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Development of a brief screen for symptoms of posttraumatic stress disorder in young children: The Young Child PTSD Screen (YCPS)

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Abstract

Objective: The ability to reliably detect posttraumatic stress disorder (PTSD) symptoms that require treatment in young children through screening efforts is a critical step towards providing appropriate treatment. The developmental differences in this age group compared to older youths pose challenges for accurate detection. A brief, age-appropriate screen has not yet been quantitatively validated. This study aimed to address that gap by creating a rapid and brief screen based on empirical data that focused on sensitivity and face validity for children three-to-six years of age.

Method: A trauma-exposed group ($N = 284$), and a non-trauma exposed group ($N = 46$), aged 3 to 6 years, were assessed with a semi-structured diagnostic interview with their primary caregivers.

Results: One hundred twenty combinations of items were evaluated for sensitivity, specificity, positive predictive value, negative predictive value, associations with functional impairment, and frequency of false positives. Many combinations of items performed well on these psychometrics, and the final selection of a six-item screener was influenced by considerations of face validity so that the screen would best reflect the unique symptoms of PTSD.

Conclusion: The screener is a promising tool that will benefit from additional research to examine its psychometric properties as a standalone PTSD screen. Future research ought to include test-retest reliability, and replication of these findings in other samples and settings. Eventual uses of a brief screen for PTSD in young children include screening during primary care visits and large-scale screening efforts following disasters, where cost and time need to be maximized.

Keywords

screen; post-traumatic stress; young children

The need for a screen for clinically-significant levels of posttraumatic stress disorder (PTSD) symptoms for very young children is compelled by several issues. First, following exposure, young children develop PTSD at rates equivalent or even higher than older children and adults.¹ Second, while the PTSD symptoms in young children are very similar to those in older youths and adults, there are a number of developmental issues that create challenges for assessment of post-traumatic reactions in very young children.² Third, trauma exposure is common. In a nationally-representative survey of violence exposure in youth, 43.9% of two-to-five year-old children had been exposed to at least one physical assault.³ This is likely to be an underestimate of trauma exposure because the survey did not encompass motor vehicle accidents, accidental injuries, animal attacks, or disasters. Although young children have had relatively less time to be exposed to traumatic events compared to adolescents, some traumatic experiences, such as physical abuse, are known to occur more frequently to young children,⁴ and other types of events are perceived by young children as relatively more life-threatening compared to older children, such as dog and large animal attacks, physical and sexual abuse, witnessing domestic violence, and invasive medical procedures. Fourth, due to the frequent scheduled contact that pediatricians and related primary care providers have with very young children, trauma-related problems are most likely to be detected first in primary care settings.

In a primary care health setting, the purpose of screening is to look for disease in members of a population who do not necessarily believe that they are at risk. In other words, the purpose of screening is to test for disease before symptoms are apparent. Because the purpose of screening is to look for disease in those who have no known symptoms, screening tools must be suitable for widespread public health disseminations, meaning low-cost, rapid, and short. If symptoms are known, and disease is suspected, it is no longer appropriate to simply screen, and it is more appropriate to conduct in-depth assessment. These considerations are relevant when deciding whether to create a screen with higher sensitivity versus higher specificity. Usually, there is an inverse tradeoff between the two, and one cannot hope for perfect sensitivity and perfect specificity in the same test. A screen it seems should aim for higher sensitivity at the sacrifice of specificity when the harm of overestimating both is equal, and we would rather over-identify children than miss children who could have been helped. This screen may be their best or only hope of being identified and treated.

There are no rapid and short screens for PTSD symptom severity developed for very young children. The shortest known version is an ad hoc subscale of 15 items from the Child Behavior Checklist,⁵ but these items are embedded within the full 100-item measure. The Early Childhood Screening Assessment⁶ contains two PTSD items, but these are embedded within the full 40-item measure. Kramer and colleagues developed and tested in preschool children a modification of the Pediatric Emotional Distress Scale that they called an “early screener,”⁷ but the two versions they tested, 21-items and 26-items, were as long or longer than many existing checklists that cover all 17 symptoms in the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV)⁸ or all 20 symptoms in the Fifth Edition (DSM-5)⁹ definitions of PTSD. The aim of the current study therefore was to develop a rapid and short screen based on empirical data for high sensitivity with face validity for children three-to-six years of age.

