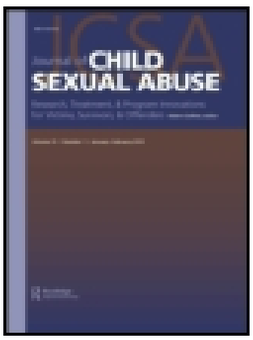

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# Children's Knowledge of Abuse Questionnaires (CKAQ)-Short: Two Brief Ten-Item Measures of Knowledge about Child Sexual Abuse Concepts

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**ABSTRACT**

Child-focused sexual abuse prevention programs were developed in the 1970s in response to significant concerns across North America with respect to children being sexually abused. While program evaluations are common, measures to evaluate these programs, most of which are offered to children in elementary schools, are not widely available. This article reviews the key concepts covered in CSA prevention education programs that comprise the constructs used to measure knowledge/attitude gains post-program. Available measures are reviewed and the psychometrics of two new 10-item versions (one for students in grades 1–2; the other for grades 3–6) of the CKAQ-33, a commonly used tool, are presented and psychometrically assessed with a sample of 7646 elementary school students.

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Child sexual abuse (CSA) is a significant problem across the globe (Barth, Bermetz, Heim, Trelle, & Tonia, 2013; Stoltenborgh, van IJzendoorn, Euser, & Bakermans-Kranenburg, 2011). Its consequences include significant individual psychological issues including depression, anxiety and post-traumatic stress (Daigneault, Vézina-Gagnona, Bourgeois, Esposito, & Hébert, 2017; Gray & Rarick, 2018), which often extend into adulthood as continuing mental health problems and interpersonal difficulties with intimate partners (Hillberg, Hamilton-Giachritsis, & Dixon, 2011; Lalor & McElvaney, 2010). Further, childhood sexual abuse exacts a high economic price from society (Letourneau, Brown, Fang, Hassan, & Mercy, 2018).

Given these widespread and significant consequences, preventing child sexual abuse is clearly the best option. However, authors have long debated how best to do this (Rudolph & Zimmer-Gembeck, 2018; Zeuthen & Hagelskaer, 2012). Key prevention strategies including media and public awareness campaigns (Kemshall & Moulden, 2017; Rheingold et al., 2007), parent education (Guastaferro, Zadzora, Reader, Shanley, & Noll, 2019; Nickerson, Livingston, & Kamper-DeMarco, 2018) especially with the parents of preschoolers (Mendelson & Letourneau, 2015;

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Wurtele, Moreno, & Kenny, 2008) and school-based child-directed programs (Walsh, Zwi, Woolfenden, & Shlonsky, 2015).

Arguably, each prevention strategy should be offered concurrently as every effort to prevent CSA is warranted. However, ever since the conception of school-based CSA programs, critics have been concerned about children being taught the core CSA prevention concepts, worrying that they might be negatively affected, become anxious or traumatized or that they might generalize this to fear about benign or loving touches from trusted adults. These concerns remain, despite considerable research concluding that most children have no negative or unintended consequences after participating in a child-focused CSA prevention education program (Dale et al., 2016).

This article briefly reviews the history and the key concepts taught in child sexual abuse prevention programs, leading to a discussion about what measures are available for evaluating these efforts. One of the most often-used measures, the CKAQ-33, is described, with a rationale for shortening the scale for use in program outcome monitoring. Program monitoring occurs after having determined program efficacy to address long-term effectiveness and fidelity and, as such, the methodology is not as stringent as the original research (Bond & Carmola Hauf, 2004). The psychometric properties of the two 10-item scales, one for children in grades 1–2; the other for grades 3–6, are analyzed.

## *Prevention education programs about child sexual abuse*

Child sexual abuse is an ancient problem (Rush, 1981), but widespread concern about this only surfaced in North America in the 1970s, when prevention efforts began (Plummer, 1999). Finkelhor's (1984) four preconditions for sexual offenses to occur (an offender's motivation; offender's inhibitions, external impediments and child resistance) provide a useful framework for identifying prevention options. Each precondition can be the target of primary (universal factors), secondary (early interventions) and tertiary (treatment) prevention programs (Tutty, 1991).

