

Evidence-based Assessment of Coping and Stress in Pediatric Psychology

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Objective To review selected measures of stress and coping in pediatric populations. Stress and coping are presented within a risk and resiliency framework. **Methods** The Society of Pediatric Psychology (SPP) surveyed the membership to identify the most frequently used assessment instruments. Twelve measures of coping and three measures of stress were reviewed. These instruments were evaluated using the Stress and Coping workgroup's modification of the criteria developed by the SPP Assessment Task Force (SPP-ATF). **Results** One of the three measures of stress and five of the 12 measures of coping were Well-established measures that broaden understanding. Additionally, one of the coping measures was categorized as a Well-established measure that guides treatment. Merits of the individual measures are discussed. **Conclusions** Recommendations for future research are provided, including suggestions for the construction and use of measures to inform treatment research.

Key words evidence-based assessment; measurement; pediatric psychology; coping; stress.

Over the last decade there has been a growing movement for the various fields of clinical psychology to be more consistently rooted in, and guided by, the empirical findings from its research base. This movement started with efforts to determine the evidence-based interventions within the fields of clinical psychology (Chambless & Hollon, 1998), including the specialization of pediatric psychology (Spirito, 1999). This initiative expanded as Ollendick (1999), President of Division 12 (Society of Clinical Psychology) of the American Psychological Association, called for a task force on upgrading the Science and Technology of Assessment and Diagnosis. Ollendick placed a particular emphasis on whether assessment instruments were useful for guiding the design and course of treatment interventions. Paul Frick served as the chair of that initial task force, which focused on measures for assessing children and adolescents. In his conclusions, Frick (2000) stated,

“Unfortunately, evidence for the direct clinical utility of these measures is uniformly minimal. In most cases, there is no evidence that the use of these measures enhances treatment outcome, such as by designating important processes that should be targets of intervention” (p. 476). The issue of clinical utility was not as explicitly addressed in a more recent series of scholarly and detailed reviews by the Society of Clinical Child and Adolescent Psychology (Mash & Hunsley, 2005).

In 2002, Annette La Greca, President of the Society of Pediatric Psychology, assembled the Assessment Task Force (SPP-ATF) to examine the assessment measures that were most commonly used in eight different areas of pediatric psychology (Cohen, La Greca, Blount, Kazak, Holmbeck, & Lemanek, in press). This article is one product from that task force, focusing specifically on providing an evidence-based review of instruments for assessing coping and stress. Coping and stress are

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relevant issues across almost all acute and chronic medical conditions, as well as for patients undergoing frightening and painful medical procedures, such as injections, surgery, and hospitalizations.

Stress and coping are often studied in tandem. They can be considered from a risk and resiliency framework, with stress increasing risk for adverse outcomes, and effective coping behaviors providing resiliency to mitigate the likelihood of adverse outcomes and potentially enhance growth (Blount, Bunke, & Zaff, 2000a,b; Carrey & Ungar, 2007; Kazdin, Kraemer, Kessler, Kupfer, & Offord, 1997). Events that are perceived as stressful are antecedents to coping. Stress can be defined as an event or experience that expends the resources of an individual. In general, greater stress is associated with poorer outcomes [e.g., health/immune functioning (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002); psychosocial functioning (Kanner, Feldman, Weinberger, & Ford, 1987; Santa Lucia et al., 2000)]. Stress encompasses both objective (e.g., observable distressing event, such as chronic illness or divorce) and subjective dimensions (e.g., perceived threat). Some measures of stress focus only on the objective stress experience (e.g., Coddington Life Events Scales; Coddington, 1972), whereas others incorporate the stressful event and perceptions of the impact of the event (e.g., Children's Hassles and Uplifts Scale; Kanner et al., 1987). It is noteworthy that ineffective reactions to stressful events may compound the potentially deleterious effects of those events.

Although the definitions vary, coping has traditionally been defined as thoughts and behaviors that are used to manage the internal and external demands of situations that are appraised as stressful (Lazarus & Folkman, 1984). Coping is a dynamic process that changes in response to the ongoing demands of the stressor. The construct of coping has been subcategorized in a variety of ways. Compas, Connor-Smith, and Saltzman (2001) proposed that coping responses can be depicted along two broad dimensions: Voluntary versus involuntary and engagement versus disengagement. Voluntary responses involve motivational, goal-directed behaviors, whereas involuntary responses involve reactions that are not directed by intention (e.g., increased heart rate). Engagement refers to approach strategies, whereas disengagement refers to avoidance behaviors. Coping has also been conceptualized along dimensions such as information seeking versus information avoiding, approach versus avoidance, repressive versus sensitizing, monitoring versus blunting, and emotion-focused versus problem-focused (Blount, Davis, Powers, &

Roberts, 1991; Rudolph, Denning, & Weisz, 1995). Consistent with the different categorizations and definitions of coping, multiple measures have been developed.

Coping and stress exist within a complex framework, with the effectiveness of the particular coping strategies that are employed influencing subsequent adjustment outcomes (e.g., psychosocial, emotional, and behavioral functioning; quality of life; and physical health), and potentially even leading to growth and greater well-being. Understanding the dynamic interplay among stress, coping, and biopsychosocial outcomes can lead directly to the development of successful interventions. Accurate and useful assessment instruments for measuring relevant dimensions of stress and coping are essential for this endeavor. The charge of this workgroup was to review the most commonly used coping and stress assessment measures within a sample of surveyed pediatric psychologists, with the goals of evaluating the evidence base and providing recommendations for further development and validation of coping and stress measures. In addition, because stress and coping can be conceived as independent variables that influence many outcomes relevant to pediatric psychology, this subgroup developed additional standardized criteria to evaluate how well the instruments have been demonstrated to directly inform the design of treatment interventions versus broadening understanding of the measured constructs.

Method

Measure Selection

The mission of the SPP-ATF was to identify criteria for examining the scientific basis and utility of measurement instruments used in pediatric psychology. For detailed information regarding the methodology of this endeavor, please see the paper by Cohen et al. (in press). In brief, the SPP-ATF identified eight broad areas of interest, including quality of life, family functioning, psychosocial functioning and psychopathology, social support and peer relations, adherence, pain, coping and stress, and cognitive functioning. A list of measures in these eight areas was compiled. The Coping and Stress workgroup generated a list of 52 measures of coping, including eight observational measures, 38 self-report measures, and six adult-completed measures. Additionally, this workgroup generated a list of 12 measures of stress, including one observational, five self-report, and six adult-completed measures. Review articles, chapters, and books that addressed the measurement of children's coping and stress, as well Web of Science, Psycinfo, Medline, Cinahl, and Google Scholar searches, were utilized to help

construct an initial list of measures relevant to pediatric psychology that was as comprehensive as possible. For each measure, the name of the scale, a one-to-two sentence description of its application, and a key reference were included.

In 2003, the entire list of measures in each of the eight areas was sent to the 325 subscribers of the Division 54 listserv, with instructions to indicate the measures they had used, and return the completed survey. Subscribers also had the option to write in additional measures that were not listed. A total of 87 completed surveys were returned. For the coping scales, the number of respondents who endorsed use of a particular coping scale ranged from 0 to 35, with the Kidcope (Spirito, Stark, & Williams, 1988) receiving the highest number of endorsements. For the stress measures, the frequency of respondents who reported that they had used a particular scale ranged from 0 to 12, with Coddington's Life Events Scale (Coddington, 1972) receiving the highest number of endorsements. In general, the coping and stress scales were endorsed as having been used fewer times than was found in some of the other topic areas addressed by the task force (i.e., Psychosocial Functioning and Psychopathology, Family Assessment, and Cognitive Functioning), but on par with most of the other areas. Those scales that were endorsed by five or more people were selected for inclusion in this review.

Review of Measures

Information collected on each measure included the name of the measure, central references, additional references of studies that used the instrument, description of the measure (e.g., purpose, age-range, populations, sample sizes of studies using the measure, format, administration, and scoring), address for obtaining the instrument, its psychometric properties (i.e., reliability and validity), its primary findings and clinical utility (i.e., whether sensitive to treatment effects and if it lead directly to treatment implications), other comments, and its categorization according to standardized criteria. This information tended to be extensive, with data and summaries per scale ranging from three to eight single spaced pages. Articles that used the measures were located using Web of Science, Psycinfo, Medline, Cinahl, and Google Scholar searches, as well as hand searches from relevant reference lists. In some cases, authors were contacted with requests for information.

The Coping and Stress workgroup used a modification of the SPP-ATF Criteria for Evidence-Based

Assessment guidelines, as presented in Table I. Consistent with the other workgroups, each measure was categorized as being either Well-established, Approaching well-established, or promising (Cohen et al., in press). The Stress and Coping work group added a unique component to the SPP-ATF's criteria for a Well-established assessment instrument by subdividing it to differentiate those assessment measures that guide treatment versus those that broaden understanding.

Reliability of Classification

Reliability was evaluated for the Coping and Stress workgroup's criteria. Six reviewers served as the primary raters for the scales. Based on their extensive written reviews for each instrument, a single blind rater also categorized each of the 15 assessment instruments reviewed by this work group. Using the SPP-ATF criteria, inter-rater reliability was found to be 93.3% agreement (100% agreement for 14 of the 15 measures) with a κ -value of .89 (Cohen, 1960). This κ -value is considered to be an excellent level of agreement, according to guidelines proposed by Fleiss (1981). For the one instance of disagreement, the classification assigned by the primary reviewer was used in this report, since he/she had extensive exposure to the source literature related to the scale.