METHOD

Participants

A trauma-exposed group and a non-trauma-exposed group of 3 through 6 year-old children were recruited for an assessment study and were described in prior publications.¹⁰ For the trauma-exposed group, the first inclusion criterion was that the participant had to have experienced at least one life-threatening trauma when the child was old enough to remember it with a narrative recall (at least 3 years old). Medical events counted if they involved major surgery or were invasive beyond blood draws (e.g., lumbar puncture). The second criterion was that the participant had to be between the ages of 36 months and 83 months at the time of enrollment. Exclusion criteria included a Glasgow Coma Scale score seven or less in the emergency room (because this would indicate significant head trauma that would likely result in permanent cognitive deficits), mental retardation, autistic disorder, blindness, deafness, and foreign language-speaking families.

Data were collected on 284 trauma-exposed children, which is the largest known database of PTSD symptoms in trauma-exposed young children in the world. Parents of young children were approached through multiple sources to recruit a heterogeneous sample of trauma victims. Fifty-four participants were recruited through a Level I Trauma Center registry (43 motor vehicle accidents and 11 accidental injuries of other origins). Eighty-five participants were identified through the three main battered women's programs in the area.¹⁰ The staff at these programs gave mothers a phone number to contact regarding the study. All of the children had witnessed domestic violence, and 92% of caregivers endorsed this as their children's worst experience. One hundred forty-five participants were recruited through newspaper ads. The Hurricane Katrina disaster struck the New Orleans metropolitan area during the middle of this study, and as a result one hundred thirty-seven of those recruited through advertisements were Hurricane Katrina victims. The remaining eight children recruited from newspaper ads involved witnessing single incidents of relatives murdered, assaulted, or severely injured.

As reported in a previous publication with this sample¹⁰, the participants could be grouped as those who experienced a single life-threatening episode (n=62), Hurricane Katrina natural disaster (n=137), and repeated events (n=85). The mean number of episodes is not an appropriate statistic to report because many participants experienced a huge number of episodes which right-skews the distribution. The single event group experienced one episode by definition. The Katrina group experienced a median of one episode, with a range of one to five episodes. The repeated events group experienced a median of nine episodes with a range of two to approximately 1,000 episodes. There were no differences between these groups on the frequency of being diagnosed with PTSD or on the total number of PTSD symptoms.

The durations of symptoms were chronic for each group. The median duration from the time of first trauma exposure to the time of assessment for the single episode group was 14.1 months, for the Katrina group was 21.6 months, and for the repeated events group was 36.5 months.

A non-trauma-exposed control group of 46 participants was recruited. In order to match to the trauma-exposed subjects on sociodemographic factors, the trauma-exposed participants were asked for neighbors and acquaintances with children in the 3-6 years age range. These families were contacted by telephone and asked to participate. They were assessed with the traumatic events measure to confirm that they had experienced no life-traumatic events including that they were not exposed to life-threatening experiences during Hurricane Katrina and their homes were not damaged by the storm. The control group did not differ from the trauma-exposed group on sex, ethnicity, fathers' ages, fathers' education, or mothers' employment. Control children were significantly younger, maternal caregivers were younger and less educated, and more fathers lived in the home compared to the trauma-exposed.

Procedure

The Tulane University Committee on the Use of Human Subjects approved this study. The initial group of interviewers and the principal investigator (PI) were trained on the diagnostic interview by a trainer from Duke University where the instrument was created. Subsequent interviewers were trained by the PI. Portions of every interview were reviewed on videotape by the PI with the person who conducted the interview to prevent drift in interview technique. Assessments were conducted in a laboratory with the caregivers alone and they were financially compensated for their time.

