Child abuse & neglect in Suriname
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Use of a screening tool for posttraumatic stress disorder in children in Suriname

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ABSTRACT

The use of validated instruments on Post Traumatic Stress Disorder (PTSD) concerning children in Suriname is scarce. Worldwide, the Children’s Revised Impact of Event Scale (CRIES-13) is one of the most used instruments to screen for PTSD in children. Current study investigated the use of this tool in Suriname. In three group homes in Paramaribo and a welfare institute, two schools, and two group homes in Nickerie, 65 children filled out the CRIES-13. All these children had been exposed to one or more Adverse Childhood Experiences during their lives. In Nickerie, where there was the possibility to include participation of parents, the Anxiety Disorders Interview Schedule for DSM-IV - Child and Parent Version (ADIS-C/P) was administered to 26 children and their parents to assess PTSD. The CRIES-13 showed to have good face validity. Besides, it demonstrated good internal consistency (0.75) and high test-retest reliability (.80). Furthermore, the CRIES-13 correlated well with the ADIS-C/P. A cut-off score of 30 emerged as the one striking the best balance between sensitivity (.91) and specificity (.73). The CRIES-13 was shown to be a reliable and valid instrument to screen for PTSD in children in Suriname. This will allow the detection of children who are in need of professional help, and therefore offer treatment in an early stage in order to prevent chronic symptoms.
INTRODUCTION

Worldwide, children are exposed to Adverse Experiences (e.g., disasters, violence, and neglect). One of the possible consequences of experiencing such events is developing a Post Traumatic Stress Disorder (PTSD). PTSD in children and adolescents can impair psychosocial functioning and increase the children’s risk of developing comorbid disorders, such as mood disorders, behavioral disorders, and anxiety disorders (Bolton et al., 2000; De Bellis & Van Dillen, 2005; Kearney at al., 2010; Schnurr et al., 2002). Research on PTSD in developing countries is scarce. While individuals in developing countries are thought to be at elevated risk of being exposed to adverse experiences, only 6% of PTSD prevalence studies are conducted in these areas. Although international studies show that symptoms of posttraumatic stress are comparable across cultures, languages, racial/ethnic groups and geographic areas, differences in violence, disasters, cultures, social structures, and coping behaviors may influence the prevalence and course of PTSD among people of different countries (e.g., Cardozo et al., 2000; De Jong et al., 2001; De Girolamo & McFarlane, 1996; Rosner et al., 2003). It is therefore not likely that research in developed countries can be generalized to developing countries.

Situation-bound risk factors, such as poverty, inadequate housing, single-parent families, substance abuse problems, and lower levels of education are more common in developing countries. These factors may increase the risk of developing PTSD (Bernal & Saez-Santiago, 2006). Not surprisingly, substantially higher rates of PTSD are observed in those countries (Cardoza et al., 2000; De Jong et al., 2001; Scholte et al., 2004). Another important factor that may place children from developing countries at higher risk of developing PTSD is stress as a consequence of immigration and culture-related intergenerational conflicts (Dutton et al., 2000).

Presumably higher rates of PTSD in developing countries require research into symptoms and the exact prevalence, and therefore reliable and valid instruments that can elicit children’s reports of their psychological adjustment (Giannopoulou et al., 2006). To assess symptoms after experiencing adverse and uprooting events, the Children’s Revised Impact of Event Scale (CRIES-13; Children and War Foundation, 1998; Olff, 2005) is one of the most widely used selfreport measures within the trauma literature (Perrin et al., 2005). The CRIES-13 is an adaptation of the Impact of Event Scale (IES; Horowitz et al., 1979), which was originally designed for adults. Its revision is a short questionnaire developed for children aged eight years and older, who might be at risk for PTSD (Horowitz et al., 1979; Giannopoulou et al., 2006). The CRIES-13 has been used to screen very large samples of at-risk children who experienced a wide range of adverse events in their childhood (Perrin et al., 2005).
One of the developing countries that merit more research on the measures of PTSD among children is Suriname. The population consists of around 540,000 people, of whom approximately 200,000 are children. More than half of this population lives in the capital, Paramaribo. The citizens are mainly of Asian, Indo Caribbean, Indigenous, African Surinamese, Javanese, Chinese, and Dutch descent (General Office of Statistics, Census Office, 2011). Approximately 70% of the population lives below the poverty line (IndexMundi, 2012). In Suriname, research on PTSD in children is scarce. To provide solid health care in this country, proper instruments are necessary in the process of early detection of symptoms. Early detection is important in order to prevent chronic symptoms developing and to offer treatment in an early stage. Furthermore, recognition by the environment (social support) has shown to be important in decreasing the risk of developing PTSD (Olff, 2012).