Adult-focused prevention (addressing external impediments) is arguably important, since it is parents' responsibility to safeguard their children. Some excellent public health initiatives that address CSA have been developed such as the US "Stop It Now!" and the Massachusetts's "Enough Abuse" campaign. However, these are not widespread, and their efficacy is difficult to assess (Kemshall & Moulden, 2017). Parent-focused CSA programs are often specific to parents of young preschool-aged children where parents are taught to provide the education materials to their own children with generally favorable results (Wurtele & Kenny, 2010; Wurtele, Saslawsky, Miller, Marrs, & Britcher, 1986). Parent-directed orientations/workshops are often a component of child-focused programs, especially in the 1990–2000s, albeit one that attracted few parents: Tutty (2000) reported that only one-fifth of parents invited to the information session of

the "Who Do You Tell?"™ program actually attended, which is similar to other studies of parent workshops/orientations (25% in Hébert, Lavoie, & Parent, 2002; 24% in Tutty, 1993).

By and large though, the earliest and most common prevention efforts are primary (universal) programs targeting children in elementary schools or preschool programs (Tutty et al., 2005). While school-based prevention education programs are generally portrayed as primarily educating potential victims of CSA (child resistance), they can also be conceptualized as teaching children who are current or potential sexual offenders that these behaviors are inappropriate (addressing offender's inhibitions) (McGibbin, Humphreys, & Hamilton, 2017).

While relatively common in the 1970s to 1990s, school-based programs became more difficult to market with the advent of two issues in the 2000s: Backlash against sexual abuse disclosures with the premise of false allegations (Friend & Snyder, 2017) and the proliferation of school-based programs to address other interpersonal violence issues such as bullying, dating violence and substance abuse (Tutty et al., 2005; Wurtele, 2009), which, among other issues such as crowded curricula, has created difficulties in accessing students. A study by Finkelhor, Asdigian, and Dziuba-Leatherman (1995) found that, while 67% of youth aged 10–16 had been exposed to a school-based victimization or abuse program in schools, only 19% had received a comprehensive program. A recent study (Finkelhor, Vanderminden, Turner, Shattuc, & Hamby, 2014) supports the low availability. In this US national study of youth (ages 5–17) who participated in violence prevention programs, only 21% had had "sexual assault" prevention, but the subset of children aged 5 to 9 were much less likely to have had such programming.

Nevertheless, with new media attention to children as victims of sexual abuse by Catholic priests (Faisal & Barron, 2018) and celebrities (Doyle, 2019), reinvigorated interest in educating children in the hope of preventing or intervening early has arisen. Also notably, school-based CSA programs are being developed and evaluated worldwide in countries such as China and Taiwan (Jin, Chen, & Yu, 2016; Zhang et al., 2014), Ecuador (Bustamante et al., 2019), Korea (Kim & Kang, 2017), South Africa (Dunn, 2011) and Turkey (Tunc et al., 2018) to name a few.

The rationale for child-focused programs is to educate children about the core dynamics that abusers use to groom or lure children into sexual activities so that children might recognize these, avoid them, if possible, and seek assistance. According to Walsh et al. (2015):

> They seek to prevent CSA by providing students with knowledge and skills to recognize and avoid potentially sexually abusive situations and with strategies to physically and verbally repel sexual approaches by offenders. They endeavor to minimize harm by disseminating messages about appropriate help seeking in the event of abuse or attempted abuse and equip adults with strategies for responding quickly and effectively to disclosures to protect children from further abuse (p. 34).

These skills and concepts form the core items in knowledge measures used to evaluate CSA prevention education programs.

## Evaluating child sexual abuse prevention education programs

CSA prevention education programs have been extensively evaluated (for reviews see Topping & Barron, 2009; Walsh et al., 2015), the bulk of which support the conclusion that children learn many of the core CSA prevention concepts. These evaluations typically use two complementary types of standardized measures: Knowledge/attitude scales such as the CKAQ-33 (Tutty, 1995) or the Personal Safety Questionnaire (Wurtele et al., 1986) and vignettes tests such as the "What If" Situations Test (Wurtele, Hughes, & Owens, 1998). Knowledge scales often include shorter vignette-like items such as "If you fell off your bike and hurt your private parts, it would be OK for a doctor or nurse to look under your clothes;" or "If you're walking down the street with your mother and she starts talking to a neighbour you have not met before, it's OK to talk with them too." – both from the CKAQ-33 (Tutty, 1995).