Measures

The Preschool Age Psychiatric Assessment (PAPA)¹¹ is a structured psychiatric diagnostic interview with the caregiver. Test-retest reliability kappa in a community sample of 307 2-5 year-old children was .73 for PTSD. Data were collected on traumatic exposure using 12 events from the Life Events section. A modified measure of traumatic life events was used that asked for the date of the first event, the date of the last event, and a frequency count of the number of each type of event. Items were numbered consistent with the DSM-IV numbering. For example, the symptom of intrusive recollections is in the B criterion (re-experiencing symptoms) and labeled (1) in the DSM-IV criteria, so it was numbered B1. The C criterion was numbing and avoidance symptoms. The D criterion was increased arousal symptoms.

The PTSD module included developmental modifications to wording of DSM-IV symptoms based on prior empirical work.¹⁰ For item B1, children's reactions did not have to show outward distress while they expressed their intrusive recollections. For item C4, diminished interests in significant activities was broadened to include play activities because most children in this age group do not attend school or have established interests. For item C5, detachment or estrangement from others was worded as social withdrawal to rely more on behavioral observations and rely less on internalized feelings. For item D2, irritability and outbursts of anger included extreme temper tantrums to be more developmentally sensitive to this age group. The validity of these developmental modifications have been tested in multiple studies and formed the basis for the new DSM-5 diagnostic category posttraumatic stress disorder for children 6 years and younger.²

Functional impairment was measured with questions about five domains of functioning – parental relationships, sibling relationships, daycare provider/teacher relationships, peer relationships, and ability to act appropriately outside of the home. Each item was rated on a 5-point (0-4) Likert scale. The DSM allows for a sixth domain – emotional distress – to count as functional impairment but we did not include that in these data analyses because distress does not reflect an impairment in role functioning.

Because the non-trauma-exposed control group had not experienced life-threatening traumas, parents were asked if the PTSD symptoms appeared more than the average child his or her age rather than following specific events. For the symptoms that are linked to environmental triggers (e.g., distress at exposure to reminders and avoidance of reminders), parents were allowed to answer in relation to non-life threatening events if any had occurred that seemed to excessively startle their children (e.g., knocked over by a playful dog, or a loud thunderstorm).

Data Analysis

It was decided *a priori* that the outcome to be predicted by the screen would be individuals who have been shown to benefit from randomized controlled trials (RCT) of evidence-based treatments (EBT). This outcome to be predicted is not the same as individuals with a full diagnosis of PTSD. It is known from controlled studies and from clinical experience that individuals with substantial symptoms of PTSD but not full-blown disorder can benefit from treatment. The most commonly used criterion that has been used to enroll youths in RCTs for tests of EBTs has been the presence of five or more PTSD symptoms.¹²

At the time that this study was conducted, the DSM-IV⁸ was the current taxonomy. The diagnostic criteria for PTSD in the DSM-IV contained 17 possible symptoms. Based on multiple empirical investigations with very young children, it has been well established that two of those symptoms – inability to recall an important aspect of the trauma, and sense of a foreshortened future – were rarely, if ever, present in this age group, and therefore were unsuitable items to include in a screen designed for high sensitivity. That left 15 possible symptoms for serious consideration for inclusion in the screen.

There is no single, pathognomonic symptom that must be present in every case of PTSD. If there were, the screen might need to be only one item. A screen for PTSD must include a range of symptoms, some of which we expect cases to have, and some of which we expect cases not to have. The goal, thus, was to create a screen that reflected children who, if all 15 symptoms were measured, would show five or more of them. The number of children who had at least five PTSD symptoms was calculated (n=165), indicating that this sample had a large representation of subjects with the dependent variable for the screen. In addition, this sample included 135 children who met full criteria for the DSM-5 diagnosis of PTSD for children 6 years and younger. Consistent with prior efforts to develop brief screening tools to detect clinical psychiatric syndromes in primary care settings,¹³ it was also decided *a priori* that sensitivity would be valued more than specificity based on the principle that over-identification of possible cases causes greater good than under-identification of real cases.