Results

Overview of Findings

A review of the scales indicates that although stress and coping are conceptually linked, they are often measured separately. In most cases, when measuring coping, the researcher/clinician aims to identify how an individual manages or reacts to a specific stressor (e.g., providing a prompt about a researcher-chosen topic or asking the respondent to select their own topic). Alternatively, when measuring stress, researchers/clinicians aim to quantify the types and impact of specific stressors (e.g., asking for the frequency and intensity of a variety of stressors). However, some measures evaluate both the frequency and intensity of stressors, as well as individuals' responses to them. For example, the CAMPIS (Blount et al., 1989, 1997) and the BAADS (Hubert, Jay, Saltoun, & Hayes, 1988) assess both distress and coping behaviors during a medical procedure using a behavioral coding or behavioral rating system. Detailed reviews are provided in Tables II and III, starting with the measures for stress and then the measures for coping. For coping, the self-report measures for coping with more general

Table 1. SPP-ATF and Stress and Coping Workgroup Criteria for Evaluating the Clinical Utility of Assessment Instruments

Assessments	Criteria
Well-established assessment that:	I. The measure must have been presented in at least two peer-reviewed articles by different investigators or investigatory teams.
(A) <i>Guide treatment</i>	II. Sufficient detail about the measure to allow critical evaluation and replication (e.g., measure and manual provided or available upon request).
Or	III. Detailed (e.g., statistics presented) information indicating good validity and reliability in at least one peer-reviewed article.
(B) <i>Broaden understanding</i>	Scales classified as Well-established were further classified as:
	A. <i>Guide treatment: Results from the measure lead directly to the design of treatment interventions. Additionally, results from the measure may broaden understanding.</i>
	B. <i>Broaden understanding: Results of measure broaden understanding of the participants, disease, or other aspect of the studied phenomenon.</i>
Approaching well-established assessment	I. The measure must have been presented in at least two peer-reviewed articles, which might be by the same investigator or investigatory team.
	II. Sufficient detail about the measure to allow critical evaluation and replication (e.g., measure and manual provided or available upon request).
	III. Validity and reliability information either presented in vague terms (e.g., no statistics presented) or only moderate values presented.
Promising assessment	I. The measure must have been presented in at least one peer-reviewed article.
	II. Validity and reliability information either presented in vague terms (e.g., no statistics presented) or moderate values presented.
	III. Sufficient detail about the measure to allow critical evaluation and replication (e.g., measure and manual provided or available upon request).

Note: Those instruments that were classified as Well-established using SPP-ATF criteria were further classified by the Stress and Coping workgroup as either leading directly to treatment recommendations or broadening understanding. Italics show criteria unique to Stress and Coping workgroup.

stressors are presented prior to the self-report and observational measures for coping with pain.

Stress

This task force reviewed three self-report or parent-report measures of child stress. The Children's Hassles Scale and Children's Uplifts Scale (CHS, CUS) (Kanner et al., 1987), two separate subscales within the same inventory, were classified as a Well-established that broadens understanding, while the other two (i.e., Coddington Life Events Scales and Questionnaire on Resources and Stress) were classified as Approaching well-established. The measures reviewed ranged in their focus on specific versus general stressors and in their format for assessing stress. None of the stress assessment instruments were designed exclusively for use with pediatric medical populations. However, they do assess domains relevant to children with medical conditions or those who experience medical treatments.

Children's Hassles Scale and Children's Uplifts Scale (CHS, CUS)

The CHS measures the frequency and impact of daily hassles, defined as irritating and/or distressing demands that to some degree characterize everyday interactions

with the environment (Kanner, Coyne, Schafer, & Lazarus, 1981). The CUS measures the frequency and impact of daily uplifts, defined as the good things that people experience in their everyday lives. These measures were derived from a pool of 74 items. Factor analytic methods were used to create two higher-order scales, daily hassles (CHS) and uplifts (CUS), each consisting of 25 items (Kanner et al., 1987). These two subscales have been used in tandem and separately. Further, factor analyses were conducted to derive 4 lower-order factors within both the CHS and the CUS (Santa Lucia et al., 2000). These lower-order factors included parent, peer comparison, school, and sibling or family. Three scores may be derived from the CHS and the CUS, including the frequency of hassles/uplifts, the frequency of bad hassles/good uplifts, and the intensity of hassles/uplifts (rated on a 0–100 scale). Internal consistency estimates for the higher-order CHS and CUS scales are very good ($\alpha = .85$ and above). The internal consistency estimates for the lower-order factors range from unacceptable ($\alpha = .54$) to respectable ($\alpha = .73$). Predictive validity was established for this measure with significant associations between more frequent hassles and emotional distress and more frequent uplifts associated with emotional well-being and social adjustment (Kanner et al., 1987).

Table II. Self-report Stress Measures

Authors and measure	Scale description				Reliability and validity		Treatment implications Sensitive to treatment outcome? Leads to treatment implications?	Scale criteria Stress and coping criteria
	Informant/ population	Stressor/ context	No. of items; Subscales	Scales/factors	Internal consistency/ test-retest	Convergent/ predictive		
Children's Hassles Scale (CHS) and Children's Uplifts Scale (CUS) Kanner et al., 1987	Self-report 8–17 years Healthy children; limb deficiencies; rheumatic disease	Assesses hassles/ uplifts that may have occurred in the past month	25 hassles; 25 uplifts	Factors derived from factor analysis by Santa Lucia, Gesten, Rendina-Gobioff, Epstein, Kaufmann, & Salcedo (2000) were peer comparison, parent, school, and family ($\alpha = .62-.73$) for the CHS, and parent, peer comparison, school, and sibling ($\alpha = .54-.73$) for the CUS	$\alpha = .85$ and above Test-retest not reported	Convergent: Not reported Predictive: More frequent hassles correlated with emotional distress and interpersonal problems; peer and family hassles predict school adjustment beyond school hassles. More frequent uplifts correlated with emotional well-being and social adjustment.	Sensitive: No study found. Implications: No study currently demonstrates this.	Well-established assessment that broadens understanding
Coddington Life Events Scales (CLES) Coddington, 1972	Parent report 5 years and under (CLES-P) Parent report or interviewer given 6–11 years (CLES-C) Parent or self-report 12–19 years (CLES-A) Failure to thrive; depression; type I diabetes; eating disorder; abdominal pain; runaways	Assesses the life events a child has experienced in the past year	CLES-P: 30 items; CLES-C: 36 items; CLES-A: 50 items.	No specific scales/factors. Respondents indicated the number of times a stressor occurred and how long ago (e.g., 0–3 months, 4–6 months)	Internal Consistency not reported Test-retest for CLES-A ($r = .69$) 3 month	Convergent: Youth in runaway shelters reported several stressful life events. Predictive: Depressed adolescents and children report more stressful life events than nondepressed controls. More Life events were found to relate to poorer health status in adolescents with type I diabetes.	Sensitive: No study found. Implications: Sandberg and colleagues (2001) found that parent-report was unable to predict onset of psychiatric disorder in teens. CLES-P was able to correctly identify 32 of 46 failure-to-thrive infants from matched controls.	Approaching Well-established
Questionnaire on Resources and Stress (QRS) Holyroyd, 1974	Self-report for any family member with 6th grade reading level Self-report short form (QRS-SF) Developmental disabilities, psychiatric problems, renal disease, leukemia cystic fibrosis, and neuromuscular disease	Assesses level of stress in a family member of an individual with a physical disability, medical illness, or mental disorder	QRS: 285 items; 3 general response categories, 15 scales QRS-SF: 66 items	Three general response categories: Personal Problems, Family Problems, and Problems of Index Case ^a 15 scales: Personal Problems: PH/M, ETD, NAIC, O/D, LSS, O/M, P; Family Problems: LFI, LFO, FP; Problems of Index Case: PI, LAIC, OLIC, SO, DPC Supported by factor analysis	QRS: $\kappa = .96$ for total; .24–.88 for scales QRS-SF: $\kappa = .79$ to .85 for total; .31–.85 for scales Test-retest not reported	Convergent: Mothers of children with autism rated from interview as experiencing "high stress" scored higher on scales 5, 7, 8, 9, and 10 than mothers determined to be under "low stress" (Holyroyd, Brown, Wilker, & Simmons III, 1975) Predictive: QRS-SF showed that perceived social support and sibling independence related to stress in adults with a sibling with an intellectual disability (Egan & Walsh, 2001). Caregivers of sons with hemophilia and HIV report physical and adaptive limitations and more pessimism regarding parenting and their child's future than parents with sons who were hemophilic, but not HIV+ (Bordeaux et al., 2003). Mothers of children with different developmental disabilities (e.g., Down syndrome, cerebral palsy, autism, etc.) were shown to have disability specific elevations of QRS subscales (Pisula, 1998).	Sensitive: In one study, no significant changes were found after intervention (Carnevale, Anselmi, Busichio, & Mills, 2002). Implications: No study currently demonstrates this.	Approaching Well-established

^aPH/M, Poor health/mood; ETD, excess time demands; NAIC, negative attitude towards index case; O/D, overprotection/dependency; LSS, lack of social support; O/M, overcommitment/martyrdom; P, pessimism; LFI, lack of family integration; LFO, limits on family opportunity; FP, financial problems. PI, physical incapacitation; LAIC, lack of activities for index case; OLIC, occupational limits for index case; SO, social obtrusiveness; DPC, difficult personality characteristics.