This study intends to investigate the use of a short screening tool (CRIES-13; Children and War Foundation, 1998; Olff, 2005) to detect PTSD in children living in Suriname. No study so far has been focused on tools to examine symptoms of posttraumatic stress in children in Suriname.

**METHODS**

*Participants*

The study population consisted of a sample of 65 children and adolescents (27 male, 41.5%) aged between 8 and 16 years old (M = 11.48, SD = 2.31), all exposed to one or more adverse event(s) during their lives, mainly abuse and/or neglect. One part of the study (N = 39) took place in three group homes in different parts of Paramaribo, the capital of Suriname. The other part of the study (N = 26) took place in the welfare institute WiN Group, two group homes, and two schools in Nickerie, a small city in the Northwestern part of Suriname. All participants experienced at least one adverse experience in their past. The adverse experience(s) were categorized as a single external event (type I) or a long-standing series of such events (repeated exposure, type II; Terr, 2003). In this population, 12 children had been exposed to a single adverse event, and 53 children had been exposed to longstanding series of such events. In Paramaribo, participants were recruited between March and July 2011. Data in Nickerie were collected in July and August 2009.
Instruments

The Children’s Revised Impact of Event Scale-13
The Children’s Revised Impact of Event Scale (Children and War Foundation, 1998; Dutch translation by Olff, 2005) is a short questionnaire to screen children aged eight years and older for PTSD. Respondents rate the frequency with which they have experienced each of the 13 items during the past week, using a four-point Likert-like scale (0 = none, 1 = rarely, 3 = sometimes, and 5 = often). Scores are acquired for four intrusion items, four avoidance items, and five hyperarousal items (Giannopoulou et al., 2006). Validity data from two samples of children showed that 75–83% of the children were correctly classified as having PTSD after completing the CRIES-13, in which a cut-off score of 30 or higher on the total score was indicative of probable PTSD. The CRIES-13 has been used to screen very large samples of at-risk children who experienced a wide range of adverse events in their childhood (Perrin et al., 2005). The Dutch translation of the CRIES-13 (Olff, 2005) is currently being validated in the Netherlands (Verlinden et al., unpublished data).

The Anxiety Disorders Interview Schedule for DSM-IV
The Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Version (ADIS-C/P; Silverman and Albano, 1996; Dutch translation by Siebelink & Treffers, 2001) is a semi-structured interview for diagnosing anxiety and other related disorders in children and adolescents between the ages of 7 and 17 years. The ADIS-C/P is administered separately to children and their parent(s). Symptoms are rated by these two informants as either present (‘yes’), absent (‘no’) or ‘other’ (e.g., ‘sometimes’ or ‘don’t know’). In addition, impairment ratings of each diagnosis are considered. Diagnoses are derived based upon the child report (ADIS-C) and parent report (ADIS-P) separately. In addition, the interviews provide combined diagnoses based on child and parent reports. The ADIS-C/P appears to be a reliable instrument for deriving DSM-IV anxiety disorder symptoms and diagnosis in children. The current version shows to have excellent test-retest reliability (kappa values ranged from 0.61 to 1.00; Silverman et al., 2001).

Procedures

Permission was granted by the board of each group home (Paramaribo), the board of the welfare institute WiN Group, the boards of the different institutes where the study took place (Nickerie), and by the participating children and their parents/caretakers. All children were invited to participate. However, it was emphasized that the child was free not to participate. The anonymity of the screening was explained as well. Although
the participants mastered the Dutch language, a list with definitions and explanations in Sranan Tongo matching the questionnaires was given to the caretaker, as Sranan Tongo is the everyday language in the country. Assessment in Paramaribo took place in three group homes. Because not everyone had the opportunity to go the welfare institute WiN Group, assessment in Nickerie took place in different settings, i.e. at the welfare institute WiN Group, at the schools of the children, and at the homes of the participants. Detailed instructions, including information about the study and the way of completing the questionnaire, were given by the researchers. The researcher was there to answer questions when necessary. In the group homes, the caretaker of the child was present as well. Depending on the reading level of the child, the researcher was allowed to provide help by reading every item out loud. In Nickerie, where there was the possibility to include parents in participation, the PTSD section of the ADIS-C/P was administered. A clinically trained psychologist interviewed both child and parent separately. The CRIES-13 and ADIS-C were completed in the same session.

