

Current Measures of PTSD for Children and Adolescents

Summer Sherburne Hawkins,¹ MS, and Jerilynn Radcliffe,² PhD

¹*Institute of Child Health, University College London, and* ²*The Children's Hospital of Philadelphia and University of Pennsylvania School of Medicine*

Objective To review measures of posttraumatic stress disorder (PTSD) and posttraumatic stress symptoms (PSS) for children and adolescents. **Methods** We reviewed broad-based child mental health journals within the disciplines of pediatrics, child psychology, and trauma, from 1995 to 2004, to identify measures of PTSD and PSS for children and adolescents. The review includes a summary of the psychometric properties and associated features of the measures and the clinical domains and types of studies using each measure. **Results** Seven measures of PTSD and PSS were identified, including clinician-administered interviews and self-report questionnaires. Sixty-five articles containing the measures were categorized into eight trauma domains. We found there is little consensus over measures used within each trauma domain. **Conclusions** Few measures of PTSD and PSS have been designed specifically for young people. Further directions for measurement of PTSD in this age group are discussed to prevent under-diagnosis and under-treatment for youth.

Key words adolescent; assessment; children; posttraumatic stress disorder; trauma.

Understanding how children experience such events as war, violence, and abuse requires the use of measures and procedures able to detect posttraumatic stress disorder (PTSD). Since 1987, when the diagnosis of PTSD was extended to children and adolescents (referred to as youth), efforts to study youth reaction to possible stressors have used a variety of methods. As a result, it is difficult to characterize the prevalence of PTSD or to accurately assess PTSD among youth in response to apparent increasing rates of traumatic events worldwide. Youth have been found to experience posttraumatic stress symptoms (PSS) from many types of events (Brown, Madan-Swain, & Lambert, 2003; Goenjian et al., 1995), with the severity of PSS related to the level of exposure (Cooley-Quille, Boyd, Frantz, & Walsh, 2001) and number of exposures (Allwood et al., 2002). Between 25 and 87% of youth report experiencing at least one traumatic event before age 20, with girls reporting more episodes (Elklit, 2002). Rates of estimated lifetime prevalence of PTSD in nonclinical youth samples range from 5 to 10% (Elklit, 2002; Giaconia et al.,

1995) and prevalence of current PTSD diagnosis is estimated at <1–10%, with higher rates among girls (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Ford, Goodman, & Meltzer, 2003; Kilpatrick et al., 2003). It is not clear whether differences in rates are sample specific or because of variation in assessment methods.

Youth with PTSD often carry dual diagnoses, making it difficult for clinicians to distinguish between overlapping symptoms. High rates of comorbidity have been documented in youth exposed to a variety of traumas (Kilpatrick et al., 2003; Sack, Seeley, Him, & Clarke, 1998). A survey of 1,433 youth revealed that victimization, during a 15-month follow-up period, was significantly related to PSS and depression, even after controlling for symptoms present initially (Boney-McCoy & Finkelhor, 1996). Runyon et al. (2002) found that abused children with PTSD and major depressive disorder reported more intrusive PTSD symptoms than children with PTSD alone. Although the wide range of symptoms displayed can make diagnosis more difficult, accurate diagnosis of PTSD remains essential.

All correspondence concerning this article should be addressed to Jerilynn Radcliffe, PhD, The Children's Hospital of Philadelphia, 34th Street and Civic Center Boulevard, Philadelphia, Pennsylvania 19104-4399. E-mail: radcliffe@email.chop.edu.

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Within the field of pediatric trauma, debate continues on the uniqueness of youth PSS and whether distinct criteria should be established. Since PTSD was introduced as a formal diagnosis in the *Diagnostic and Statistical Manual (DSM)-III* [American Psychiatric Association (APA), 1980], youth PSS have been evaluated using criteria designed for adults. Although research suggests that youth may manifest these symptoms differently, few qualifiers for symptoms have been introduced. The *DSM-III-R* (American Psychiatric Association, 1987) included alternative criteria for children within cluster B “reexperiencing” criterion 1 (repetitive play) and cluster C “avoidance/numbing” criterion 4 (loss of recently acquired developmental skills). *DSM-IV* (American Psychiatric Association, 1994) introduced additional child criteria for cluster A “exposure” criterion 2 (disorganized or agitated behavior) and cluster B criterion 2 (frightening dreams) and criterion 3 (trauma-specific reenactment). However, the child qualifier in cluster C criterion 4 was removed from the 1987 edition. These criteria are consistent with those within *DSM-IV-TR* (American Psychiatric Association, 2000).