Table III. Coping Measures

Authors and measure	Scale description			Reliability and validity		Treatment implications Sensitive to treatment outcome? Leads to treatment implications?	Scale criteria Stress and coping criteria	
	Informant/population	Stressor	No. of items; subscales	Scales/factors	Internal consistency/ test-retest			Convergent/predictive
Self-report general coping measures								
A-Cope Patterson & McCubbin, 1987	Self-report 11 and up Healthy adolescents; cystic fibrosis; HIV; adolescent mothers	“When feeling tense or facing a problem or difficulty”	54 items; 12 subscales	^a Scales include: VF; SD; DR; DSS; SFP; AP; SSS; ICF; SPS; EDA; BH; R Factors derived from factor analysis by Chapman and Mullis (2000) were problem-focused coping, cognitive-focused coping, and emotion-focused coping	$\alpha = .50$ to $.75$ (median = $.72$) Test-retest ($r = .83$) based on Young Adult COPE	Convergent: Not reported Predictive: High self-esteem correlated with more problem-focused coping and less emotion-focused coping; avoiding problems correlated with illicit substance use.	Sensitive: pre- and post-test measures for treatment (Carty, 1993; Harris & Franklin, 2003; Mason & Collison, 1995) Implications: No study currently demonstrates this. Typically used to describe most frequently used coping strategy.	Well-established assessment that broadens understanding
Coping Response Inventory – Youth Form (CRI-Y) Ebata & Moos, 1991	Self-report 12–18 Healthy children; depression; conduct disorder; rheumatic disease; siblings of children with a disability	Researcher (e.g., start college) or self-selected stressor	48 items; eight subscales Measure has Actual form and Ideal form. Ideal form asks preferred coping style.	^b Scales include four approach coping (LA, PR, SG, PS) and four avoidance coping (CA, AR, SAR, ED) No factor analytic studies have been conducted with this measure.	$\alpha = .55$ to $.79$ Test-Retest ($r = .29$ to $.34$) 15 month	Convergent: Not reported Predictive: Approach coping correlated negatively with health problems and health risk behaviors; avoidance coping correlated positively with these domains. Approach coping related to fewer stressors with siblings and friends.	Sensitive: Some changes in coping behaviors following Teaching Kids to Cope program for depression and coping in rural children (Puskar, Sereika, & Tusaie-Mumford, 2003). Implications: No study currently shows this.	Approaching well-established
Coping Strategies Inventory (CSI) Tobin, 1991	Self-report 7 and up or parent report on child 3 and up Healthy children and young adults; sickle cell anemia, HIV; renal transplant; eating disorder; cancer; Inflammatory Bowel Disease	Researcher (e.g., sickle cell disease) or self-selected stressor	32 items; eight primary subscales, four secondary scales, two tertiary scales	^c Primary scales include: PS, CR, SS, EE, PA, WT, SC, SW; Secondary Scales include: PE, EG, PD, ED; Tertiary scales include: ENG, DIS factor analysis by Tobin, Holroyd, Reynolds, and Wigal (1989) are consistent with the hierarchical scales	$\alpha = .70$ to $.94$ Test-retest ($r = .67$ to $.83$) for same stressor and ($r = .39$ to $.61$) with two different stressors	Convergent: Not reported Predictive: Individuals with greater self-efficacy report doing more problem-solving and less problem-avoidance than individuals with lower self-efficacy. Adolescents with IBD with poor coping report lower medication adherence (Mackner & Crandall, 2004)	Sensitive: No study found. Implications: No study currently demonstrates this.	Well-established assessment that broadens understanding
Kidcope Spirito, Stark, & Williams, 1988	Self-report 7–12 year old version Self-report 13–18 year old version Various contexts in which child is faced with an acute or chronic health related stressor (e.g., cancer and diabetes).	Researcher (e.g., being teased, hospital) or self-selected stressor	15 items; 10 subscales 10 items; 10 subscales	^d Scales include: PS, D, SS, SW, CR, SC, BO, ER, WT, R Factors derived from factor analysis by Cheng and Chan (2003) were control-oriented coping and escape-oriented coping	Internal consistency not reported Test-retest ($r = .41$ to $.83$) 3–7 days ($r = .15$ to $.43$) 10 weeks	Convergent: Scales related to Coping Strategies Inventory scales ($r = .33$ to $.77$) and ACOPE scales ($r = .08$ to $.62$) Predictive: Cognitive restructuring positively correlated with positive well-being and negatively correlated with depression (Well-Being Questionnaire 12); Avoidant/emotion-focused strategies correlated with PTSD diagnosis	Sensitive: No study found. Implications: No study currently demonstrates this.	Approaching well-established

Role-Play Inventory of Situations and Coping Strategies (RISCS) (Quittner, Tolbert, Regoli, 1996)	Self-report adolescent version Self-report school-age children version Self-report parents of adolescents version Self-report parents of school-age children version Children and adolescents with CF and their parents	Vignette provided; "What would you say or do in this situation?" Also rate frequency and difficulty level of each situation	31 vignettes	11 domains: Medications and treatment, Routines, Spouse, Outside activities, Discipline, Peers, School, Medical care, Finances, Siblings, and Mealtimes	Inter-rater reliability: 81%	Convergent: Not reported. Predictive: For adolescents, RISCS correlated in the expected directions with CDI and the Harter Self-Perception Profile for Adolescents. For parents, RISCS correlated in the expected directions with the CES-D and certain domains from the Who Does What? Questionnaire, with some findings only significant for mothers or fathers.	Sensitive: CBT intervention showed that coping strategies generated by children and adolescents with CF improved, but no significant change occurred in their ratings of frequency or difficulty of situations (Davis, Quittner, Stark, & Tang, 2003). Implications: Not currently demonstrated; however, the RISCS identifies the frequency and severity of specific types of situations that are problematic for families, which could inform treatment.	Approaching well-established	
Ways of Coping (Revised version) (Folkman & Lazarus, 1980)	Self-report for children, adolescents, and adults Widely used; e.g., healthy children, adolescents, and adults at risk for type 1 diabetes	Researcher or self-selected stressor	68 items; eight subscales	"Subscales include: CC, D, SC, SSS, AR, EA, PPS, PR Factor analysis reported for original version: Folkman and Lazarus (1980) found two factors: emotion- and problem-focused coping; using an adolescent sample, Halstead, Johson, & Cunningham, 1993, found four factors: problem-focused, seeks social support, wishful thinking, and avoidance.	$\alpha = .61$ to $.88$ for subscales Test-retest not reported; however, Consistency scores for individuals reporting on different stressors ranged from $.714$ to 1.00	Convergent: Not reported Predictive: Israeli children's scores were positively correlated with global distress, measured via the Global Severity Index (Hallis & Slone, 1999). Older adolescents used a wider variety of coping strategies and methods that could more likely reduce the impact of a stressful situation compared to younger adolescents (Williams & McGillicuddy-De Lisi, 1999). Children at risk for Type 1 diabetes used more avoidance, wishful thinking, and self-blame than adults (Johnson & Carmichael, 2000).	Sensitive: No study found. Implications: No study currently demonstrates this. Typically used to describe coping strategies used in stressful situations.	Well-established assessment that broadens understanding	
Self-report pain coping measures									
Pain Coping Questionnaire (PCQ) (Reid, Gilbert, & McGrath, 1998)	Self-report 8 and up or parent report Healthy youth; youth with chronic, recurrent or postoperative pain and their parents	"When I am hurt or in pain for a few hours or days, I..."	39 items; eight subscales; three higher-order scales	"Subscales include: IS, PS, SSS, PSS, BD, CD, E, I/C; higher-order scales include: A, PFA, EFA Factors derived from factor analysis by Reid et al. (1998) are consistent with the hierarchical scales	$\alpha = .74-.86$ for subscales $\alpha = .85$ to $.89$ for higher-order scales Test-retest not reported	Convergent: Not reported Predictive: Approach and problem-focused avoidance were positively related to pain controllability and coping effectiveness. Problem-focused avoidance was negatively related to pain, distress, and functional disability. Emotion-focused avoidance was negatively related to pain controllability and coping effectiveness, and positively related to pain intensity, distress, depression, and functional disability.	Sensitive: CBT treatment showed significant reduction in catastrophizing (Eccleston, Malleon, Clinch, Connell & Sourbut, 2003) Implications: Typically used in correlational studies. Potential implications for treatment to coping style. Children with low distraction scores did better in attention focusing than distraction intervention in one study (Pira, Hayes, Goodenough, & von Baeyer (2006).	Well-established assessment that broadens understanding	

(continued)

Table III. Continued

Authors and measure	Scale description			Reliability and validity		Treatment implications	Scale criteria	
	Informant/population	Stressor	No. of items; subscales	Scales/factors	Internal consistency/ test-retest	Convergent/predictive	Sensitive to treatment outcome? Leads to treatment implications?	Stress and coping criteria
Pain Response Inventory (PRI) Walker, Smith, Garber, & Van Slyke, 1997	Self-report for school-age children Children with recurrent abdominal pain (RAP)	“When you have a bad stomachache how often do you . . .?”	60 items; 13 subscales; three broad coping factors	^g Subscales include: PS, SSS, R, M/G, CSS, SI, BD, C, A, MP, SE, D/I, S; broad coping factors include: ACT, PAS, ACC Covariance structure analysis by Walker et al. (1997) supports 13 first-order and three second-order factors, which include passive coping, active coping, and accommodative coping	RAP patients: $\alpha = .71-.78$ for higher-order scales $\alpha = .68-.89$ for subscales Test-retest ($r = .46-.71$) 1 week median = .59 ($r = .34-.46$) 6 months	Convergent: Episode-specific active, passive, and accommodative coping was associated with PRI dispositional scores, active ($r = .28$), passive ($r = .53$), and accommodative ($r = .42$) coping. (Walker, Smith, Garber & Claar, 2005) Predictive: PAS coping was associated with pain, somatization, functional disability, and depressive symptoms. Behavioral disengagement, lack of self-encouragement, lack of problem-solving predicted pain and somatization. Self-isolation and stoicism predicted somatization. Catastrophizing lack of distraction strategies predicted pain. Greater Catastrophizing and Massage/Guard, and less Problem-Solving and Condition-Specific Strategies predicted depressive symptoms.	Sensitive: 3-session CBT treatment showed significant reduction in catastrophizing (Levy et al., 2003). Implications: Walker et al. (2005) examined dispositional and episode specific coping strategies to extend our conceptual understanding of coping with pain with direct implications for the importance of reducing passive coping.	Well-established assessment that broadens understanding
Waldron/Varni Pediatric Pain Coping Inventory (PPCI) Varni et al., 1996	Self-report 5–12 year old version Self-report 13–18 year old version Parent version (5–18 years) Children with musculoskeletal pain secondary to rheumatologic disease; leukemia; their parents	“When I feel pain or hurt, I:”	41 items; five theoretically-derived subscales OR 5 empirically-derived subscales	^h Theoretically-derived Subscales include: CSI, PS, D, SSS, C/H; Empirically-derived include: CS, SSS, SRBA, CR, PSSE. Factor analysis supports five subscale model	$\alpha = .85$ for total PCCI; .57 to .74 for subscales Test-retest not reported	Convergent: Not reported Predictive: Strive to Rest and Be Alone subscale were positively associated with pain intensity, anxiety, depressive symptoms, and inversely associated with self-esteem. These relationships were opposite for the Cognitive Refocusing subscale. Scores on the Problem Solving Self-Efficacy subscale were positively associated with self-esteem and inversely associated with depressive symptoms. Scores on the Seeking Social Support subscale were associated with higher depressive symptoms, trait anxiety, externalizing problems, and lower emotional and social functioning.	Sensitive: No study found. Implications: No study currently demonstrates this.	Promising

