with two or more coping factors. In addition, the item–factor correlations were not theoretically or substantively clear and meaningful. Taken together, these data provided evidence that the previously deleted COPE items should not be included in our cross-validation of the seven-factor model.

To fit the initial CFA model, interfactor correlations that had achieved significance in Study 1's EFA model were allowed to vary freely, as use of one coping strategy does not preclude use of another coping strategy. For the CFA model, all regression paths and all correlations were found to be significant ($p < .001$), with the exception of correlations between the Problem-Solving and the Avoidant factors and between the Problem-Solving and the Substance Use factors. These pairs of factors had been found to be weakly and negatively correlated in Study 1. The fit of the initial CFA was $\chi^2(770, N = 350) = 1700.85$, $p = .00$, RMSEA = .06, CFI = .84, and TLI = .82, which indicated that the model possibly could be improved. In an attempt to improve the fit, we examined modification indices, and correlations were allowed between Religion and Seek Social Support, Religion and Express Emotions, Express Emotions and Problem-Solving, Substance Use and Avoidant, Substance Use and Express Emotions, Humor and Substance Use, Humor and Express Emotions, and Avoidant and Express Emotions. Nonsignificant correlations were set to 0, as in the initial CFA model. The implementation of these changes improved the model, so that the final fit was moderately good, $\chi^2(765, N = 350) = 1484.16$, $p = .00$, RMSEA = .05, CFI = .88, and TLI = .86 (see Figure 1).

Discussion

CFA was used to cross-validate the EFA-derived seven-factor model of coping from Study 1. Results indicated a moderately good fit, offering confirmatory evidence for the factor structure in an independent sample of mothers of 2-year-olds with prenatal polysubstance exposure. The fact that CFI and TLI for the CFA model did not achieve values > .9 may be reflective of the fact that appraisal and coping are shaped by individual characteristics and contextual issues, and our two samples differed in race and social class, as well as in types and stages of stressful life events encountered. Sixty percent of the mothers in Study 1 were socioeconomically disadvantaged, compared with 98% of the mothers in Study 2, and 50% in Study 1 were African American, compared with 80% in Study 2.

The significant factor correlations that emerged in the CFA model were consistent with previous findings linking Religion, Seek Social Support, and Express Emotions coping (Murray, Bynum, Brody, Willert, & Stephens, 2001); Express Emotions and Problem-Solving coping (Lepore, Ragan, & Jones, 2000); Substance Use, Avoidant, and Express Emotions coping (Hien & Miele, 2003); Humor and Substance Use (Scott, 1989); and Humor and Express Emotions (Lefcourt, Davidson, Prkachin, & Mills, 1997). The significant correlation between the Avoidant and Express Emotions factors in our CFA model was supported on theoretical (Horowitz, 1976) and empirical (Navajits, Weiss, & Shaw, 1997) grounds.

General Discussion of Studies 1 and 2

Accurate measurement of unique coping strategies, tailored to the specific needs of applied populations, is fundamental to coping