A comparison of knowledge/attitude measures for elementary school children is presented in Table 1. In three instances, the scale items were not published (Binder & McNeil, 1987; Fryer, Kerns Kraiser, & Miyoshi, 1987; Hazzard, Webb, Kleemeier, Angert, & Pohl, 1991) so, while these are mentioned, it is not possible to comment about them extensively. Excluded from Table 1 were publications in which the measure is so specific to a particular program (i.e. Wood and Archbold (2015) regarding Red Flag Green Flag People) that it would not be easily applicable for evaluations of other prevention education efforts. Notably, relatively few measures specific to elementary school-aged children have been published. Most are short (10–13 items), with only the Kraizer's (1986) 18-item Knowledge Scale, Dake, Price, and Murnan (2003) 16-item, Hazzard et al.'s (1991) unpublished 25-item scale and the CKAQ-33 (Tutty, 1995) being longer.

## The Children's Knowledge of Abuse Questionnaire (CKAQ)

The original 40-item Children's Knowledge of Abuse Questionnaire (CKAQ-40) was developed to assess the knowledge levels of abuse prevention concepts for elementary school-aged children in grades one through six (Tutty, 1995). It was designed as a non-program specific measure, so that it could be used by programs other than "Touching," the program evaluated in the original study (Tutty, 1992). The measure starts with a brief introduction to the concepts of good, bad and confusing touches so that children who may not have had any information about child sexual abuse prevention concepts can understand the premise of the CKAQ items. Generally, while children are provided with a paper copy of the measure that they answer themselves,

**Table 1.** Measures of child sexual abuse knowledge for elementary school-aged children in published studies.

| Measure | Citation of Measure | Information & Psychometrics | Evaluations Using the Measure | Comments |
|---|---|---|---|---|
| Children's Knowledge of Abuse Questionnaire Revised (CKAQ-33) | Tutty (1995) | Grades K-6: 33 items: T-F responses; **24-item Inappropriate Touch subscale**: alpha = .84; 1 month test-retest = .89; **9-item Appropriate Touch subscale** alpha = .50; 1 month test-retest = .59. | **CKAQ-33**: Casper, 1999; Dunn, 2011; Gangos et al., 2018; Hayward & Pehrsson, 2000; Holloway & Polido, 2018; Oldfield et al., 1996; Pulido et al., 2015; Tutty, 1997. **24 item Inappropriate Touch subscale**: Daigneault et al., 2012 | Good psychometrics for Inappropriate Touch subscale. Not as strong for Appropriate Touch subscale. |
| Protective Behaviors Questionnaire (ProB) | Dale et al., 2016 | Grade 1. 12 items; alpha = .55; test-retest .77 (no time specified). | White et al., 2018; Dale et al., 2016 | Relatively low alpha |
| Personal Safety Questionnaire (PSQ) | Saslawsky & Wurtele, 1986 | Grades: K-6. 13 items; KR-20 = .78; 1 week test-retest = .64. Preschool to | Wurtele, Kast, & Melzer, 1992; Wurtele et al., 1986; Hébert et al., 2001; (Lee & Tang, 1998) 4 item version: Kenny et al., 2012; Tunc et al., 2018; Zhang et al., 2014 | Used for preschool-aged through Gr. 6. Later articles using 4-item version. |
| Knowledge About Abuse and Abuse Prevention | Ko & Cosden, 2001 | Highschool: 10 items; T-F responses | Ko & Cosden, 2001 | No psychometrics |
| Children's Safety Knowledge and Skills Questionnaire | Kraizer, 1986. Items cited in MacIntyre & Carr, 1999 | Ages 7–10. 18 items; various Likert scales; alpha = .79; | MacIntyre & Carr, 1999 | Most items specific to private parts and sexual abuse by strangers. |
| Knowledge of Sexual Abuse Prevention | Jin et al., 2016 | Grades 1–5. 10 items; T-NT; alpha = .66: | Jin et al., 2016 | Chinese originally. Not used in N.A. studies |
| Knowledge Questionnaire | (Dake et al., 2003) | Grade 3: 26 items – 16 about CSA knowledge. alpha = .64 | | |
| Knowledge Questionnaire | (Wolfe, MacPherson, Blount, & Wolfe, 1986) | Grade 3: 7 items. | | No psychometrics. 5 of 7 items discriminated between treatment & control conditions |
| Measures with No Published Items | | | | |
| Children's Knowledge Questionnaire | Binder & McNeil, 1987 | K to Gr. 6; 13 items; 5 point Likert scale; alpha = .70 | Binder & McNeil, 1987 | Items not included |
| What I Know About Touching Scale | Hazzard et al., 1991 | Grades 3–4: 25 items; Y-N-DK, alpha = .75; 2-wk. test-retest = .77 | Hazzard et al., 1991 | Items not included |
| Children Need to Know Knowledge/Attitude Test (CNTKKAT) | (Fryer et al., 1987) | K to Gr. 2; N = 44: 21-items. No psychometrics | | Items not included. Used in conjuncton with a simulated abduction attempt |

the items are read aloud so that younger children or those with any reading problems are provided verbal versions of the items.