Observational pain coping measures

Behavioral Approach–Avoidance and Distress Scale (BAADS) Hubert et al., 1988	Observational rating scale of ages 3–13 years Preschoolers undergoing immunizations; pediatric patients with leukemia undergoing their first BMA	Children’s behavioral responses to an acute painful medical procedure	10 items; two scales	Scales include: Approach–Avoidance; Distress Each subscale includes 5-point behaviorally anchored ratings taken at five points during medical procedures.	$\alpha = .82$ approach $\alpha = .95$ distress Inter-rater reliability was $\kappa = .65-.78$ for approach-avoidance and $\kappa = .77-.89$ for distress	Convergent: Correlates in expected directions with the CAMPIS-R & CAMPIS-SF (Bachanas & Blount, 1996) Predictive: BAADS scores during medical preparation correlated with behavior during subsequent bone marrow aspirations. (Hubert et al., 1988)	Sensitive: Significant differences found between treatment and control groups in coping skills training intervention (Blount et al., 1992). Implications: No study currently demonstrates this.	Promising
Child Adult Medical Procedure Interaction Scale (CAMPIS) and (CAMPIS-R) Blount et al., 1989; Blount et al., 1997	Observational rating scale of ages 6 months to 13 years Immunizations; pediatric patients with leukemia undergoing BMAs and LPs; voiding cystourethograms; physical therapy regimens; cold pressor exposure	Acute painful or stressful procedure	35 codes in CAMPIS; grouped into six codes in CAMPIS-R	Scales include: child coping, child distress, child neutral, adult coping promoting, adult distress promoting, and adult neutral behaviors Each person’s behavior is typically coded at three phases (up to 3 min before the injection, during the injection, and from the needle removal until 2 min later)	Inter-rater reliability was $\kappa = .65-.92$ for all scales	Convergent: The Child Coping scales correlated in the expected directions with the Observational Scale of Behavioral Distress (OSBD), and the BAADS distress scores. Child Coping and Child Distress scales have been correlated in the expected directions with BAADS Approach scores. Predictive: Child Coping scales correlated with parent, child, and staff reports of child fear and pain. Child Coping and Child Distress scales correlated in the expected directions with parents’ ratings of their ability to help their children and with staffs’ ratings of child cooperation.	Sensitive: Therapeutic effects have been demonstrated by changes in CAMPIS-R distress, coping, distress promoting, and coping promoting scales following intervention (Blount et al., 1992; Cohen, Blount, Cohen, Schaen, & Zaff, 1999; Cohen, Blount & Panopoulos, 1997). Implications: Assessment studies lead directly to the design of therapeutic interventions to help children cope prior to and during medical treatments (Blount, Bunke, & Zaff, 2000)	Well-established assessment that guides treatment
Child Adult Medical Procedure Interaction Scale-Short Form (CAMPIS-SF) Blount et al., 2001	5-point rating scale version of CAMPIS-R. Could be used with the same populations.	Acute painful or stressful procedure	Includes four of the six codes of the CAMPIS-R.	Scales include: child coping and child distress, as well as parent and staff coping promoting and distress promoting behaviors.	Inter-rater reliability was $\alpha = .74-1.0$ for all scales	Convergent: During immunization procedures, ratings for the different CAMPIS-SF factors correlated in the expected directions with CAMPIS-R and BAADS measures, and with nurse report, parent report child self-report measures. Predictive: Nurse behavior was correlated with child coping and parent behavior with child distress during an intervention study with 3 to 7-year-old children (Cohen et al., 2002)	Sensitive: Did not show change in child behavior in one intervention study (Cohen et al., 2002). Implications: No study currently demonstrates this.	Promising

^aVF, ventilating feelings; SD, seeking diversions; DR, developing self-reliance and optimism; DSS, developing social support; SFP, solving family problems; AP, avoiding problems; SSS, seeking spiritual support; ICF, investing in close friends; SPS, seeking professional support; EDA, engaging in demanding activity; BH, being humorous; R, relaxing.

^bLA, logical analysis; PR, positive reappraisal; SG, seeking guidance and support; PS, problem solving; CA, cognitive avoidance; AR, acceptance or resignation; SAR, seeking alternative rewards; ED, emotional discharge.

^cPS, problem solving; CR, cognitive restructuring; SS, social support; EE, express emotions; PA, problem avoidance; WT, wishful thinking; SC, self-criticism; SW, social withdrawal; PE, problem engagement; EG, emotion engagement; PD, problem disengagement; ED, emotion disengagement; ENG, engagement; DIS, disengagement; SPP-ATF, Society of pediatric psychology assessment task force.

^dPS, problem solving; D, distraction; SS, social support; SW, social withdrawal; CR, cognitive restructuring; SC, self-criticism; BO, blaming others; ER, emotion regulation; WT, wishful thinking; R, resignation.

^eCC, confrontive coping; D, distancing; SC, self-controlling; SSS, seeking social support; AR, accepting responsibility; EA, escape-avoidance; PPS, playful problem-solving; PR, positive reappraisal.

^fIS, information seeking; PS, problem solving; SSS, seeking social support; PSS, positive self-statements; BD, behavioral distraction; CD, cognitive distraction; E, externalizing; I/C, internalizing/catastrophizing; A, approach; PFA, problem-focused avoidance; EFA, emotion-focused avoidance.

^gPS, problem-solving; SSS, seeking social support; R, rest; M/G, massage/guard; CSS, condition-specific strategies; SI, self-isolation; BD, behavioral disengagement; C, catastrophizing; A, acceptance; MP, minimizing pain; SE, self-encouragement; D/I, distract/ignore; S, stoicism; ACT, active; PAS, passive; ACC, accommodative.

^hCSI, cognitive self-instruction; PS, problem solving; D, distraction; SSS, seeks social support; C/H, catastrophizing/helplessness; CS, cognitive self-instruction; SSS, seek social support; SRBA, strive to rest and be alone; CR, cognitive refocusing; PSSE, problem-solving self-efficacy.

Additionally, the validity of the CHS and CUS is supported in a number of investigations, including results indicating that daily hassles account for 25% of the variability in trait anxiety scores in a sample of children with rheumatic disease (Von Weiss et al., 2002). Also, uplifts have been shown to predict a number of areas of children's psychosocial functioning (Kanner et al., 1987). No study was found that used the CHS and CUS as a measure of treatment effectiveness. The information derived from this measure fits within a risk and resiliency framework, with both hassles (risks) and uplifts (resiliency factors) contributing to the conceptualization of factors that influence children's functioning. Published reports using the CHS and CUS have been conducted mostly in the United States with participants from diverse ethnic groups. The CHS and CUS were classified as Well-established assessment that broadens understanding.

Coddington Life Events Scales (CLES)

The CLES measures the frequency and recency of stressful life events experienced by a child within the past year (Coddington, 1972; Athanassou, 2001). The aim of this measure is to identify children at risk for developing adjustment or health problems based on the presence of life stressors. There are three forms of the CLES—Preschool (CLES-P, 5 years and under), Child (CLES-C, 6–11 years), and Adolescent (CLES-A, 12–19 years). The number of items per version are 30, 36, and 50, respectively. A self-report format or an interview format is used for younger children, depending on reading level. Life Change Unit scores may be generated, with weightings for frequency and recency of events. No subscales exist for this measure. No internal consistency estimates were found. Test–retest reliability at 3 months was $r = .69$ for the CLES adolescent version. In addition, the manual provides a table of test–retest values that vary widely across stressors. In fact, it is likely that low to moderate test–retest reliability may reflect actual changes in stressors that are experienced over time, rather than any inherent difficulty with the instrument.

With regard to predictive validity, there are conflicting findings regarding the use of the CLES in predicting mental health outcomes. Some studies have demonstrated that the CLES is able to discriminate between clinical and nonclinical populations (e.g., failure-to-thrive vs. healthy infants; Bradley & Wortham, 1984; bulimics vs. anorexics and controls; Strober, 1984), whereas other studies have not found the CLES to be useful in predicting or diagnosing psychiatric disorders (Risser, Mullins, Butler, & West, 1987; Sandberg, Rutter, Pickles, McGuinness, & Angold, 2001). Life events have been found to correlate

with health status in adolescents with diabetes (Landolt, Nuessli, Schoenle, & Schoenle, 1997). Further research is necessary to determine the usefulness of the CLES in treatment planning, as there is potential for this measure to be used to identify treatment targets. Additionally, new norms need to be established to determine the validity of this measure, as the original norms are outdated (early 1970s). The CLES has been used in multiple countries and by people of different languages. The CLES was classified as Approaching well-established.

Questionnaire on Resources and Stress (QRS)

The QRS measures the level of stress experienced by a family member of an individual with a physical disability, medical illness, or mental disorder (Holyroyd, 1974). The QRS is composed of 285 true–false items and consists of 15 rationally derived scales. A short form (QRS-SF; Holyroyd & Guthrie, 1986) consisting of 66 true–false items was developed for screening purposes. The majority of research on the reliability and validity of the QRS focuses on the full-length form. Using the Kudor–Richardson method for binary response items, this measure has very good internal consistency ($\alpha = .96$). Internal consistencies for the subscales are highly variable ranging from unacceptable ($\alpha = .24$) to very good ($\alpha = .88$). Test–retest reliability data were not available in the manual, and criterion validity and construct validity have not yet been established (Erikson, 1992). However, the QRS has been demonstrated to have adequate discriminant validity, correctly classifying groups, including those with children who have either a psychiatric or a neuromuscular disorder, based on stress profiles (Holyroyd, 1974; Holyroyd & Guthrie, 1979). Also, on scales of the QRS parents of children with hemophilia who were HIV+ indicated more adaptive limitations and pessimism about their parenting and their children's future than parents of children with hemophilia who were not HIV+ (Bordeaux et al., 2003). However, in a treatment-outcome study for caregivers of adult patients with traumatic brain injury, no significant improvements were found in QRS scores (Carnevale et al., 2002). This could be indicative of an ineffective treatment intervention, insensitivity of the QRS, or both. The psychometric properties of the QRS-SF are in need of further evaluation. Limited normative data for the QRS are available for caregivers of four patient groups, including patients with developmental disabilities ($n = 145$), psychiatric problems ($n = 98$), chronic medical illness ($n = 49$), and neuromuscular disease ($n = 37$) (Erikson, 1992). The QRS has been used in research in different countries, and with participants from different

ethnic groups. The use of the QRS is limited in clinical settings due to practical issues in the length and ease of scoring of the measure. The QRS was classified as Approaching well-established.