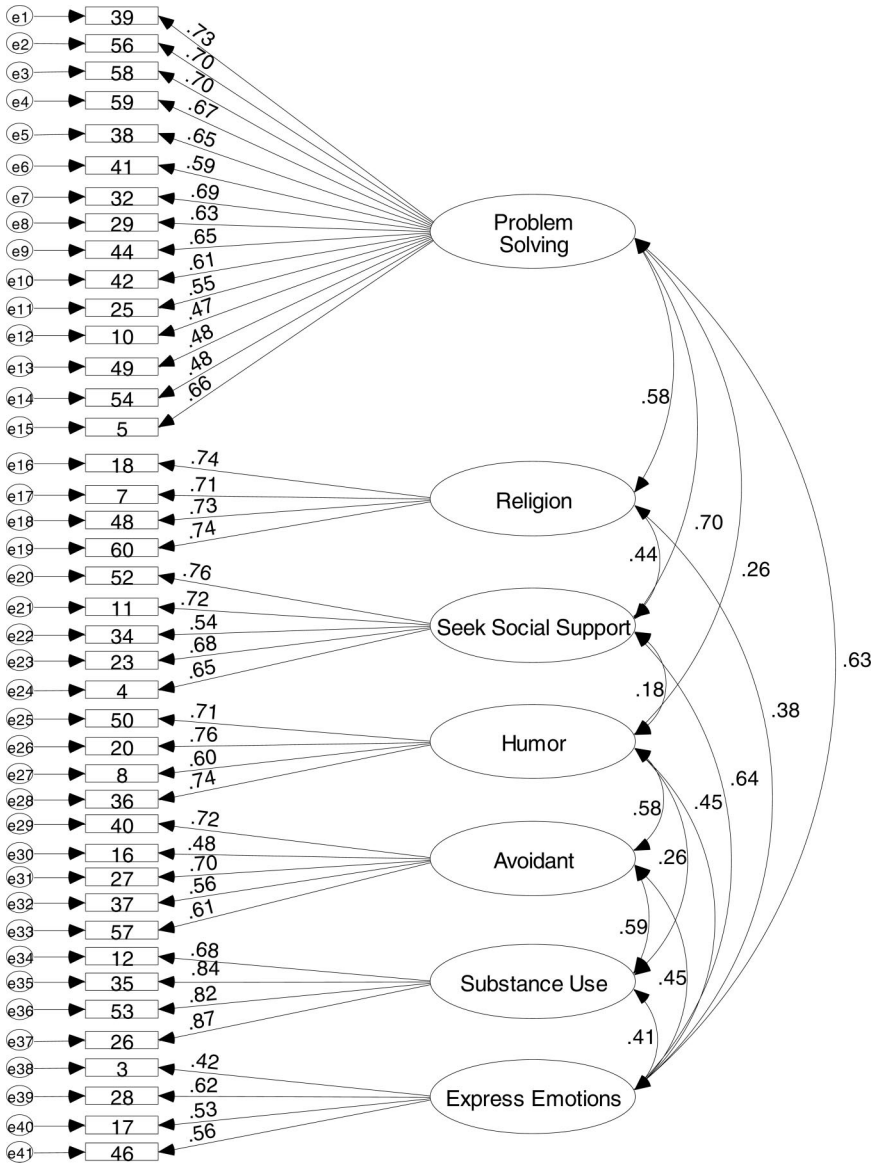

Figure 1. Figure 1 shows confirmatory factor analysis results for the seven-factor model of coping in mothers of 2-year-old children with prenatal polysubstance exposure. Standardized regression weights are shown on the straight arrows, and factor intercorrelations are shown on the curved arrows. Numbers in rectangles indicate original numbers of Coping Orientation to Problems Experienced (COPE) items, and e1–e46 in the circles on the far left represent error terms. See Table 1 for corresponding COPE items.

research, and our studies on coping have added to the literature in several ways. First, we conducted EFA on the COPE (Carver et al., 1989), a widely used, empirically and theoretically based coping instrument, to investigate coping at a discrete time point in a sample of mothers with high levels of life stress. The seven factors that emerged from the EFA were reliable and described clinically applicable dimensions of coping.

Second, our selection of external criteria broadened the range of outcomes measured in prior studies of maternal coping. Rather than focusing exclusively on reduction in psychological distress, investigators should identify coping goals that are related to positive adaptation to a context or task (Folkman & Moskowitz, 2004). Our studies illuminated relationships between coping and maternal sense of parenting competence, attachment to the child, and perception of child demandingness, in addition to negative affect. Only a few other studies (Hastings et al., 2002; Levy-Shiff et al., 1998; Smith Bynum & Brody, 2005; Veddovi et al., 2004) have attempted to broaden the scope of measurement of maternal coping effectiveness by assessing outcomes other than maternal distress.