Historically, measures and interviews designed for adults have been adapted for youth by simplifying language and concepts. Discussion continues on whether separate criteria should be created for young populations because of unique differences with interpretation of trauma, manifestation of PSS, and expression of affect (Scheeringa, Zeanah, Myers, & Putman, 2003). Youths’ understanding and memory of trauma and subsequent reactions may differ tremendously depending on developmental stage. Symptoms can include typical stress responses such as nightmares, fear, and general distress reactions (Silverman & La Greca, 2002); however, symptoms can also be unique to youth, such as reenactment of the event, regressed behavior, separation anxiety, and specific forms of behavior, academic, and somatic problems [American Academy of Child and Adolescent Psychiatry (AACAP) Official Action: Practice Parameters, 1998; Drake, Bush, & van Gorp, 2001; Pfefferbaum, 1997].

Studies have suggested that children experience the full range of PSS, but with different symptom manifestation than adults (Pynoos, Steinberg, & Goenjian, 1996). Scheeringa et al. (1995) note that in the *DSM-IV*, eight criteria require verbal descriptions of experiences and emotional states. The lack of developmental modifications may result in the under-diagnosis of PTSD. Evidence suggests that children may experience disabling PSS that warrant treatment, but not meet criteria for PTSD (Carrion, Weems, Ray, & Reiss, 2002).

Although many youth and parent interviews and youth self-report PTSD/PSS measures exist, there is not yet a “gold standard” (AACAP Official Action: Practice Parameters, 1998). McNally (1996) reviewed measures of PTSD developed for youth, but existing measures were criticized for lack of synchronicity with *DSM-III-R* criteria, limited or nonexistent establishment of psychometric properties, or as being incompletely tailored to developmental stage. Lonigan et al. (2003) found that despite the availability of increasing numbers of sophisticated measures for assessing PTSD among children, it is not yet clear how best to use diagnostic techniques to advance knowledge of this disorder and assess treatment effects. Currently, few well-validated, *DSM-IV*-based standardized measures exist.

Clinicians and researchers increasingly use a multimodal, multiinformant approach for assessment and diagnosis of psychiatric disorders in young people; however, debate remains over how child and/or parent report of symptoms should inform a diagnosis of PTSD (AACAP Official Action: Jensen et al., 1999; Practice Parameters, 1998). Despite low agreement between parent and child report of diagnostic conditions, both informants provide valuable information (Jensen et al., 1999). Evidence suggests that parents may not correctly report levels of PSS in their children as compared to child reports (Korol, Green, & Gleser, 1999). Parents may also be experiencing PSS from exposure to the trauma experienced by their child, such as cancer (Brown et al., 2003), or may be victims of trauma themselves (De Bellis et al., 2001). Child/adolescent self-report measures are not problem-free. The veracity of youth self-report depends on many factors, including the child’s developmental level, questions posed, the manner in which questions are asked, and factors about the event itself. However, after trauma, children provide more reliable information on their own internal states than others (Vogel & Vernberg, 1993).

Assessing multiple traumas is yet another challenge. The question, originally raised by Terr (1991), of whether children exposed to a single traumatic event (Type I) should be evaluated differently than those exposed to a series of traumatic events or a prolonged stressor (Type II) has not yet been resolved. Little is known about how multiple or previous trauma impacts symptom expression because this is often not assessed. Green et al. (2000) found that 65% of a sample of young women reported at least one traumatic event and 38% reported two or more events. Their results indicated that women with multiple exposures had significantly worse outcomes compared to those who experienced one or

fewer events. Previous reviews of PTSD assessment in youth have not examined whether measures capture information on multiple trauma or how multiple trauma is recorded.