Statistical analyses

Internal consistency was assessed by using Cronbach’s alpha. Spearman’s rank correlation coefficient was used to examine test-retest reliability and the extent to which the CRIES-13 is measuring the same construct as the alternative measure of posttraumatic stress (ADIS-C/P). Furthermore, to examine the efficacy of the CRIES-13 as a measure to identify PTSD in children, sensitivity, specificity, positive/negative predictive value, and overall efficiency were calculated. All analyses were performed by using software SPASW Statistics 19 (Chicago, IL). A p-value < 0.05 was considered significant.

RESULTS

According to results of the ADIS-C/P, 11 out of 26 children (42.3%) are suffering from PTSD. Table 7.1 presents the demographic characteristics of the CRIES-13.

Face validity

In general, the CRIES-13 seemed to be a valid screening tool. All children seemed to understand the fixed instruction. However, some items may be ambiguous and misinterpreted by the children. Words and sentences such as ‘irritable’ and ‘waves of strong feelings’ often had to be explained by the researcher or parent/caretaker. In addition, the CRIES-13 sometimes seemed to be difficult for the younger children, especially questions that were negatively phrased, e.g., ‘Do you try not to think about it?’
Chapter 7

Reliability

The total score of the CRIES-13 demonstrated good internal consistency. Spearman’s rank correlation coefficient showed high test-retest reliability for the total score. Table 7.2 shows the reliability of the CRIES-13.

Table 7.1 Demographic characteristics of the CRIES-13

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean (SD)</th>
<th>N = 65</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrusion</td>
<td>9.8 (5.5)</td>
<td>0–20</td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td>10.6 (4.9)</td>
<td>0–20</td>
<td></td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>11.4 (5.5)</td>
<td>0–23</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31.8 (11.7)</td>
<td>1–59</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.2 Reliability of the CRIES-13

<table>
<thead>
<tr>
<th></th>
<th>Internal consistency</th>
<th>Test-retest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value 95% CI</td>
<td>Value 95% CI</td>
</tr>
<tr>
<td>Intrusion</td>
<td>0.73 0.60–0.82</td>
<td>0.58 0.25–0.79*</td>
</tr>
<tr>
<td>Avoidance</td>
<td>0.46 0.21–0.65</td>
<td>0.68 0.40–0.84*</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.53 0.33–0.69</td>
<td>0.53 0.18–0.76*</td>
</tr>
<tr>
<td>Total</td>
<td>0.75 0.65–0.83</td>
<td>0.80 0.60–0.91*</td>
</tr>
</tbody>
</table>

*p < 0.01.

Concurrent validity

The extent to which the CRIES-13 measures the same construct as the ADIS-C/P was examined by using Spearman’s rank correlation coefficient. Correlations were higher for the child interview (ADIS-C) than for the parent interview (ADIS-P). Table 7.3 presents the concurrent validity of the CRIES-13.

Subsequently, total scores on the CRIES-13 were plotted against the presence or absence of a PTSD diagnosis to determine the best cut-off score. For this reason, the information from both child and parent interview were combined. A cut-off score of 30 emerged as the one striking the best balance between sensitivity and specificity. Results showed that
10 out of 11 children with PTSD according to the ADIS-C/P were correctly identified by the CRIES-13. Furthermore, 11 out of 15 children without PTSD according to the ADIS-C/P were correctly identified as not having PTSD by the CRIES-13. This translated into an overall efficiency rate of 81%. The high negative predictive value (.92) of the CRIES-13 indicates that if a child does not have a total score above the cut-off, it is unlikely that he or she has PTSD. Table 7.4 presents the predictive accuracy of the CRIES-13.

**DISCUSSION**

This explorative study investigated the use of a short screening tool, i.e. the CRIES-13 (Children and War Foundation, 1998; Olff, 2005), to detect PTSD in children living in Suriname. In this research population, all children had been exposed to one or more adverse event(s) during their lives, mainly abuse and/or neglect. As the results of the ADIS-C/P show, a large percentage (42.3%) of these children suffer from PTSD.