The measure was created in a methodical, stepwise fashion. The first step was to consider only the most frequently appearing symptoms in a trauma-exposed population. Consistent with other efforts to develop brief screens of clinical syndromes,^{14–17} statistical-based item reduction methods, such as factor analysis, were not appropriate to determine the best items for the screen. Factor analysis determines how items cluster together in order to determine underlying factorial structure. Determining the factorial structure is inappropriate when developing a clinical disorder screen, and furthermore, factor analysis provides no information on how frequently items occur and does not capture how items from one factor co-occur with items from other factors. The co-occurrence of items from the different clusters of PTSD symptoms is a hallmark of the algorithm-driven, cluster-based diagnosis of PTSD. The second step was to determine how many items would need to be endorsed to count as a positive screen. It was decided that a requirement of only one item endorsed was too few because if respondents misunderstood an item and endorsed it by mistake, this could too easily lead to false positives. This decision was based on the experience that many times respondents misunderstand PTSD symptoms because of the abstract and complicated nature of some of the symptoms.² In the spirit of trying to keep the screen as brief as possible, it was therefore decided to aim for a final screen in which two items being endorsed counted as a positive screen as long as the final psychometrics were acceptable.

The third step was to decide how many possible items to choose from. It was felt that seven or more items to choose from in a screen would be too many based on the principle of wanting a screen that is as short as possible. A screen with one or two items to choose from was not feasible because the screen would need at least two items endorsed to be positive. The possible range of the number of items to choose from was set at three, four, five, or six items.

The fourth step was to test all of the possible three-item, four-item, five-item, and six-item combinations. If a subject endorsed at least two items within a combination, it was counted as a positive screen. The fifth step was to calculate sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV). The sixth step was to cross tabulate positive screens against functional impairment. The seventh step was to examine the frequency of false positives. Receiver operating characteristics was not used in this study because the purpose was to develop a screen with optimal sensitivity.

It was also decided *a priori* to include a menu of traumatic events that was completed prior to completing the section of symptoms because respondents must understand that they were being asked to rate symptoms that appeared or worsened following traumatic life events. Without a trauma screen that preceded the symptoms, respondents were likely to answer the symptoms in relation to non-life-threatening events, which would not reflect PTSD.

RESULTS

Using only the 284 trauma-exposed subjects, the frequency of the occurrence of each symptom was calculated. The frequencies of each item are listed in Table 1. Based on these frequencies, it was decided to consider further only those items that occurred in at least 20% of the subjects. This decision eliminated from consideration five symptoms that appeared in

10-20% of the participants and two symptoms that appeared in fewer than 5% of the participants. This left ten items to choose from.

Avoidance of reminders was among these ten items but was not used for two reasons. First, distress at reminders was also being tested and if a person has avoidance of reminders they almost always also have distress at reminders. The only differences are in the chronology (avoidance is anticipatory) and severity (avoidance tends to signal greater severity). Having avoidance is typically highly redundant with distress of reminders, and this was confirmed in this study as 93.8% of those with avoidance of internal reminders and 94.1% of those with avoidance of external reminders also had psychological distress at reminders. Second, avoidance of reminders is often a difficult item for caregivers to understand and rate accurately.^{2,14,18} It was therefore decided to exclude avoidance symptoms (C1 and C2) from further consideration.

This left a final pool of eight items to choose from and reduce into the final set of items: B1 = recurrent and intrusive memories of the trauma(s); B2 = nightmares; B4 = upset when exposed to reminders of the trauma(s); D1 = difficulty falling or staying asleep; D2 = irritable, outbursts of anger, or extreme temper tantrums; D3 = concentration difficulty; D4 = hypervigilance; and D5 = startle more easily.

Sensitivity, Specificity, Positive Predictive Value, and Negative Predictive Value

From this pool of eight items, there were 56 possible three-item combinations, 34 possible four-item combinations, 20 possible five-item combinations, and 10 possible six-item combinations. The number of times that two or more items were endorsed in every one of these 120 combinations of items was calculated. With two or more items endorsed counting as a positive screen and zero or one item endorsed counting as a negative screen, these results were cross-tabulated against the criterion variable to calculate sensitivity, specificity, positive predictive values, and negative predictive values for every combination. The criterion variable, as noted previously, was whether a subject endorsed five or more of the 15 possible symptoms from the PAPA interview.