How well PSS is assessed among youth from multiethnic populations is another open question. Cooley & Boyce (2004) noted the challenges of assessing anxiety in youth from multiethnic populations, such as the availability of psychometrically sound measures for diverse populations, language barriers, and acculturation impacting the expression of anxiety. Although most assessment tools have been developed, normed, and validated on non-Hispanic white youth, they are increasingly used among multiethnic, multinational youth, with insufficient attention paid to possible ethnic variability in the expression of PSS or how best to assess PSS in these samples. In sum, until there is a generally accepted measure to assess PSS in youth, symptoms will continue to be vulnerable to under-diagnosis, undertreatment, and inadequate research, particularly in those ethnic groups who may differ from those in the original standardization sample(s).

The present summary includes a review and discussion of seven currently used measures of PTSD and PSS in youth. Although a thorough evaluation of all measures is beyond the scope of this review, some promising new measures are noted. The first aim is to inform clinicians and researchers about widely used measures of PSS for populations of interest. The second aim is to point to areas for further development within PSS assessment, so that understanding of this condition and its treatment may advance.

Method Procedure

Five journals, from 1995 to November 2004, were manually reviewed by the first author to determine current and frequently used measures of child and adolescent PTSD/PSS. *The Journal of Clinical Child and Adolescent Psychology*, *Journal of Consulting and Clinical Psychology*, *Journal of Pediatric Psychology*, *Journal of the American Academy of Child and Adolescent Psychiatry*, and *Journal of Traumatic Stress* were reviewed because these are broadly based and widely read journals in the areas of pediatric psychology, trauma, and clinical psychology. The following criteria were used to identify studies that included measures of PSS in youth: (a) prospective empirical study including words posttraumatic stress or PTSD and child or adolescent within the abstract; (b) sample included at least 3 or more children/adolescents;

(c) individuals were below the age of 18 or the mean age of the sample was below 20 years of age; (d) the focus of study was a sample, not properties of the measure.

Ninety-five studies were identified that contained a measure of PSS. The following criteria were used to identify frequently used measures: (a) measure was used in three or more articles; (b) studies were conducted by different research groups or the same research group with different samples; or (c) studies on the same sample included data from different time points. Twenty-one measures (in 30 studies) were found in only one article or with multiple articles on the same sample by the same research group and were not included. In total, 7 measures from 65 publications were identified.

Measures are categorized by administration method and each summary includes the stated purpose; assessment type (diagnostic vs. symptomatic); whether the measure is event specific; amount of training required to administer measure (if known); number of scales and items; inclusion of multiple informants, where applicable; and use with multiethnic youth (groups of ethnically diverse populations, including non-Hispanic whites) and non-US populations. Table I describes each measure's anchoring criteria used to assess symptoms, age range, standardization sample, psychometric properties, time frame of assessment, and length of administration, to the extent that all such information could be located. Table II summarizes the types of studies utilizing the seven measures.

Measures Child Interview with Companion Parent Interview

Diagnostic Interview for Children and Adolescents—Revised

The Diagnostic Interview for Children and Adolescents (DICA; Reich, Leacock, & Shanfield, 1994) was developed in 1969 primarily for clinical and epidemiological research and has since received many revisions. The DICA-R, the most recent version, is a semi-structured interview designed to assess present and lifetime diagnoses. The PTSD portion of the interview is based on an event the child identifies as traumatic. Lay interviewers, who receive 2–4 weeks of training, can administer the DICA-R. A diagnosis can be based on either parent or child/adolescent interview, but a thorough assessment should consider information from both sources. The DICA-R PTSD module consists of 17 questions and is 1 of 18 diagnostic scales. The DICA-R or earlier versions were used in 8/65 studies reviewed. The studies primarily included non-US populations (4/8);

Table 1. Properties of Measures to Assess Posttraumatic Stress Disorder and Posttraumatic Stress Symptoms in Children and Adolescents