The CKAQ-40 uses a true-false format and has strong psychometric properties: Kuder-Richardson-20 (a measure of internal consistency version for dichotomous scales) = .90 with a one-month test-retest *r* of .76 (Tutty, 1995), both tests providing strong support for the measure's reliability. Its construct validity was assessed by correlating the items with the Personal Safety Questionnaire (PSQ) (Saslawsky & Wurtele, 1986) with the resulting *r* of .92, providing strong evidence. Based on a factor analysis, the original CKAQ-40 was shortened to a 33-item measure (CKAQ-33) (Tutty, 1995). It was re-conceptualized as two subscales: one to identify knowledge about "inappropriate touch" and situations that could lead to sexual abuse and the other labeled as "appropriate touch" to identify misconceptions or unintended negative consequences from being in a CSA prevention program. The 24-item Inappropriate Touch Subscale includes items regarding important beliefs and facts about child sexual abuse, such as "Even someone you know might try to touch you in ways you don't like;" and "If someone touches you in a way you don't like, you should tell a grown-up you trust." The nine-item subscale on Appropriate Touch includes items about the fact that sometimes doctors may need to see a child's private parts and that, if lost, it is appropriate to ask a security guard for help, even if he is a stranger. Notably, while similar to items in the CKAQ-40, items on the Appropriate Touch subscale were re-written or expanded to better reflect this variable.

The CKAQ-33 has been used in a number of CSA prevention programs evaluations or will be in future (e.g. McElearney, Brennan-Wilson, Murphy, Stephenson, & Bunting, 2018). While most researchers used the 33-item scale (Casper, 1999; Dunn, 2011; Hayward & Pehrsson, 2000; Holloway & Polido, 2018; Oldfield, Hays, & Megel, 1996; Pulido et al., 2015), some used only the 24-item Inappropriate Touch subscale (Daigneault, Hébert, McDuff, & Frappier, 2012); others shortened the measure (Czerwinski, Finne, Kolip, & Alfes, 2018; Müller, Rödera, & Fingerle, 2014), or adapted it with items from other measures (Baker, Gleason, Naai, Mitchell, & Trecker, 2013; Hébert, Lavoie, Piché, & Poitras, 2001; Lee, McGee, & Ungar, 2001).

The measure has been translated into different languages including French (Daigneault et al., 2012; Hébert et al., 2001), German (Czerwinski et al., 2018), Greek (Gangos, Nega, & Apergi, 2018), Africaans & IsiXhosa from South Africa (Dunn, 2011), Spanish (De Luna & Hernandez Sampieri, 2005) and Indonesian (Fitriana, Suryawati, & Zubaidah, 2018). Finally, although not originally designed for this purpose, the CKAQ-33 has also been used as an outcome measure for CSA treatment (Liotta, Springer, Misurell, Block-Lerner, & Brandwein, 2015; Misurell, Springer, & Tryon, 2011; Reeker & Ensing, 1998; Springer & Misurell, 2010; Springer, Misurell, & Hiller, 2012).

The 24-item Inappropriate Touch subscale of the CKAQ-33, has strong reliability: Cronbach alpha = .84 ($N$ = 238); 1 month test-retest of .89

($N$ = 114) but the psychometrics on the 9-item Appropriate Touch subscale are not as strong: Cronbach alpha = .50 (N = 238); 1 month test-retest of .59 (N = 114) (Tutty, 1997). The length of the CKAQ-33 has been problematic for some evaluators, especially those wishing to assess multiple outcomes besides knowledge such as behavioral intentions, anxiety or self-esteem, as only a few examples. Further, long measures are less desirable for monitoring program outcomes. The purpose of this paper is to highlight the development and psychometric properties of two 10-item measures from the longer CKAQ-33, one for students in grades one and two and the other for students from grade three to six.