Six combinations had perfect 100% sensitivity, eight combinations had 99% sensitivity, and three combinations had 98% sensitivity. Of the six combinations with 100% sensitivity, all of them were either 5-item or 6-item combinations, suggesting that relatively more items, as opposed to 3- or 4-item combinations, achieved greater sensitivity. The results for all 120 combinations are available from the author. Specificity ranged from 97% (B1B2D4, B2D4D5, and D3D4D5) to 40% (B1B4D1D2D3D4). The range of specificity for the six combinations with 100% sensitivity was 41-49%. The PPV is an index of true positives. If a combination leads to zero false positives, the PPV will be 100%. PPV values ranged from 95% (B1D2D4 and B2D4D5) to 70% (B1B2B4D1D2D4 and B1B4D1D2D3D4). The range of PPV for the six combinations with 100% sensitivity was 70-73%. The NPV is an index of true negatives. If a combination leads to zero false negatives, the NPV will be 100%. NPV values ranged from 100% to 56% (B1D3D4 and D3D4D5). The six combinations with 100% sensitivity all had 100% NPV.

Functional Impairment

For all combinations, associations with functional impairment were calculated with a categorical index of impairment and then a continuous index of impairment. A categorical index of impairment was counted as positive if a subject was rated to have a score of one or higher on at least one of the five impairment items. Percent agreement was calculated as the percentage of those with a positive screen who also had categorical impairment. The lowest percent agreement was 77.9% for B1B4D4, and the highest was 90.5% for B2D3D5. The percent agreements for the six combinations with 100% sensitivity are shown in Table 2; all of them were tightly clustered together with 80-82% agreement with impairment.

A continuous index of impairment was created by summing the Likert ratings of all five impairment items. The lowest mean severity of impairment was 1.67 (SD 1.48) for B1B4D4 and 1.67 (SD 1.51) for B1B4D1D4. The highest mean severity of impairment was 2.19 (SD 1.61) for B2D3D4. The means for the six combinations with 100% sensitivity are shown in Table 2; all of them were tightly clustered together with means of 1.73-1.76. From these analyses of impairment, no combination clearly stands out from the others.

False Positives in a Non-Trauma Exposed Sample

Using only the 46 subjects who were not trauma exposed, the number of false positives was calculated. Because these subjects had never been exposed to life-threatening traumatic events, if a screen was positive, it was assumed that this was a false positive. The purpose of this analysis was to obtain an indication of how easy it might be for respondents to misunderstand the PTSD symptoms and overendorse them. Among the six combinations with 100% sensitivity, false positive occurred in a range of three to five times out of 46 subjects. Again, no combination clearly stood out from the others.

Face Validity

Many combinations of symptoms demonstrated characteristics of an effective screen with high sensitivity, high associations with functional impairment, and infrequent false positives in a non-trauma exposed sample, yet no combination clearly stood out from the others. Consistent with Lang and colleagues (2017), face validity considerations were used to select the final combination.¹⁵ It was deemed best that the reexperiencing symptoms be represented as much as possible in the screen items because those describe behaviors more obviously triggered by trauma reminders, and respondents would perceive the screen as more intuitively related to PTSD. Within the pool of eight items to choose from, there were three reexperiencing symptoms: B1 = intrusive recollections (present in 45% of the sample); B2 = nightmares (present in 42% of the sample); and B4 = psychological distress at reminders (present in 75% of the sample). The only combination with 100% sensitivity that contained all three of these reexperiencing items was B1B2B4D1D2D5. The final screen (available for free at <https://medicine.tulane.edu/departments/psychiatry/research/dr-scheeringas-lab>) was therefore selected to consist of B1B2B4D1D2D5 (Appendix), which showed 100% sensitivity, 42% specificity, 71% PPV, and 100% NPV. Of the 135 children who met full criteria for the DSM-5 diagnosis of PTSD for children 6 years and younger, 100% were detected by the final screen.

Scoring

For creation of the screen, a three-point Likert scale (0, 1, or 2) was chosen for scoring each symptom. For scoring, either “yes” answer (any 1 or 2) counts as a “yes”. Two “yes” answers is a positive screen. The Likert scale however was created only for administration purposes to give respondents a range of scores and enhance the face validity of the screening process. It was considered that if respondents were given only dichotomous choices to score they may not endorse mild to moderate symptoms. The total sum of the Likert scores is therefore of less import.