Method of administration	Measure	Anchoring criteria	Age	Standardization sample ^b	Validity ^b	Reliability ^b	Time frame	Length of administration
Child/adolescent interview with parent interview	Diagnostic Interview for Children and Adolescents-Revised (Reich et al., 1994) Kiddie Schedule for Affective Disorder and Schizophrenia for School-age Children-Present and Lifetime version (Kaufman et al., 1997)	DSM-III-R and DSM-IV DSM-III-R and DSM-IV	6-17 years	Not reported	CONC: N/A; CONV: N/A	IC: N/A; IR: N/A; TR: N/A	Previous 2 weeks	Entire interview: 1-2 hr
Child/adolescent interview only	Clinician Administered PTSD Scale for Children and Adolescents (Newman et al., 2004)	DSM-IV	8-15 years	55 psychiatric outpatient children/adolescents and 11 normal controls No published normative data	CONC: N/A; CONV: 0.71 agreement with CBCL PTSD subscale (McLeer et al., 1998)	IC: N/A; IR: 98% agreement on current/lifetime diagnoses; IR: .63 (Freeman & Beck, 2000); TR: Present PTSD = 0.67; lifetime PTSD = 0.60 IC for total score = 0.89 (Daviss et al., 2000); IR: 0.80-1.0 (Daviss et al., 2000; Erwin, Newman, McMackin, Morrissey, & Kaloupek, 2000); TR: N/A	Previous 2 weeks and 12 months Previous week, month, lifetime	Entire interview: normals: 35-45 min; psychiatric patients: 1.25 hr 45 min
Child/adolescent self-report	Impact of Events Scale-Revised (Weiss & Marmar, 1997)	DSM-IV	12+ years ^a	189 adult emergency personnel; 206 adult earthquake victims	CONC: N/A; CONV: 66% agreement between diagnosis from DICA and IES (Sack et al., 1998)	IC: 0.89-0.92 among three scales (Alderfer, Labay, & Kazak, 2003); IR: N/A; TR: 0.51-0.59 among three scales (adult samples)	Previous week	5 min

Table I. Continued

Method of administration	Measure	Anchoring criteria	Age	Standardization sample ^b	Validity ^b	Reliability ^b	Time frame	Length of administration
	Child Posttraumatic Stress Disorder Reaction Index (Pynoos et al., 1987)	DSM-III, DSM-III-R, DSM-IV	5+ years	159 children exposed to a sniper shooting; numerous United States and international groups exposed to trauma	CONC: 0.32–0.64 with CDI (Hadi & Liabre, 1998; Haviland, Sonne, & Woods, 1995), 0.70 with RCMAS (Haviland et al., 1995); CONV: 78% agreement with DSM-III-R diagnosis (Pynoos et al., 1993)	IC: 0.74–0.84 (Alderfer et al., 2003; Allwood et al., 2002; Madan-Swain et al., 2000); IR: 0.88; TR: 0.94 (Pynoos & Nader, 1989)	Previous week	5 min
	PTSD Symptom Scale (Foa et al., 1993)	DSM-III-R	12+ years ^a	46 female rape victims and 72 female non-sexual assault victims	CONC: 0.80 with BDI, 0.52–0.56 with STAI; CONV: 0.81 with IES intrusion; 94% agreement with PTSD diagnosis on SCID	IC: 0.85 in child trauma victims (Boney-McCoy & Finkelhor, 1996) and 0.78–0.82 in female assault victims; IR: N/A; TR: 0.66–0.77	Previous 2 weeks	20–30 min
	Trauma Symptom Checklist for Children Posttraumatic Stress scale (Briere, 1996)	Distress and related symptoms to trauma	8–16 years	3,008 children in three nonclinical samples; 222 children in normative sample	CONC: 0.22–0.23 with CBCL-Youth, 0.53–0.75 with CBCL-Parent, 0.64 with CDI; CONV: N/A	IC: 0.85–0.87; IR: N/A; TR: N/A	Previous 2 months	15–20 min

BDI, Beck Depression Inventory; CBCL, Child Behavior Checklist; CDI, Child Depression Inventory; CONC, concurrent; CONV, convergent; DICA, Diagnostic Interview for Children and Adolescents DSM, Diagnostic and statistical manual of mental disorders; IC, internal consistency; IES, Impact of Events Scale; IR, interrater; N/A, not applicable or not available; PSS, Posttraumatic Stress Symptoms; PTSD, posttraumatic stress disorder; RCMAS, Revised Children's Manifest Anxiety Scale; SCID, Structured Diagnostic Interview for DSM-III-R; STAI, Spielberger State-Trait Anxiety Inventory; and TR, test-retest.