Third, we cross-validated our results by conducting CFA in an independent sample of mothers with high levels of life stress, keeping the time points for data measurement constant across the two studies. There are few studies in which CFA has been used successfully to verify the factor structure of coping models (Parker & Endler, 1992). Although the EFA-derived factor structure was cross-validated by CFA in an independent sample, comparison of

results showed that factor correlations were lower for Study 1 than for Study 2. These differences might indicate that the factors represented more distinct coping constructs for mothers of FT and VLBW 2-year-olds compared with mothers of children with prenatal polysubstance exposure. One possible explanation for this disparity in factor correlations for our two studies is that Study 1 participants were a heterogeneous group with regard to social class and race, whereas Study 2 participants represented an overly homogeneous group, comprising principally lower social class, African American women. The lack of variability in sociodemographic indicators for Study 2 participants may have inflated correlations among the coping factors. Another explanation is that substance use was measured as a coping strategy in both studies and also served as one of the inclusionary sample criteria for Study 2 participants and one of the exclusionary sample criteria for Study 1 participants. Thus, no mothers in Study 1 had used alcohol or illicit drugs, whereas 89% of the mothers in Study 2 had used substances. It is possible that for Study 2 participants, their characteristic use of substances as a coping strategy may have affected variance shared with other coping strategies. The differences in correlations among the coping factors that emerged for our two samples are illustrative of the contextual and individual features of coping.

Limitations

The conceptual and methodological challenges of coping research are applicable to the current studies, and as such, findings should be examined with caution. Results may be applicable only to mothers with 2-year-old children and high levels of life stress and may not be generalizable to other populations. Nevertheless, investigators (Coyne & Racioppo, 2000) have called for context- and population-specific studies of coping and for the design of specialized measures to be used in such studies. All questionnaires were self-report, and there was no independent corroboration of data. Mothers who were more distressed may have rated their children as more demanding. However, even if maternal distress exerted a negative bias in maternal ratings of children, previous research (Hart, Field, & Roitfarb, 1999; Stern & Hildebrandt, 1986) indicated that subjective maternal perceptions were predictive of child outcomes.

Participants were asked to recall how they had coped over the past year, and their retrospective accounts of coping may not have been accurate. Even so, emerging data (Todd, Tennen, Carney, Armeli, & Affleck, 2004) support the accuracy of time-limited retrospective recall of coping, and retrospective measures may be needed to capture complex or infrequently used types of coping (Coyne & Racioppo, 2000). Similarly, recall accuracy for the PSI (Abidin, 1986) may have been jeopardized, because outcomes were measured retrospectively over the past year. In contrast, mothers were asked to rate items on the BSI (Derogatis & Melisaratos, 1983) with regard to the past 2 weeks. This discrepancy in time frames for the COPE, PSI, and BSI questionnaires presents a dilemma in determining whether these variables were measured at sufficiently proximal time points to be indicators of real-time stress and coping processes. However, the test–retest reliabilities reported in the original materials for the COPE (Carver et al., 1989), PSI (Abidin, 1986), and BSI (Derogatis & Melisaratos, 1983) were good and provided a rationale for comparing outcomes measured with these instruments. Paradoxically, although temporal proximity is essential in studying relations among stress, coping, and outcomes because of the dynamic, self-modifying nature of stress and coping processes (Beehr & McGrath, 1996), cross-sectional designs prohibit conclusions about causal relations (Stevens, 1996).

Some authors (Floyd & Widaman, 1995) have suggested that CFA of instruments having a relatively large number of items may yield unsatisfactory results when analyses are performed on item-level data. Consequently, because the seven-factor model contains 41 items, the reliability of the CFA fit statistics must be considered carefully. A related concern is that our applied sample was relatively small with respect to the number of original COPE items used for the EFA. However, Guadagnoli and Velicer (1988) advised that size of factor loadings, rather than variable to participant ratio, may be most critical in determining accurate factor solutions, and other experts (Reise, Waller, & Comfrey, 2000) argued that when factors are well-defined by many large loadings, sample sizes of 100 may be adequate. Most factor loadings for our model were $> .70$. Moreover, cross-validation of results using CFA in an independent sample provided additional support for our seven-factor model of coping in mothers with high levels of life stress.

Conclusion

Providing mothers with information about adaptive coping may improve maternal and child outcomes. As high-risk children are differentially vulnerable to maternal distress and poorer quality parenting behaviors (Singer et al., 1996, 2003), future research should focus on investigation of maternal coping in applied clinical populations. The foundation for such research is the development of clinically relevant, reliable, and valid measures of coping that are tailored to particular populations and contexts.