Symptoms are scored for totality of events in contrast to many other checklists that rate for only one event. For example, if a child experienced sexual abuse when she was three years old and an earthquake when she was five years old, the child could have hypervigilance that started at three years and distress at reminders that started at five years.

DISCUSSION

The YCPS was created empirically in a stepwise fashion. The screen was designed to detect young children who were likely to have five out of 15 symptoms of developmentally-appropriate diagnostic criteria. Because these 15 symptoms were closely adopted in the new DSM-5 diagnosis of PTSD for children 6 years and younger, the YCPS is adapted to the DSM-5. It is acknowledged that many other combinations of items would make good screening tools. There were 48 combinations of items that had 90% or higher sensitivity. The final combination of six items which included all three of the reexperiencing items was selected to have relatively greater face validity than other combinations.

For comparison, the shortest known screens for PTSD that have been developed for older children and adolescents are the four-item Child Stress Disorders Checklist Short Form (CSDC-SF),¹⁹ and the three-item and six-item versions of the Acute Stress Checklist for Children (ASC-3 and ASC-6).²⁰ The CSDC-SF overlaps with the YCPS on two items – psychological distress at reminders and exaggerated startle. The ASC-3 and ASC-6 overlap with the YCPS on one item – psychological distress at reminders. It is noteworthy that CSDC-SF and the ASC versions, which were all developed on the same age range of older youths, roughly seven to seventeen years of age, overlapped with each other on only two items – psychological distress at reminders and avoidance of activities that served as reminders. Consistent with this study, it appears that there are many combinations of symptoms that can serve usefully as screens for PTSD.

The final six-item combination showed 100% sensitivity and 100% NPV. This NPV ought to give high confidence that a negative result is true. The specificity was 42%, and this was by design because sensitivity was paramount. Similarly, the PPV value of 71% indicates that there were false positives. This is of relatively limited concern however as others have noted that the costs of untreated mental disorders are higher than the costs of identifying false positives.^{13,21–23} False positives are of more concern in diseases in which a false positive triggers potentially harmful consequences, such as when a false diagnosis of cancer would trigger treatment with chemotherapy that typically causes serious adverse side effects. A false positive for PTSD would trigger only a referral to a mental health specialist who would

conduct a more in-depth assessment. A false positive is of limited concern also because of previous research that has demonstrated that significantly more youths are impaired by PTSD symptoms than fully diagnosed;²⁴ some children with fewer than five PTSD symptoms might suffer functional impairment and would benefit from treatment.

Other strengths of this screen include that it is the only known short screen for very young children that was created from an empirical analysis of data, the data came from the largest known database of PTSD symptoms in trauma-exposed young children, and the sample experienced a diversity of traumatic experiences. The sample was representative of the most common forms of exposure to trauma. Of the 16 types of directly-experienced traumatic events measured in an epidemiological survey of youth,²⁵ witnessing domestic violence, accidental injuries, and natural disasters were the first, third, and fourth most common types respectively. While there has been interest in the notion that different types of trauma exposure produce different manifestations of PTSD, existing data do not support that speculation. In the largest test of this notion in young children, it was demonstrated that there was no difference in the rates of being diagnosed with PTSD between children who experienced single events, Hurricane Katrina, or repeated events.²⁶ When other studies have claimed to have found different types of exposures causing different post-traumatic stress reactions they have invariably biased their studies by including exposure to non-life-threatening stress events (see Scheeringa 2015,²⁶ for a discussion of this problem).

The creation of this screen was consistent with the creation of other screens in which the first step has been to extract a smaller number of items from longer instruments.^{19,20} The validation of screens is an iterative process, and future steps ought to include test-retest reliability, use of the screen as a stand-alone measure that is validated against a gold standard measure, and replication of these findings in other samples and settings.