^aMeasure was designed for use with adult populations; age based upon studies reviewed.

^bUnless stated otherwise, information is available in primary reference for each measure.

Table II. Numbers of Studies by Trauma Type Utilizing Measures that Assess Posttraumatic Stress Disorder and Posttraumatic Stress Symptoms in Children and Adolescents

Measure	Cancer	Child abuse	Death	Injury	Natural disaster	Range of traumatic events	Violence	War
DICA-R		1		1	1	2		3
K-SADS-PL		4				2	1	1
CAPS-CA				3		2		
IES-R	3	1	1	2		1		3
CPTSD-RI	6	3	3	4	10	2	3	3
PSS						2		3
TSCC	2	2				1	2	

PTSD, posttraumatic stress disorder and PSS, posttraumatic stress symptoms.

Articles are from the *Journal of Clinical Child and Adolescent Psychology*, *Journal of Consulting and Clinical Psychology*, *Journal of Pediatric Psychology*, *Journal of the American Academy of Child and Adolescent Psychiatry*, and *Journal of Traumatic Stress* between the years 1995 and November 2004. Studies may also use more than one measure to assess PTSD or PSS.

fewer studies involved multiethnic youth (2/8). Both parent and youth interview were utilized in 3/8 studies.

Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime version

The original Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS; Kaufman et al. 1997) was designed as a comprehensive instrument to assess psychopathology in children. This semistructured interview assesses full and partial diagnosis, including present and lifetime diagnosis of PTSD. Intensive training is recommended to administer the instrument because of the importance of diagnostic classification and differential diagnosis. The clinician integrates parents' report of observable behavior and child self-report when formulating a diagnosis. In the PTSD module, the scale initially assesses whether any of a variety of traumatic events occurred recently or in the past, then assesses PTSD diagnostic criteria for one specific event. The PTSD module is one of 32 scales and varies in length depending on the number of endorsed items. The K-SADS-PL or other versions were used in 8/65 studies reviewed. The studies primarily included multiethnic youth (5/8) and fewer studies involved non-US populations (2/8). Both parent and youth interview were utilized in one study.

Child/Adolescent Interview Only

Clinician-Administered PTSD Scale for Children and Adolescents

The Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA; Newman et al. 2004) is a semistructured clinical interview designed to assess PTSD symptoms and associated symptoms in children and adolescents. This is a developmentally modified version of the Clinician-Administered PTSD Scale (Blake

et al., 1990). The CAPS-CA evaluates current and lifetime diagnosis, frequency and intensity of symptoms as well as social, developmental, and scholastic functioning. The CAPS-CA consists of 36 questions based on a specific event the child identifies as most distressing. A diagnosis also incorporates clinical judgment, regarding the type of trauma and impact on functioning. The CAPS-CA was used in 5/65 studies reviewed. The studies were used primarily with US populations and multiethnic youth (3/5).

Child/Adolescent Self-Report

Impact of Events Scale—Revised

The Impact of Events Scale—Revised (IES-R; Weiss & Marmar, 1997) is an adaptation of the Impact of Events Scale, a self-report measure, that assessed adults' intrusive and avoidant reactions associated with a particular event (IES; Horowitz, Wilner, & Alvarez, 1979). The IES-R was designed to also include items that assess the domain of hyper arousal. D. S. Weiss (personal communication, March 26, 2003) stated the IES-R was neither designed nor validated with children, but is probably comprehensible for children at approximately the formal operations level. The author notes that any results from this scale with youth should be considered preliminary. The IES-R was not intended for use as a diagnostic tool and consists of 22 items composing three scales: hyper arousal, intrusion, and avoidance. The IES-R or IES were used in 11/65 studies reviewed. The studies primarily included non-Hispanic white youth (5/11) and non-US groups (3/11).