References

Abidin, R. R. (1986). *Parenting Stress Index* (2nd ed.). Charlottesville, VA: Pediatric Psychology Press.

Affleck, G., & Tennen, H. (1991). Appraisal and coping predictors of mother and child outcomes after newborn intensive care. *Journal of Social and Clinical Psychology, 10*(4), 424–447.

Affleck, G., Tennen, H., & Rowe, J. (1990). Mothers, fathers, and the crisis of newborn intensive care. *Infant Mental Health Journal, 11,* 12–25.

Affleck, G., Tennen, H., & Rowe, J. (1991). *Infants in crisis: How parents cope with newborn intensive care and its aftermath.* New York: Springer-Verlag.

Atkinson, L., Scott, B., Chisholm, V., Blackwell, J., Dickens, S., Tam, F., & Goldberg, S. (1995). Cognitive coping, affective distress, and maternal sensitivity: Mothers of children with Down Syndrome. *Developmental Psychology, 31,* 668–676.

Bancalari, E. (2001). Changes in the pathogenesis and prevention of chronic lung disease of prematurity. *American Journal of Perinatology, 18,* 1–9.

Barakat, L. P., & Linney, J. A. (1995). Optimism, appraisals, and coping in the adjustment of mothers and their children with spina bifida. *Journal of Child and Family Studies, 4,* 303–320.

Beehr, T. A., & McGrath, J. E. (1996). The methodology of research on coping: Conceptual, strategic, and operational-level issues. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 65–82). New York: Wiley.

Belding, M. A., Iguchi, M. Y., Lamb, R. J., Lakin, M., & Terry, R. (1996).

Coping strategies and continued drug use among methadone maintenance patients. *Addictive Behaviors, 21,* 389–401.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and the evaluation of fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588–606.

Blankfeld, D. F., & Holahan, C. J. (1996). Family support, coping strategies, and depressive symptoms among mothers of children with diabetes. *Journal of Family Psychology, 10,* 173–179.

Bornstein, M. H. (2002). Parenting infants. In M. H. Bornstein (Ed.), *Handbook of parenting, Vol. 1: Children and Parenting* (2nd ed., pp. 3–43). Mahwah, NJ: Erlbaum.

Brodsky, A. E. (2000). The role of religion in the lives of resilient, urban, African American single mothers. *Journal of Community Psychology, 28,* 199–219.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior.* New York: Springer-Verlag.

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

Cheng, P., & Tang, C. (1995). Coping and psychological distress of Chinese parents of children with Down syndrome. *Mental Retardation, 33,* 10–20.

Christian, M. D., & Barbarin, O. A. (2001). Cultural responses and psychological adjustment of African American children: Effects of spirituality and racial attribution. *Journal of Black Psychology, 27,* 43–63.

Clark, K. K., Bormann, C. A., Cropanzano, R. S., & James, K. (1995). Validation evidence for three coping measures. *Journal of Personality Assessment, 65,* 434–455.

Cook, S. W., & Heppner, P. P. (1997). A psychometric study of three coping measures. *Educational and Psychological Measurement, 57,* 906–923.

Costa, P. J., Somerfield, M. R., & McCrae, R. R. (1996). Personality and coping: A reconceptualization. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 44–64). New York: Wiley.

Coyne, J. C., & Racioppo, M. W. (2000). Never the twain shall meet? Closing the gap between coping research and clinical intervention research. *American Psychologist, 55,* 655–664.

Crnic, K., & Acevedo, M. (1995). Everyday stresses and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting,* Vol. 4 (pp. 277–297). Mahwah, NJ: Erlbaum.

Cutrona, C. E., & Troutman, B. R. (1986). Social support, infant temperament, and parenting self-efficacy: A mediational model of postpartum depression. *Child Development, 57,* 1507–1518.

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 13,* 595–605.

Eisengart, S. P., Singer, L. T., Fulton, S., & Baley, J. (2003). Coping and psychological distress in mothers of very low birth weight young children. *Parenting: Science and Practice, 3,* 49–72.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Assessment, 4,* 272–299.