In summary, the discriminative and predictive validity of the measures of stress have generally been supported in correlational research. This research has broadened understanding about the association between stress and different psychosocial states. Research is sparse on criterion validity and construct validity. Research is also limited on sensitivity to treatment effects, and one study of the QRS did not detect changes following an intervention (Carnevale et al., 2002).

Despite the wide-usage of the CHS and CUS, CLES, and QRS, questions arise about the psychometric properties of the measures, their usefulness due to outdated norms (e.g., CLES, QRS), or length of the measure (e.g., QRS). Although the stress measures were generally not stable over time, this may be a reflection of changes in the actual levels of stress over time. The CHS and CUS, and QRS assess negative stressful events as well as positive life events or resources, allowing for a broader assessment of both risk and resilience factors. In contrast, the CLES focuses solely on negative events. Research with the CHS and CUS has been conducted mostly in the North America with participants from various ethnic backgrounds. Research with the CLES and QRS has been conducted with people from different ethnicities and in a number of different countries. In general, the measures of stress were designed more for use with child and adolescent clinical populations, but have also been adopted for use with pediatric medical populations. Despite the widespread use of these inventories, only the CHS and CUS subscales were classified as Well-established assessment that broadens understanding. The CLES and QRS were classified as Approaching well-established using the SPP-ATF criteria, primarily due to a lack of recent norms or other psychometric information.

Coping

This task force reviewed nine self-report (six general coping, three pain-specific coping) and three observational measures of pain coping. Many of the coping measures were specifically designed for use with pediatric, as opposed to child clinical or nonmedical populations and/or environments. Of the six general measures of coping, four were classified as Well-established measures that broaden understanding and two as Approaching well-established. For the pain-specific

self-report and observational measures ($n=6$), one was classified as a Well-established measure that guides treatment, two as Well-established that broaden understanding, two as Approaching well-established, and two as promising. The review will first examine general coping measures and then discuss pain-specific coping measures.

Self-Report Measures of General Coping

Adolescent Coping Orientation for Problem Experiences (A-COPE)

The A-COPE measures the frequency of specific adolescent coping behaviors (Patterson & McCubbin, 1987). The 54 items were derived based on a review of the literature and interviews with adolescents. Adolescents score the items from 1 = never to 5 = most of the time, to indicate the frequency with which they use the coping behavior when feeling tense or facing a problem or difficulty. As such, this is more of a general coping measure rather than a measure of coping with specific stressors. The A-COPE defines coping as behaviors used to manage stress or emotional distress secondary to stressful events. The A-COPE consists of 12 rationally-derived subscales or types of coping activities. Factor analysis by Chapman and Mullis (2000) resulted in the identification of three general factors: problem-focused coping, cognitive-focused coping, and emotion-focused coping. However, earlier factor analyses by different authors resulted in 13 factors (Copeland & Hess, 1995), suggesting that further analyses need to be done. Internal consistency estimates across the 12 subscales range from unacceptable ($\alpha = .50$) to respectable ($\alpha = .75$), with very good test-retest estimates ($r = .83$). No internal consistency estimates for the higher-order factor derived scales could be located. The A-COPE has been used as pre- and post-test measures to evaluate treatment outcome with substance abusing adolescents and pregnant teenagers (Carty, 1993; Harris & Franklin, 2003; Mason & Collison, 1995), thus demonstrating potential as a clinically useful tool to evaluate the success of psychological interventions with adolescents. The A-COPE has also been used in several studies with healthy adolescents to evaluate differences in coping behaviors that are associated with demographic factors (Chapman & Mullis, 2000). The A-COPE has also been used with pediatric medical populations. For example, Lewis and Brown (2002) found that adolescents diagnosed with HIV/AIDS for more than 4 years reported greater use of diversion coping than those diagnosed for

shorter periods. The A-COPE has been used in numerous studies with participants from different ethnicities and has been used in different countries. The A-COPE was classified as a Well-established assessment that broadens understanding.

Coping Response Inventory—Youth Form (CRI-Y)

The CRI-Y identifies cognitive and behavioral responses used to manage a recent problem or stressful event. It is based on the approach–avoidance theoretical framework (Ebata & Moos, 1991). It may be used with 12–18 year olds with psychiatric, emotional, or behavioral problems, or medical disorders. This 48 item measure is scored on a 4-point scale, with responses ranging from “no” to “yes, fairly often.” There are eight rationally-derived scales (four approach and four avoidance coping scales). It also includes items for respondents to evaluate characteristics of the stressful event. The measure contains an Actual form and an Ideal form (i.e., preferred coping styles). The authors suggest using the Ideal form to set treatment goals. No factor analytic studies could be located to confirm the rationally derived subscales created in this measure. The normative sample consisted of 400 youth, including healthy youth, those who were depressed or had a conduct disorder, and those with rheumatic disease.

The internal consistency estimates for the subscales in this measure range from unacceptable ($\alpha = .55$) to respectable ($\alpha = .79$), with the test–retest estimates over a 15-month period being very low ($r = .29-.34$). Similar to measuring stressors, it is likely that coping strategies change across time and across different situations. Predictive validity is generally supported from findings using the scale. Studies with the CRI-Y indicates that approach coping increased with age, and is associated with more favorable outcomes (Griffith, Dubow, & Ippolito, 2000). Also, use of approach coping was correlated negatively with health problems and health risk behaviors. Avoidance coping was correlated positively with these domains. Use of both types of coping seemed to override the negative effects of avoidance coping when used alone (Steiner, Erickson, Hernandez, & Pavelski, 2002). A number of scales of the CRI-Y have been found to be responsive to a treatment program designed to improve coping (Puskar, Sereika, & Tusaie-Mumford, 2003). Published research with the CRI-Y has included participants from different ethnicities and from several different countries. The CRI-Y was categorized as Approaching well-established, primarily due to a lack of detailed psychometric information,

as well as a lack of detail on the sources of the psychometric information found in the manual.

Coping Strategies Inventory (CSI)

The CSI assesses coping thoughts and behaviors in response to a specific stressor (Tobin, 1991). The individual whose coping is being assessed describes in writing the events or circumstances of a stressful event. After describing the event, the individual completes the CSI using a 5-point Likert scale for each question. To develop this 72-item measure, 23 of the items were taken from the Ways of Coping Checklist (Folkman & Lazarus, 1980) and 49 items were written to reflect hypothesized dimensions of engagement and disengagement coping. Construction of the subscales was based on a review of the coping assessment literature and factor structure analysis (Tobin et al., 1989). A 32-item version of this scale was developed from the highest factor loadings and best alpha coefficients from the 72-item version. The shortened version has been used most often in the pediatric literature (Madan-Swain et al., 1994). There are eight primary subscales. These combine to create four higher order or secondary scales (i.e., problem engagement, emotion engagement, problem disengagement, and emotion disengagement). These four secondary scales combine to create the two higher-order scales of engagement and disengagement. There are nine items per subscale for the longer version, and four items per subscale for the shorter version. There is a child self-report version for children aged 7 years and above, and a parent-report on child version for children age 3 years and above.

The internal consistency estimates for this scale range from respectable ($\alpha = .70$) to excellent ($\alpha = .94$), representing the most stable internal consistency estimates for general coping measures reviewed in this article. The developers of this measure also conducted test–retest reliability within stressor ($r = .67-.83$) (Tobin et al., 1989). Research using the CSI has been descriptive in nature, although this measure has the potential to be clinically useful for identifying treatment targets given its brief nature and strong psychometric properties. The CSI has been used mostly in the United States with participants from diverse ethnic backgrounds. The scale was classified as a Well-established assessment that broadens understanding.

Kidcope

The Kidcope is a self-report, multidimensional measure of children’s coping strategies (Spirito et al., 1988). The version for children aged 7–12 years has 15 items,

with 1–2 items per strategy. For 13–18 year olds, there are 10 items, with 1 item per strategy. Prior to completing the Kidcope, the respondent is either presented a stressful situation (e.g., hospitalization) or generates a stressful situation. For each strategy, the child or adolescent rates if they use the strategy (i.e., frequency, scored yes/no for children or rated on a Likert scale for adolescents) and how much it helps (i.e., efficacy, scored on a 3 or 5 point Likert scale for children and adolescents, respectively). Active (e.g., problem solving), avoidant (e.g., social withdrawal), and negative (e.g., self-criticism) coping strategies/questions are included.

The Kidcope was intended as a brief screening tool rather than a comprehensive measure of coping (Spirito, 1996). The factor structure of the Kidcope is reported to vary across situations (Spirito, 1996). Test-retest reliability ranged considerably over a brief (3–7 day) period ($r = .41-.83$), with 10-week estimates unacceptable ($r = .15-.43$) (Spirito et al., 1988). It is unclear if the same stressor was used at each assessment interval, which would significantly influence the stability of reporting. Concurrent validity data are not strong, with correlations between the dimensions of the Kidcope and the CSI (Tobin, 1991) ranging from .33 to .77, and correlations between the Kidcope and the A-COPE (Patterson & McCubbin, 1987) being .08 to .62. In other studies of predictive validity, Edgar and Skinner (2003) found that adolescents with diabetes reported use of cognitive restructuring correlated positively with well-being and negatively with depression. Also, acutely ill children reported using avoidant coping strategies more than chronically ill children (Spirito, Stark, & Tyc, 1994).