Child Post-Traumatic Stress Disorder Reaction Index

The Child Post-Traumatic Stress Disorder Reaction Index (CPTSD-RI; Pynoos et al. 1987) was originally intended for use as an interview, but is most often used as a self-report measure. The CPTSD-RI only assesses

reactions to a specific traumatic event and was not designed as a diagnostic tool. The CPTSD-RI consists of 20 items composing three factors: intrusiveness/numbing/avoidance, fear/anxiety, and disturbances in sleep and concentration. The CPTSD-RI was the most frequently used measure overall (33/65) and with non-US groups. The studies primarily included non-Hispanic white youth (15/33), with fewer studies involving multiethnic youth (7/33) or non-US populations (7/33). Both parent and youth self-report were utilized in 4/33 studies.

Colleagues at University of California, Los Angeles (UCLA) have recently developed a series of self-report measures to assess trauma symptoms in children and adolescents (Rodriguez, Steinberg, & Pynoos, 1999). The UCLA PTSD Reaction Index includes child, adolescent, and parent versions to provide preliminary PTSD diagnoses using DSM-IV criteria. All measures are based upon the CPTSD-RI and contain approximately 20 questions. The validity and reliability of these measures have been described (Steinberg, Brymer, Decker, & Pynoos, 2004).

PTSD Symptom Scale

The PTSD Symptom Scale (PSS; Foa, Riggs, Dancu, & Rothbaum, 1993) was developed to assess the presence and severity of PTSD symptoms in adults, with a known trauma history, as a semistructured interview or self-report questionnaire. Although the PSS has been used with many youth populations, it has not been validated with these groups. The PSS measures symptom severity for a specific traumatic event and consists of 17 items composing three scales: reexperiencing, avoidance, and arousal. The PSS was used in 5/65 studies reviewed and primarily included non-US populations (3/5).

Foa and colleagues have recently published a revised measure for children, called the Child PTSD Symptom Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001). The CPSS is a self-report measure designed to diagnose and assess severity of PTSD, as outlined in DSM-IV, in children and adolescents. This measure shows strong preliminary psychometric properties.

Trauma Symptom Checklist for Children

The Trauma Symptom Checklist for Children (TSCC; Briere, 1996) is a self-report measure developed to assess a wide range of symptoms in children. Although the TSCC was not designed for use as a diagnostic tool, it assesses exposure to a variety of trauma, including sexual trauma, and PSS related to the events. The administration of the TSCC does not require specialized training, but the interpretation of scores does. The complete version contains 54 items and the posttraumatic stress scale is one of six clinical scales. The TSCC or

previous version were used in 7/65 studies reviewed and included multiethnic youth (4/7).

Review

The type of trauma assessed for the 65 reviewed articles was determined and then collapsed to derive eight trauma domains. The trauma domains included cancer ($N = 6$), child abuse ($N = 9$, physical or sexual abuse), death ($N = 4$), injury ($N = 8$), natural disaster ($N = 11$), range of traumatic events ($N = 11$), violence ($N = 6$), and war ($N = 11$), with one study including two types of trauma. The distribution of articles was as follows: *Journal of Clinical Child and Adolescent Psychology* ($N = 7$), *Journal of Consulting and Clinical Psychology* ($N = 4$), *Journal of Pediatric Psychology* ($N = 4$), *Journal of the American Academy of Child and Adolescent Psychiatry* ($N = 37$), and *Journal of Traumatic Stress* ($N = 13$). Table II illustrates the number of studies used with each clinical domain. Overall, there appears to be little consensus over the type of measure used to assess PTSD/PSS within the eight clinical domains.

Discussion

Although research suggests that youth manifest PSS differently than adults, the present review found that few measures of youth PTSD/PSS have been created specifically for this population. Instead, many measures designed for adults have been used in young people with author-stated cautions. For this reason, it remains essential to consider the developmental appropriateness of a measure when an adapted adult measure is used.