Field, T. (1995). Psychologically depressed parents. In M. H. Bornstein (Ed.), *Handbook of parenting,* Vol. 4 (pp. 85–99). Mahwah, NJ: Erlbaum.

Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7,* 286–299.

Folkman, S., & Lazarus, R. S. (1991). Coping and emotion. In A. Monat & R. S. Lazarus (Eds.), *Stress and coping: An anthology* (3rd ed., pp. 207–227). New York: Columbia University Press.

Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promises. *Annual Review of Psychology, 55,* 745–774.

Goldberg, S., & DiVitto, B. (1995). Parenting children born preterm. In M. H. Bornstein (Ed.), *Handbook of parenting* (Vol. 1, pp. 209–231). Mahwah, NJ: Erlbaum.

Greenspan, S. I. (1989). Normal child development. In H. I. Kaplan & B. J. Sadock (Eds.), *Comprehensive textbook of psychiatry* (5th ed., Vol. 2, pp. 1695–1710). Baltimore: Williams & Wilkins.

Guadagnoli, E., & Velicer, W. (1988). Relation of sample size to the stability of component patterns. *Psychological Bulletin, 103,* 265–275.

Hart, S., Field, T., & Roitfarb, M. (1999). Depressed mothers' assessments of their neonates' behaviors. *Infant Mental Health Journal, 20,* 200–210.

Hasking, P. A., & Oei, T. P. S. (2002). Confirmatory factor analysis of the COPE questionnaire on community drinkers and an alcohol-dependent sample. *Journal of Studies in Alcohol, 63,* 631–640.

Hastings, R. P., Allen, R., McDermott, K., & Still, D. (2002). Factors related to positive perceptions in mothers of children with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 15,* 269–275.

Heinicke, C. M. (1995). Determinants of the transition to parenting. In M. H. Bornstein (Ed.), *Handbook of parenting* (Vol. 3, pp. 277–303). Mahwah, NJ: Erlbaum.

Hien, D. A., & Miele, G. M. (2003). Emotion-focused coping as a mediator of maternal cocaine abuse and antisocial behavior. *Psychology of Addictive Behaviors, 7,* 49–55.

Hollingshead, A. B. (1957). *Two factor index of social position.* New Haven, CT: Yale University Press.

Horowitz, M. (1976). *Stress response syndromes.* New York: Aronson.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3,* 426–453.

Hughes, D., & Simpson, L. (1995). The role of social change in preventing low birth weight. *The Future of Children, 5,* 87–102.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping.* New York: Springer Publishing.

Lefcourt, H. M., Davidson, K., Prkachin, K. M., & Mills, D. E. (1997). Humor as a stress moderator in the prediction of blood pressure obtained during five stressful tasks. *Journal of Research in Personality, 31,* 523–542.

Lepore, S. J., Ragan, J. D., & Jones, S. (2000). Talking facilitates cognitive–emotional processes of adaptation to an acute stressor. *Journal of Personality and Social Psychology, 78,* 499–508.

Levy-Shiff, R., Dimitrovsky, L., Shulman, S., & Har-Even, D. (1998). Cognitive appraisals, coping strategies, and support resources as correlates of parenting and infant development. *Developmental Psychology, 34,* 1417–1427.

McIntosh, B. J., Stern, M., & Ferguson, K. S. (2004). Optimism, coping, and psychological distress: Maternal reactions to NICU hospitalization. *Children's Health Care, 33,* 59–76.

Murray, V. M., Bynum, M. S., Brody, G. H., Willert, A., & Stephens, D. (2001). African American single mothers and children in context: A review of studies on risk and resilience. *Clinical Child and Family Psychology Review, 4,* 133–155.

Navajits, L. M., Weiss, R. D., & Shaw, S. R. (1997). The link between substance abuse and posttraumatic stress disorder in women: A research review. *American Journal on Addictions, 5,* 273–283.

Parker, J. D. A., & Endler, N. S. (1992). Coping with coping assessment. *European Journal of Personality, 6,* 321–344.