The authors report that the Kidcope could be used to guide interventions. However, no treatment-outcome studies were found. Additionally, having only one or two items per subscale makes it difficult to conduct statistical comparisons of coping strategies. The Kidcope has been used in a number of countries and with different ethnicities. The Kidcope was the coping scale endorsed most frequently by those who responded to the Division 54 survey, compared to other scales reviewed by the Coping and Stress workgroup, probably due to ease of use and brevity. Single item scales and brevity should be seen as both an asset and a liability. Convenience and ease of use are obtained at the price of lower psychometric properties and less detailed data. Although the Kidcope is widely used and its brevity provides a helpful screening tool, it was classified as Approaching well-established due to concerns about its psychometric properties.

Role-play Inventory of Situations and Coping Strategies (RISCS)

The RISCS is a context-specific measure of problem situations and coping strategies for children living with cystic fibrosis (CF) (Quittner et al., 1996). There are four versions of this measure: adolescent, school-aged child, parent of adolescent, and parent of school-aged child. The measure consists of 31 written and audiotaped vignettes of frequent and difficult problem situations that span 11 domains of functioning relative to CF care (e.g., mealtimes and routines). The respondent listens to the vignette and provides an immediate open-ended coping response. The open-ended coping responses are recorded, transcribed, and coded on a 4-point scale that ranges from “extremely incompetent” to “extremely competent.” The open-ended response is followed by a forced-choice format for rating the frequency and difficulty of each situation. The inter-rater reliability for this measure is good (81%).

The RISCS displays good concurrent and predictive validity in correlational research (DiGirolamo, Quittner, Ackerman, & Stevens, 1997). In addition, the RISCS was used to measure change in coping strategies following administration of an educational CD-ROM program for children and adolescents with CF, with improvements in coping strategies noted as a result of the intervention (Davis et al., 2003). Beyond measuring change, this scale is appropriate for intervention development, as it identifies specific types of situations that are problematic for families, both in frequency and severity. The RISCS is a thorough measure of coping for parents and children, as it captures coping responses (open-ended, qualitative information) and frequency/difficulty (forced-response, quantitative information). This diversity of information is useful in understanding, categorizing, and intervening with a complex construct such as coping. Unfortunately, administration of this measure is more time consuming and cumbersome than several other self-report measures of coping, making it less practical for busy clinical practice settings. To our knowledge, thus far the RISCS has been used with mostly Caucasian participants in the United States. The RISCS was classified as Approaching well-established, as investigations with this measure thus far have been conducted by Dr. Quittner and her colleagues.

Ways of Coping Checklist (WCCL)

The WCCL is a self-report measure describing behavioral and cognitive coping strategies that individuals use in a specific stressful experience (Vitaliano, Russo, Carr, Maiuro, & Becker, 1985, revised version; Folkman &

Lazarus, 1980, original). This scale was originally developed for middle-aged adults, but has been revised and used widely with children and adolescents. The revised version consists of 66 items, with five factor-derived subscales that were established with an adult population (Vitaliano et al., 1985). Interestingly, a factor analysis conducted with adolescents derived a four-factor structure with the Blamed Self subscale dropped, as it lacked response variability (Halstead et al., 1993). In the revised version, each question is answered on a 4-point Likert scale with 0 = does not apply and/or not used and 3 = used a great deal. Internal consistency estimates from the Halstead et al. (1993) study were acceptable ($\alpha > .79$) for three of the four retained scales with the Avoidance subscale having an unacceptable internal stability estimate ($\alpha = .55$). Although the Blamed Self subscale was dropped based on the Halstead et al. analysis, it has been retained in other investigations with pediatric samples (Johnson & Carmichael, 2000). An unacceptable α -level for the Avoidance scale has been found in subsequent research (Johnson & Carmichael, 2000), thus suggesting that this subscale is not psychometrically sound. There is evidence of predictive validity. For example, in an investigation by Williams and McGillicuddy-De Lisi (1999), older children used a wider variety of coping strategies than younger children, including strategies that would likely reduce the impact of a stressful situation. Research using the WCCL has been descriptive in nature, with no treatment-outcome research using this measure located at the time of this review. The scale has been used in published research that was conducted in several countries and with different ethnic groups. The WCCL was classified as Well-established assessment that broadens understanding.

Overall, two measures of general coping have unique strengths to highlight. The Coping Strategies Inventory (CSI) provides sound psychometric data for its use in assessing coping strategies in response to a stressor. The CSI was based on the extant literature and a previous measure of coping, the Ways of Coping Checklist (Folkman & Lazarus, 1980). Hierarchical factor analytic methods were used to derive a statistically stable scale and the shortened version of this measure has retained the highest loading items. Test-retest reliability estimates have been conducted in a logical manner to take into consideration variation due to within versus across stressors. Lastly, this measure has been used with specific pediatric populations (e.g., pediatric HIV: Bachanas et al., 2001; inflammatory bowel disease: Mackner & Crandall, 2005), indicating its role in pediatric psychology research.

The second notable measure is the RISC. This measure takes a step beyond simple forced-choice self-report response formats to collect the rich data provided through open-ended responses. In addition, the use of vignettes may elicit emotional responses in participants that may prompt more accurate reporting of coping responses. However, due to the time required to transcribe and code responses, the RISC would not be applicable for most busy clinical settings. Of the scales reviewed in this section, the CRI-Y and the RISC have been shown to be sensitive to treatment effects.

Self-Report Measures of Pain Coping

Pain Coping Questionnaire (PCQ)

The PCQ is a multidimensional measure of coping with pain for use with children and adolescents (Reid et al., 1998). The types of pain noted in the instructions for completing the PCQ include headache, stomach ache, a bad muscle pull, joint pain, back pain, earache, or menstrual pain, all examples of pain of several hours or days duration. The responses focus on what people say, do or think when they have pain. This 39-item measure consists of three higher-order subscales and eight lower-order subscales derived from confirmatory factor analysis (Reid et al., 1998). These eight subscales may be subsumed under the higher-order factors of approach, problem-focused avoidance, and emotion-focused avoidance. The 5-point Likert scale ranges from "Never" to "Very Often." Internal consistency estimates range from respectable ($\alpha = .74$) to very good ($\alpha = .86$) for the eight lower-order subscales and are very good ($\alpha > .85$) for the higher-order scales. Test-retest stability data could not be located. Predictive validity is supported in several studies that have been published demonstrating associations between PCQ subscales and outcomes of interest, such as pain responses (Thastum, Zachariae, Scholer, Bjerring, & Herlin, 1997) and functional disability (Reid, Chambers, McGrath, & Finley, 1997). In some of the studies using the PCQ, different versions (e.g., 51-item; 25-item) and subscale combinations have been used, suggesting researchers must examine studies carefully when drawing conclusion about the data.

This measure has been translated into multiple languages (e.g., Danish and Dutch) and used in different countries, demonstrating its widespread use and applicability, although most participants thus far appear to have been Caucasian. Children with low PCQ distraction scores had better cold-pressor pain outcomes if assigned to an attention-focusing rather than distraction intervention (Piira et al., 2006). The PCQ has been used

as an outcome measure in a cognitive behavioral intervention for adolescents with chronic pain. Statistically significant reductions in catastrophic thinking were found 3 months following treatment (Eccleston et al., 2003), demonstrating the catastrophic thinking subscale's sensitivity to treatment intervention. The PCQ appears applicable for use in clinical settings. The PCQ was classified as a Well-established assessment instrument that broadens understanding.

Pain Response Inventory (PRI)

The PRI is a multidimensional questionnaire designed to assess children's coping responses to recurrent abdominal pain (Walker et al., 1997). This 60-item measure consists of 13 first-order factors and three broader second-order factors (active coping, passive coping, and accommodative coping). The structure for this scale was established using covariance structure analysis and corresponds with the proposed subscales set forth by the authors (Walker et al., 1997). Internal consistency estimates for the three broad coping factors were respectable ($\alpha = .71-.78$) and the 13 subscales ranged from minimally acceptable ($\alpha = .68$) to very good ($\alpha = .89$). Test-retest reliabilities were generally unacceptable and likely reflect the dynamic nature of coping over time. Construct validity was supported in the initial validation sample, and norms are available for three samples of children. In the initial validation study, passive coping was the higher-order factor out of the three that was significantly associated with pain, somatization symptoms, disability, and depressive symptoms in a sample of participants from school, a clinic, and former clinic patients. Beyond the initial validation study, recent publications have demonstrated significant relationships between PRI higher-order factor of passive coping and the subscales of self-isolation, catastrophizing, and disengagement and depressive symptoms (Kaminsky, Robertson, & Dewey, 2006). Lipani and Walker (2006) created a passive coping index as a proportion of passive coping to total coping behaviors endorsed. However, in regression analyses passive coping did not contribute to maternal worry about children's pain or to family activities. Although no research was located using the PRI in pain populations other than abdominal pain, it is likely that this measure could easily be adapted for this purpose.

The PRI has been used in treatment-outcome research. Levy et al. (2003) reported a significant decrease in children's tendency to catastrophize about abdominal pain following a three session CBT intervention focusing on parental response and modeling in mothers with Irritable Bowel Syndrome. Thus far, the PRI has

been used mostly in published research conducted in North America, and has included participants from various ethnicities. The PRI was classified as a Well-established instrument that broadens understanding.

Waldron/Varni Pediatric Pain Coping Inventory (PPCI)

The PPCI was designed to facilitate understanding about factors that influence pain and to give direction for developing treatment strategies (Varni et al., 1996). There are separate forms for children (5–12 years), adolescents (13–18 years), and parents. The forms are identical except for the use of developmentally appropriate language and use of the first or third person. Scoring is done on a 3-point Likert scale, with 0 = never and 2 = often. The authors generated items for the PPCI based on their review of the pediatric and adult pain coping literature, and items were revised by other experts in the field. The resultant measure consists of 41 strategies that children might use to cope with pain. This measure can be scored using five theoretically-derived scales or five empirically-derived scales. The empirically-derived scales included two factors, problem-solving self-efficacy ($\alpha = .67$) and strive to rest and be alone ($\alpha = .73$), while the conceptually-derived scales included two different factors, catastrophizing/helplessness ($\alpha = .57$) and problem-solving ($\alpha = .67$). Internal consistency for the total PPCI is very good ($\alpha = .85$). The empirically-derived scales appear to provide more stable indices. Research using the PPCI has been descriptive in nature, with no evidence thus far of its use in treatment-outcome studies. The PPCI has content validity and evidence of predictive validity. In some of those studies, Varni et al. (1996) found that greater use of cognitive refocusing was associated with better pain outcomes. High scores on the strive to rest and be alone subscale were associated with poor pain outcomes and more depression (Varni et al., 1996) and with parents' reports of lower patient social, physical, and emotional functioning (Sawyer et al., 2004, 2005). There is no evidence thus far that the PPCI has been used to guide treatment design. The PPCI has been used in research in North America with patients from various ethnic backgrounds and it has been used in Australia. Participants have included children and adolescents with arthritis or cancer. The scale was classified as promising, with a need for more psychometric data.