### Table 7.3 Concurrent validity of the CRIES-13

<table>
<thead>
<tr>
<th></th>
<th>ADIS-C</th>
<th></th>
<th>ADIS-P</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>95% CI</td>
<td>Value</td>
<td>95% CI</td>
</tr>
<tr>
<td>Intrusion</td>
<td>0.52</td>
<td>0.17–0.76*</td>
<td>0.48</td>
<td>0.11–0.73**</td>
</tr>
<tr>
<td>Avoidance</td>
<td>0.51</td>
<td>0.15–0.75*</td>
<td>0.32</td>
<td>0.00–0.63***</td>
</tr>
<tr>
<td>Hyperarousal</td>
<td>0.82</td>
<td>0.63–0.92*</td>
<td>0.57</td>
<td>0.23–0.78*</td>
</tr>
<tr>
<td>Total</td>
<td>0.78</td>
<td>0.56–0.90*</td>
<td>0.61</td>
<td>0.29–0.81*</td>
</tr>
</tbody>
</table>

* p < 0.01, ** p < 0.05, *** p = 0.11.

### Table 7.4 Predictive accuracy of the CRIES-13

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>0.91</td>
<td>0.62–0.98</td>
</tr>
<tr>
<td>Specificity</td>
<td>0.73</td>
<td>0.48–0.89</td>
</tr>
<tr>
<td>PPV&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.71</td>
<td>0.45–0.88</td>
</tr>
<tr>
<td>NPV&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.92</td>
<td>0.65–0.99</td>
</tr>
</tbody>
</table>

<sup>a</sup> PPV = Positive Predictive Value.  
<sup>b</sup> NPV = Negative Predictive Value.
The current study does provide further support for the excellent psychometric properties of the CRIES-13. The screening tool was shown to have good face validity, good internal consistency, and high test-retest reliability for the total scale. It should be noted however, that values for the three subscales were lower than those reported by Smith et al. (2003). Furthermore, the CRIES-13 correlated well with the ADIS-C/P. A cut-off score of 30 emerged as the one striking the best balance between sensitivity and specificity. In other words, a score of 30 or higher indicates the presence of PTSD. This cut-off score is in line with the one reported by Perrin et al. (2005).

**Strengths and limitations**

The CRIES-13 is a short instrument. It consists of only 13 items and therefore is not time-consuming. The items can be scored easily, which makes the CRIES-13 a user-friendly tool. In Suriname, where research on this topic and the use of instruments to assess PTSD in children is scarce, a brief instrument is to be preferred over a time-consuming and demanding one, such as the ADIS. In the current study, the CRIES-13 appears to have high sensitivity. In other words, the CRIES-13 does not exclude children with a PTSD diagnosis. Furthermore, a self-report of PTSD symptoms, rather than a measure that has to be administered to parents and/or teachers is important, because evidence indicates that these informants tend to underestimate children’s level of these symptoms in comparison to children’s self-ratings (Earls et al., 1988; Yule & Williams, 1990).

To make the children in the group homes feel more at ease, their caretaker was present during assessment. We realize that this might have been of influence on the answers of these children. The misunderstanding of some items could be a result of the lower level of education of the children in this country (Multiple Indicator Cluster Survey-3, Suriname, 2006). Misunderstandings may also have been caused by some unfamiliarity with expressing feelings in the formal language (Dutch), while these are normally expressed in Sranan Tongo. Unfamiliarity in general with expressing emotions may be a determining factor as well. Parents and other caretakers might be low in sensitivity and responsivity, resulting in children not recognizing, verbalizing, and communicating their emotional states. We have no knowledge of empirical research in Suriname addressing this subject.

**Recommendations**

The CRIES-13 is a useful instrument to screen for PTSD in children and can be administered by professionals with medical and/or social education. It should be mentioned however,
that one cannot make a clinical diagnosis based on the scores on the CRIES-13. If the CRIES-13 indicates the presence of PTSD, further clinical assessment is necessary in order to make a proper diagnosis. In this study, the CRIES-13 was administered in different settings in two relatively highly populated cities in Suriname. In continuing this study, the population may be widened, in particular through including settings that are located in the interior. In addition, further investigation in other settings, such as hospitals, mental health centres, and among general practitioners, is recommended. To eliminate factors that could yield difficulties, a fixed glossary with explanations in the local language is recommended, as well as the presence of a professional who can provide help at any time. The conversion of the negative items would probably make the questionnaire more accessible for young children as well.

**Conclusions**

In summary, our results indicate that the CRIES-13 may serve as a useful tool to screen for PTSD in children in Suriname. A tool in order to screen children for PTSD can detect children who are in need of professional support, and therefore assist in providing treatment at an early stage and help to prevent chronic health related symptoms.
REFERENCES