This review also highlights challenges with PTSD/PSS evaluation. Most measures assess a specific, traumatic reference, but are not designed to assess chronic trauma or multiple traumatic experiences (Terr, 1991). Although many measures ask the informant to state traumatic events they have been exposed to (and allow for indirect assessment of multiple trauma), only one traumatic event becomes the basis for reporting of symptoms. Valuable information may be missed if a child has experienced chronic/repeated trauma (e.g., child abuse) or multiple traumas (e.g., rape and natural disaster). When there is question of multiple traumas, as among incarcerated youth, measures that assess general trauma symptoms may be beneficial to determine whether symptoms warrant treatment or, at least, further examination. A separate assessment of traumatic event exposure may then prove to be useful.

Most of the current measures of PSS are either youth interviews, with companion parent interviews, or self-report. Very few studies included both parent and youth report, and diagnoses were primarily based on child information only. Multimethod approaches for the assessment of young populations, including parent and teacher report, would provide more comprehensive and less biased information (Jensen et al., 1999). Describing the affect of another individual, as happens when parents are asked to characterize anxiety of their child, is challenging; this may contribute to discordant results. Guidelines as how to best integrate information from various sources are, in general, lacking, although youth self-reports appear to be more reliable for internalizing symptoms (Vogel & Vernberg, 1993) and parent reports are often used to assess externalizing symptoms. Discriminant analyses of PSS reported by multiple informants may ultimately provide greater clarity regarding how to utilize multiple reports.

Although physiologically based measures of response to trauma have been recommended as promising in the study of trauma effects (McNally, 1996), such methods were included in only a few studies. These included the use of the modified Stroop procedure (Dubner & Motta, 1999), hypothalamic-pituitary-adrenal activity (Goenjian et al., 2003), and salivary cortisol responses (Lipschitz et al., 2003). Continued research investigating the linkages between behavioral and physiological measures of PSS is clearly an important further direction in assessment.

Most of the present measures have been standardized on non-Hispanic white, US-based samples, but they are often also used with multiethnic youth and non-US groups. For example, the CPTSD-RI was most commonly used with non-US samples, although this measure was developed on non-Hispanic white youth. Cross-cultural differences in symptom expression as well as wording of questions are clearly an avenue for further investigation. In addition, including samples of multiethnic youth in the standardization of measures will further the understanding of symptom levels and types, necessary for the development of interventions.

Additional aspects of PSS measures needing further development are determining the optimal way to define the reference event, reaching consensus on the most appropriate time frame for symptom assessment, and developing measures for treatment outcomes assessment and longitudinal follow-up. Although many measures compare symptoms against *DSM-IV* criteria, not all use the most recent PTSD criteria or any criteria. Similarly, the time frame of symptom assessment varies considerably

from 1 week to 1 month, although a *DSM-IV* diagnosis requires symptoms to be present for at least 1 month. Finally, methods for outcomes assessment and longitudinal follow-up need to be developed. Few PSS measures include study of retest over extended periods of time, although test-retest reliabilities would allow for more rigorous investigation of symptom change over time.

An evaluation of all PTSD/PSS measures for youth was beyond the scope of this review, which adopted a broad-based approach to the state of the art of PTSD/PSS assessment. Many journals covering youth trauma and assessment were not included and additional measures for specific types of trauma were not reviewed as a result. Some strong measures were not included simply because they were used less frequently in the journals searched. In addition, some promising new measures have not been included because sufficient numbers of studies with these measures have not yet appeared in published literature.

Suggestions for further tool development include (a) expanded normative and clinical group studies of measures, including wider geographic variability and study of possible moderating effects of responses to measures such as cognitive level of the child/adolescent and family socioeconomic status; (b) measures that permit responses to multiple trauma identified by the respondent as reference events; (c) wider range of measures and/or procedures appropriate for preschool age children; and (d) further development of measures for assessing response to trauma for multiethnic youth and youth living in non-Western cultures.

Accurate assessment of PTSD/PSS in children and adolescents is critical because of the detrimental effects trauma can have on all aspects of functioning. Correct symptom description, diagnosis, and response to interventions can be made only to the extent that measures allow. Although current measures are promising and new measures are emerging, further work remains to address measurement issues in PTSD/PSS among children and adolescents.

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