In summary, of the self-report measures of coping with pain, the Pain Coping Questionnaire and PRI stand out as psychometrically sound and frequently used assessment measures. Both of these measures were derived from factor analytic methods, have strong internal

consistency estimates, extensive validity data, and have been shown to be sensitive to change in response to treatment.

Observational Measures of Pain Coping

The observational coping measures in this review were specifically designed to assess coping with acute painful medical procedures. Observational measures provide the opportunity to obtain objective measures of overt coping behavior. Although these measures are specific to the acute pain context, the implications of findings from these measures may extend beyond the arena of acute pain and prove heuristic for informing our understanding of the impact of individual coping behaviors during episodic or chronic pain situations.

Behavioral Approach–Avoidance and Distress Scale (BAADS)

The BAADS is an observational measure designed to evaluate children's behavioral responses during preparation for or the experience of acutely painful medical procedures (Hubert et al., 1988). It was originally developed for use during preparation for bone marrow aspiration procedures, but has also been validated for use during immunizations (Bachanas & Blount, 1996). The BAADS consists of two subscales, Approach–Avoidance and Distress. Each subscale includes 5-point behaviorally anchored ratings that are conducted at five time intervals during the medical procedure. The BAADS has demonstrated good internal consistency estimates for the approach ($\alpha = .82$) and distress ($\alpha = .95$) subscales. Inter-rater reliability estimates are also generally acceptable ranging from acceptable ($\kappa = .65$) to very good ($\kappa = .89$). The BAADS has also demonstrated convergent and predictive validity. The BAADS has been shown to be sensitive to change in a coping skills intervention study (Blount et al., 1992). However, there has been some question regarding the utility of this measure to describe children's coping during medical procedures. Bachanas and Blount (1996) indicated that the BAADS seems to measure the quantity rather than style of coping. As such, they suggested that Approach coping essentially translated into more coping. Additionally, Bachanas and Blount (1996) proposed that the behaviors conceptualized as “avoidance” could also be considered to be indicative of “distress.” A later evaluation of the BAADS using multitrait–multimethod matrix analyses corroborated these findings (Bernard, Cohen, McClellan, & MacLaren, 2004). These conceptual issues with the Approach–Avoidance subscale of the BAADS indicate that the BAADS should not be used as a measure

of coping style during painful procedures. However, it may be useful in quantifying how much a child might approach a new or distressing situation, such as was done in the original research by Hubert et al. (1988). The BAADS has been used mostly in North America with children from multiple ethnic backgrounds. It was classified as Promising.

Child Adult Medical Procedure Interaction Scale (CAMPIS)

The CAMPIS and CAMPIS-R are observational instruments that measure the behaviors of children, parents, and medical staff during acute medical procedures (Blount et al., 1989; CAMPIS-R; Blount et al., 1997). The CAMPIS is a 35-code instrument, while the CAMPIS-R is a regrouping of those 35 codes into six higher-order codes. This regrouping was done based on the pain and coping literature and based on the patterning of results from sequential analysis methods used in the initial study with the measure (Blount et al., 1989). With the CAMPIS, medical procedures are typically videotaped for later coding. The CAMPIS and CAMPIS-R are unique in that they assess child coping, child distress, and other child behaviors, as well as parent and staff coping promoting, distress promoting, and other behaviors that occur before, during, and after the child's medical treatment. Inter-rater reliability for this measure ranges from acceptable ($\kappa = .65$) to excellent ($\kappa = .92$). The CAMPIS is a flexible instrument that has demonstrated good validity and reliability in a variety of medical situations, such as bone marrow aspirations and lumbar punctures (Blount et al., 1989), voiding cystourthogram (Salmon & Pereira, 2002), physical therapy regimens (Miller, Johanna-Murphy, & Zhelezniak, 2001), and the analogue pain-induction cold-pressor task (Chambers, Craig, & Bennett, 2002). A recent version of the CAMPIS has been developed for use in perioperative environments (Caldwell-Andrews, Blount, Mayes, & Kain, 2005). The scales of the CAMPIS have been shown to be sensitive to change following interventions (Blount et al., 1992; Cohen et al., 1999). Additionally, results from the initial correlational and sequential analytic studies using the CAMPIS/CAMPIS-R led directly to the design of effective treatment interventions for promoting coping and reducing distress in children (Blount et al., 2000a,b). Because adults' behaviors are also assessed with the CAMPIS, it is easier to determine the effects of their behaviors on children's coping and distress. Although the CAMPIS and CAMPIS-R provide rich data due to their comprehensiveness, the length of time required to code is a barrier

for use in applied clinical settings, which led to the creation of the CAMPIS-Short Form (CAMPIS-SF). The CAMPIS/CAMPIS-R has been used primarily in the US, Canada, and Australia, and with participants from various ethnic backgrounds. It was classified as a Well-established assessment measure that guides treatment design.

Child Adult Medical Procedure Interaction Scale- Short Form (CAMPIS-SF)

The CAMPIS-SF is a rating scale version of the CAMPIS-R. Although it is easier to use, it also gives less detailed information (Blount, Bunke, Cohen, & Forbes, 2001). The CAMPIS-SF offers a quicker assessment of child coping, as well as child distress, adult coping promoting, and adult distress promoting behaviors. Inter-rater reliability for this measure ranges from respectable ($\kappa = .74$) to excellent ($\kappa = .92$). Evidence of construct validity was presented in the initial study with the measure. The CAMPIS-SF is a newer scale that has not been extensively studied, and therefore requires further validation. However, it is likely to be beneficial in situations where there is not sufficient time to use the CAMPIS/CAMPIS-R coding system. The CAMPIS-SF validation research was conducted with a sample in the United States that was primarily Caucasian and African-American. The scale was classified as Promising.

In summary, the direct observation CAMPIS/CAMPIS-R was classified as Well-established assessment that leads directly to the design of treatment interventions. The behavioral rating scales, the BAADS and the CAMPIS-SF, were classified as promising. The CAMPIS/CAMPIS-R provide very detailed descriptions of children's coping, distress, and other behaviors, as well as the behaviors of others who accompany and have been shown to influence the children's reactions to fearful or painful medical treatments. Not surprisingly, the strength of the detailed data provided by CAMPIS/CAMPIS-R is also its weakness. It is labor and time intensive to use, prohibiting it from use in applied clinical settings. It is much more applicable for research settings, and its format is generalizable to a host of painful events. To make it more applicable for use in applied settings, only particular codes of interest could be monitored, such as children's coping behaviors and adults' coping promoting behaviors subsequent to a coping skills intervention, as has been done in some research investigations (Cohen et al., 1997). In addition, the CAMPIS-SF has promise for use in applied environments for monitoring children's coping and distress, and the behaviors of others around them. However, the efficiency of behavioral rating scales also contributes to their lower

overall validity. Global ratings scales cannot produce the detailed data provided by the CAMPIS/CAMPIS-R.

Discussion and Future Directions

Of the 15 measures reviewed by this group, six were classified as Well-established assessment instruments that broaden understanding and one as a Well-established instrument that guides treatment. Of the three stress measures, only the CHS and CUS (Kanner et al., 1987) is Well-established, and it broadens understanding. In research with the CHS and CUS, hassles and uplifts have been found to correlate in the expected direction with children's adjustment. Both subscales are available in the original journal publication.

Of the 12 coping measures, six met criteria for Well-established. These included the A-Cope, CSI, PCQ, PRI, WCCL, and the CAMPIS/CAMPIS-R (Table III). There were also some very promising scales, such as the RISCs, that would have met the criteria for Well-established except that all investigations have involved one or more of the original authors of the measure. Having multiple investigative teams use the scales in published research is a requirement for the Well-established designation. Each of the coping scales has been used in correlational research. In addition, the A-COPE, PCQ, PRI, RISCs, BAADS, and CAMPIS/CAMPIS-R have been shown to be sensitive as dependent variables for measuring changes in treatment research. Others scales also have the potential for measuring change in intervention research.

The measures of coping appeared to hold the greatest potential for guiding the design of treatment interventions. When using the Stress and Coping workgroup criteria, the CAMPIS/CAMPIS-R was the only scale thus far that has been shown to directly inform the design of treatment interventions. The connections between assessment research using the CAMPIS and treatment design have been described by the authors (Blount et al., 2000a,b; Blount, Piira, & Cohen, 2003), and may serve as one possible prototype for helping guide this area. Although not systematically addressed by this subgroup, the reviewers noted that several other scales that were reviewed have the potential to indirectly inform the design of treatment interventions. For example, research with these inventories may specify the types of constructs that need to be changed rather than specific behaviors that should be trained in order to produce a desirable outcome. However, we did not find explicit, direct linkages for the other inventories in which

assessment research directly informed the design of treatment interventions.

Limitations of this review should be noted. The first broad issue to be considered involves the selection of measures. The survey that was initially mailed to the membership, although intended to be comprehensive, almost surely excluded some stress and coping scales. Scales that were more likely to be left out were the ones that were most recently developed. Further, the newer scales that were included in the survey were less likely to become part of the review because they were less likely to be endorsed as having been used by as many people. Few endorsements could reflect the short duration since they had been published rather than any lack of strong psychometric properties or potential for high clinical utility. In addition, the survey of the membership was conducted in 2003 and, although it may have accurately represented the research activities and clinical practice of the responders at that time, some additional scales might be used today. Finally, the responses of the 87 subscribers to the Division 54 listserv who completed the surveys may not accurately reflect the use of particular coping and stress measures by the field as a whole. The second broad issue relates to the criteria that were used by the Evidence-based Assessment Task Force and those that were unique to the Stress and Coping Workgroup. In contrast to prior efforts to determine evidence-based treatments, determining assessment instruments that should be considered as evidence-based is a much more complicated task. This complexity arises in large part because there are multiple kinds of validity that an assessment instrument could display (Cohen et al., in press). Further, an instrument might be valid for one purpose, but not for another. For the SPP-ATF, one global categorization was made for each scale, as being Promising, Approaching well-established, or Well-established. It is possible that future assessment task forces might apply these criteria individually to the different types of validity.