The ratings of the symptoms were obtained by rigorous interviews, as opposed to self-administered questionnaires, which is viewed as both a strength and limitation of this process. It is a strength because the accuracy of rating the symptoms for the dependent variable is likely to be greater compared to self-administered questionnaires. The interview method allowed follow-up questions and educational interviewing to arrive at the most accurate answer possible. PTSD items are often abstract and difficult to understand, which can make them prone to misunderstanding for those who have little frame of reference in their lives to understand PTSD symptoms.² It is a limitation because the accuracy of the ratings may not be identical to how respondents would actually fill out a screen that is self-administered.

Other limitations include that the YCPS has not been used in a study yet and there are no data on how this six-item combination functions when used separately. The trauma-exposed children were assessed for the most part one to three years after their first trauma exposures, meaning that their PTSD symptoms would be viewed traditionally as chronic symptoms. It is not known if the same results would be found if children had been studied in a more acute period such as within the first six months following trauma. Control children were similar on most demographic variables but were significantly younger, maternal caregivers were younger and less educated, and more fathers lived in the home compared to the trauma-

exposed. Because trauma exposure does not happen at random and can be associated with sociodemographic variables,²⁷ it is questionable whether a non-trauma-exposed control group can ever be perfectly matched to many types of trauma-exposed cohorts.

The YCPS is free for others to use, reproduce, distribute, or translate, except for commercial purposes, without additional permission needed from the author. A positive screen is considered the presence of two out of the six screen items, and the brevity of the YCPS is seen as its major strength compared to longer measures. Eventual uses of a brief screen include primary care visits. The most commonly-used mental health screeners in pediatric primary care settings, such as the Pediatric Symptom Checklist-17,²⁸ do not screen for trauma exposure or for PTSD symptoms. Eventual uses of the screen could also be for large-scale screening efforts, such as following natural disasters, where cost and time factors dictate the need for inexpensive and rapid tools.

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Table 1.

Frequency That Symptoms Were Endorsed in the Trauma-Exposed (n=284) and Control (n=46) Groups.

DSM-IV Label	Description of symptom	Trauma-Exposed		Controls	
		Number	%	Number	%
B4	Upset when exposed to reminders of the trauma(s)	214	75%	3	7%
D2	Irritable, outbursts of anger, or extreme temper tantrums	177	62%	9	20%
D1	Difficulty falling or staying asleep	163	57%	8	17%
C2	Avoidance of external reminders	153	54%	1	2%
B1	Recurrent and intrusive memories of the trauma(s)	127	45%	3	7%
B2	Nightmares	120	42%	2	4%
D5	Startle more easily	105	37%	1	2%
D3	Concentration difficulty	100	35%	1	2%
C1	Avoidance of internal reminders	81	29%	1	2%
D4	Hypervigilance	74	26%	1	2%
B3	Flashbacks and dissociation	52	18%	2	4%
B5	Physiological distress when exposed to reminders	49	17%	0	0%
C6	Restricted range of affect	46	16%	0	0%
C5	Social withdrawal	39	14%	1	2%
C4	Loss of interests in usual activities	38	13%	1	2%
C3	Inability to recall trauma events	13	5%	2	4%
C7	Sense of foreshortened future	1	0%	0	0%

Table 2.

Impairment for the six combinations with 100% sensitivity.

Combination		Categorical	Continuous	
		Percent with Impairment	Mean	SD
B1B4D1D2D5	Pos	81.4%	1.76	1.51
	Neg	41.4%	.66	1.09
B4D1D2D3D5	Pos	81.5%	1.76	1.50
	Neg	40.4%	.63	1.13
B1B2B4D1D2D5	Pos	81.6%	1.75	1.50
	Neg	35.3%	.57	1.06
B1B4D1D2D3D5	Pos	80.0%	1.73	1.51
	Neg	40.8%	.61	1.08
B2B4D1D2D3D5	Pos	81.7%	1.75	1.49
	Neg	37.0%	.63	1.15
B4D1D2D3D4D5	Pos	80.2%	1.74	1.51
	Neg	42.3%	.62	1.07

Pos = subjects who scored positive on this combination (two or more items endorsed). Neg = subjects who scored negative on this combination (zero or one item endorsed).