Pearce, L. D., & Axinn, W. G. (1998). The impact of family religious life on the quality of mother–child relations. *American Sociological Review, 63,* 810–828.

Reise, S. P., Waller, N. G., & Comfrey, A. L. (2000). Factor analysis and scale revision. *Psychological Assessment, 12,* 287–297.

Scott, E. M. (1989). Humor and the alcoholic patient: A beginning study. *Alcoholism Treatment Quarterly, 6,* 29–39.

Short, E. J., Klein, N. K., Lewis, B. A., Fulton, S., Eisengart, S., Kercsmar, C., et al. (2003). Cognitive and academic consequences of bronchopulmonary dysplasia and very low birth weight: 8-year-old outcomes. *Pediatrics, 112,* 359–366.

Singer, L. T., Arendt, R., Farkas, K., Minnes, S., Huang, J., & Yamashita, T. (1997). The relationship of prenatal cocaine exposure and postpartum psychological distress to child developmental outcome. *Developmental Psychopathology, 9,* 473–489.

Singer, L. T., Arendt, R. E., Minnes, S., Farkas, K., & Salvator, A. (2000). Neurobehavioral outcomes of cocaine-exposed infants. *Neurotoxicology and Teratology, 22,* 653–666.

Singer, L. T., Arendt, R. E., Minnes, S., Farkas, K., Salvator, A., Kirchner, H. L., & Kliegman, R. (2002). Cognitive and motor outcomes of cocaine-exposed infants. *Journal of the American Medical Association, 287,* 1952–1960.

Singer, L. T., Davillier, M., Pruess, L., Szekly, L., Hawkins, S., Yamashito, T., & Baley, J. (1996). Feeding interactions in infants with very low birth weight and bronchopulmonary dysplasia. *Developmental and Behavioral Pediatrics, 17,* 69–75.

Singer, L. T., Fulton, S., Davillier, M., Koshy, D., Salvator, A., & Baley, J. E. (2003). Effects of infant risk status and maternal psychological distress on maternal–infant interactions during the first year of life. *Journal of Developmental and Behavioral Pediatrics, 24,* 233–241.

Singer, L. T., Salvator, A., Arendt, R., Minnes, S., Farkas, K., & Kliegman, R. (2002). Effects of cocaine/polydrug exposure and maternal psychological distress on infant birth outcomes. *Neurotoxicology and Teratology, 24,* 127–135.

Singer, L. T., Salvator, A., Guo, S., Collin, M., Lilien, L., & Baley, J. (1999). Maternal psychological distress and parenting stress after the birth of a very low birthweight infant. *Journal of the American Medical Association, 281,* 799–805.

Smith Bynum, M., & Brody, G. H. (2005). Coping behaviors, parenting, and perceptions of children's internalizing and externalizing problems in rural African American mothers. *Family Relations, 54,* 58–71.

Spear, M. L., Leef, K., Epps, S., & Locke, R. (2002). Family reactions during infants' hospitalization in the neonatal intensive care unit. *American Journal of Perinatology, 19,* 205–213.

Stern, M., & Hildebrandt, K. (1986). Prematurity stereotype: Effects on mother–infant interaction. *Child Development, 57,* 308–315.

Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, NJ: Erlbaum.

Thompson, R. J., Jr., Oehler, J. M., Catlett, A. T., & Johndrow, D. A. (1993). Maternal psychological adjustment to the birth of an infant weighing 1500 grams or less. *Infant Behavior and Development, 16,* 471–485.

Todd, M., Tennen, H., Carney, M. A., Armeli, S., & Affleck, G. (2004). Do we know how we cope? Relating daily coping reports to global and time-limited retrospective assessments. *Journal of Personality and Social Psychology, 86,* 310–319.

Veddovi, M., Gibson, F., Kenny, D. T., Bowen, J., & Starte, D. (2004). Preterm behavior, maternal adjustment, and competencies in the newborn period: What influence do they have at 12 months postnatal age? *Infant Mental Health Journal, 25,* 580–599.

Received October 19, 2004
Revision received February 20, 2006
Accepted March 7, 2006 ■