To help guide future research, and in particular to help facilitate a closer and more explicit connection between stress and coping assessment research and the design of treatment interventions, we suggest the following considerations and guidelines:

1. *Assessment of stress may indicate that something needs to be changed, and may even indicate what that something is, but rarely indicates how to change it.* High levels of stress in a person's life is generally associated with undesirable outcomes. This is true whether stress is viewed as an accumulation

of aversive external events or counterproductive means of dealing with those events. The treatment implications of high stress are negative, in the sense that there should be a reduction or removal of external stressors or a cessation of reacting in counterproductive ways to life's challenges. This information can be very valuable, but it may not be sufficient. It can be very difficult to simply cease doing something, even if that something is counterproductive. It is difficult to turn from something without having a desirable alternative place to go.

2. *Focus on coping assessment research for treatment implications.* The goal of coping assessment should be to find effective, malleable behaviors, and strategies that reduce adverse reactions to stressful life events. This is true whether the event is chronic, such as having a medical disorder, or acute, such as receiving a painful injection. In the best of cases, greater proficiency in using these strategies might not only lead to a reduction of adverse outcomes, but might actually promote a sense of mastery for patients and others who may be enlisted to assist them. In contrast to the negative therapeutic implications of the assessment of stress (e.g., take something away), as noted earlier, the therapeutic implications of discovering effective, trainable coping strategies are positive, in the sense that they can be taught and added to the individual's repertoire. By turning to the use of effective coping strategies to promote personal growth and satisfaction, patients necessarily will have to turn from the excessive use of ineffective, and perhaps habitual, unproductive ways of being.
3. *To the extent possible, coping assessment research should focus on discrete behaviors as well as on constructs.* Constructs are part of theory development and testing, and they allow for an easier conceptualization of how broad categories of variables relate to each other and to outcomes of interests. In contrast to more amorphous constructs, individual assessment scale items may reflect particular, discrete behaviors that can be trained. Those individual overt or cognitive behaviors that are associated with beneficial outcomes can be taught to increase their occurrence. Behaviors associated with adverse outcomes can be targeted for reduction, probably by training an incompatible and beneficial behavior to replace it.

Constructs and behaviors can be reframed in terms of risk and resiliency research as marker variables and functional variables (Kazdin et al., 1997). Constructs can be thought of as markers that direct researchers' attention to examine the components of the construct that may be functional; that is, helpful or detrimental in relation to a particular outcome of interest. These individual behaviors are potentially trainable, whereas constructs tend to be more abstract and difficult to operationalize in training programs. Including relevant, malleable, individual behavioral items in the design of coping scales helps facilitate the potential linkage between assessment and treatment. This may also mean a rethinking of how to present the results of correlational research, with attention to behavioral items that are helpful, as well as to constructs.

A greater attention to individual coping scale items that are indicative of modifiable behaviors increases the likelihood of correlational research on coping yielding direct implications, as opposed to general recommendations, for the design of therapeutic programs. The implication, simply put, is that the patient is to do more of this particular coping behavior when faced with a particular stressor. Greater reliance on constructs rather than particular behavioral items lessens the explicitness of the connection between coping assessment research and the design of treatment interventions. With this said, the lack of an explicit connection does not mean that prior coping research has not been valuable for designing treatment interventions. Indeed, construct-oriented coping assessment research suggests many valuable, but often general, implications for treatment design. Construct-oriented assessment research necessarily means that treatment designers must extrapolate, correctly or not, from the findings of correlational research if particular coping strategies are to be trained.

4. *Coping assessment research should consider important contextual variables that facilitate the performance of effective coping behaviors.* Simply knowing how to perform a coping behavior does not assure that behavior will be used when needed. Identification and assessment of malleable contextual variables that encourage or discourage the performance of effective coping behaviors is essential to help assure generalization from the

times, when coping behaviors are taught to the times when their performance is needed. For children, the behaviors of parents, medical professionals, siblings, teachers, peers, and even the presence of environmental stimuli might provide important cues that either increase or decrease the likelihood of coping occurring when needed. For example, in assessment and coping skills training research with children in acute painful situations, prompts from parents or medical staff (Blount et al., 1989, 2003; Chambers et al., 2002) or the use of potent environmental prompts (Cohen et al., 1997) are often necessary to facilitate children engaging in effective coping during the painful events. In fact, one study showed that children's coping behaviors during painful medical treatments rarely occurred except when repeatedly prompted (Blount et al., 1989). It is also well-established that the effectiveness of coping behaviors varies depending on a multitude of factors, including the characteristics of the stressor. For example, different coping behaviors seem to be useful for coping with acute versus long term stressors. Even within acute painful medical stressors, effective coping seems to vary for different phases of the medical procedure, such as before versus during painful injections (Blount, Sturges, & Powers, 1990). As stressors differ on important domains, different coping behaviors would be required. Generally, we advocate that researchers focus on stressor-specific coping assessment, with attention to both effective coping behaviors and their match to the unique characteristics of the stressors.

5. *It may be beneficial for coping assessment measures to be multidimensional.* We will use the CAMPIS as a basis for discussion. This scale includes behaviors indicative of coping, distress, and other child behaviors, as well as a host of behaviors that may be performed by parents and/or medical staff that influence the child. These behaviors may be performed before, during, or after different medical procedures. The inclusion of these various dimensions within one inventory has facilitated investigations and analyses to discover those parent, staff, and child behaviors that are helpful and those that are detrimental during different phases of the medical procedure. If the CAMPIS was unidimensional, measuring only coping behaviors, it would be less likely that researchers

who use it would assemble the necessary additional measures to assess all of the other relevant dimensions. We believe that there is a place in research for more labor-intensive measures, and in practice for the abbreviated usage of only several highly relevant codes, or for more easily used rating inventories or brief paper and pencil measures that assess the same constructs.

6. *Coping assessment researchers should more explicitly describe how assessment results inform treatment design.* It is possible that there are more direct assessment-treatment linkages in the extant research than were identified by this group. Discovering these linkages is easier when the developers of the inventories and others who use them specifically describe how correlational results and other findings from research with any given inventory directly inform the design of treatment interventions. Such descriptions may also serve to help other scale developers attend to this aspect of clinical utility when designing the scales.
7. *Use the results from coping assessment studies to conduct treatment research.* As has been noted elsewhere (Blount et al., 2000a,b) and as elaborated on subsequently, the rates of treatment research compared to other types of research, particularly correlational research, has remained too low over the last decade and a half. If coping assessment is to be shown to have direct clinical utility, researchers must take the next step and use the data from correlational research to design treatment interventions. Experimental treatment-outcome studies of this type would provide a stringent test of the validity of findings from correlational research. This research would also demonstrate the assessment-treatment design linkages that we so strongly advocate in this article.

In conclusion, as we noted at the beginning of this review, the assessment of stress and coping is essentially the assessment of risk and resiliency factors, respectively. The identification of these risk and resiliency factors through assessment research is primarily useful to the extent that those factors can be manipulated to promote better biopsychosocial outcomes (Blount et al., 2000a,b; Kazdin et al., 1997). It has been observed over the years (Blount et al., 1991; Compas et al., 2001) that the study of coping is well-developed, in terms of theory and that the assessment of coping has the potential to yield tremendous practical and clinical implications

for the development of effective treatment interventions in multiple areas of pediatric psychology. However, as is true of assessment in other areas of psychology (Frick, 2000) that potential is yet to be fully realized. Only one coping scale was rated as having demonstrated direct implications for the design of effective treatment interventions. Others have clear potential and may have indirectly informed the design of interventions. However, the explicitness of the linkage was not as clear.

Michael Roberts noted (1992; Roberts, McNeal, Randall, & Roberts, 1996) that a disproportionate 78% of research published in the *Journal of Pediatric Psychology (JPP)* is explicative, or correlational, in nature. This explicative research involves the use of assessment instruments with the purpose of enhancing understanding and developing theory. That is a noble goal and necessary for any field. However, Roberts also found that only about 10% of research published in the *JPP* during his surveys involved treatment-outcome research. To him and to us this seems too little. The editors following Roberts each made significant efforts to increase the publication of treatment-outcome research in *JPP*, but the percentage of published treatment research remained the same or decreased during those subsequent 5-year editorship periods. La Greca (1997) reported that there was a similar percentage of treatment studies published (11% or 26 treatment studies/236 total publications) during her editorship. Kazak indicated in 2002 that the percentage of treatment studies published decreased to 4.7% (14 treatment studies, including three case studies/292 total articles). Finally, although these data are preliminary and based on a shorter time span the prior editors' reports, during an 18-month period of Ronald Brown's editorship (personal communication, November 11, 2006), only 4.67% of manuscripts that were submitted online involved treatment-outcome research. With a rejection rate of 80–90% for *JPP*, the percentage of articles published from that total could be lower. There are multiple reasons for the apparently low and decreasing rate of treatment-outcome research in *JPP* other than the design of coping assessment inventories. However, coping instruments that yield direct implications for the design of treatment interventions at least equip researchers to take the next step and use that information.

We have described elsewhere (Blount et al., 2000a,b) some ways in which the assessment of coping and stress can be better designed and utilized to attain its potential for changing the low ratio of explicative or correlational research to treatment research. This effort will be enhanced by application of the paradigm for studying risk and resilience factors, as described by

Kazdin et al. (1997), as well as by some of the recommendations provided earlier. Further, we hope that the special criteria adopted by the Coping and Stress subgroup will encourage this endeavor. With these criteria, there is an explicit expectation that coping assessment measures should be useful for designing treatment interventions, as well as for broadening understanding.

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