## Method

### *The "Who Do You Tell?"™ CSA prevention education program ("WDYT?"™)*

The "Who Do You Tell?"™ program was first developed 35 years ago in 1983, and was updated in the early 1990's by the Calgary Communities Against Sexual Abuse (CCASA). The program is offered at the request of elementary school principals. Two trainers offer the program in small groups (15 to 30) of children from kindergarten to Grade 6. The program is delivered to children in two sessions of 45 to 60 minutes apiece, on consecutive days. The program includes teacher training and parents are invited to an introductory presentation and receive informational handouts. Parental permission to attend is required, with participation in the program monitoring included in the school board approved consent forms. The "WDYT?"™ program was evaluated previously (Tutty, 1997, 2000) using the CKAQ-33, concluding that children who received the programs significantly increased their knowledge of CSA concepts after having received the program in comparison with students in the control condition.

### *Developing the CKAQ-Short measures*

The Calgary Communities Against Abuse agency was interested in monitoring the program effectiveness of "WDYT?"™, however, the CKAQ-33 is too lengthy for outcome monitoring. As such, the author worked with then "WDYT?"™ program director, Anne-Marie Tocher, to shorten and revise the CKAQ-33. First, Ms. Tocher identified items that were directly addressed in the curriculum. Using data from the Tutty (1997) "WDYT?"™ evaluation, items from the short-list that were deemed the most difficult (i.e. lowest scores at pretest) were identified. Notably, all items were from the CKAQ-33 Inappropriate Touch subscale.

Damon (1988) suggested subdividing age groups of 6 to 12 into 6 to 7 years and 8 to 12 years based on differences in moral developmental. For example,

a child's ability to ignore or to oppose the wishes of an adult, a key CSA prevention concept, is better developed in the older age-group. Further, as the response pattern to the CKAQ-33 differed between younger and older children, two separate 10-item scales were developed with eight common items and two different final items for the separate grade groups (Grades 1–2 and Grades 3–6). The results of the monitoring study are presented elsewhere (Tutty, Aubry, & Vasquez, 2019) concluding that students from all grades made statistically significant improvements on knowledge after participating in "WDYT?"™, with increased scores on every item of the two CKAQ-10 short scales.

### *Research setting*

This study took place in the city of Calgary, Alberta, Canada over an 8-year period (2010–2017). The "WDYT?"™ program was presented in 50 elementary schools. Program staff administered the CKAQ-10 measures immediately before the program and shortly after the second session, but only the pretest scores were used in the current study.

### *Data analysis*

Psychometric tests were conducted on the pretest scores of the two scales as suggested by DeVellis (1991). Internal consistency is measured by the coefficient alpha (Cronbach alpha) for the total scores. Corrected item-total scale correlations (correlating each item with the total score when that particular item is removed) provide information about the extent to which the scale items are related; high correlations are important in measures assessing a single construct (DeVellis, 1991. Finally, principle component factor analyses were conducted on the pretest scores of the two scales. In test construction or validation, a factor analysis is used to identify whether the items represent one or several underlying variables (Field, 2009). A principal components analysis extracts factors by rank, ordering the items in terms of highest association with the construct being measured (called factor loadings). Field (2009) suggests that items with factor loadings of .40 indicate a significant fit with the construct.

## Results

As can be seen in Table 2, a total of 7646 elementary school students completed pretests using the new measures.

In the CKAQ-10-Gr 1-2, notably, the number of Grade 1 students was small, with the majority of the CKAQ-10-Gr 1-2 measure answered by Grade 2 students. The internal consistency (Cronbach alpha) for the CKAQ-10-Gr 1-2 (N = 1241) is .57. As can be seen in Table 3, all items significantly correlated with the corrected total score (range of .12 to .33). The Cronbach alphas if the item was removed were lower but relatively close to the alpha for the total score (.57). Since the resulting

**Table 2.** CKAQ-10 responses by grade level.

| CKAQ-10-short | N per grade | Percentage of Total Subgroup |
|---|---|---|
| CKAQ-10-Gr. 1-2 | Grade 1 (*n* = 16) | 1.2% |
| | Grade 2 (*n* = 1311) | 98.8% |
| **Combined Grades 1 & 2** | ***N* = 1327** | **100%** |
| CKAQ-10-Gr. 3-6 | Grade 3 (*n* = 1699) | 26.9% |
| | Grade 4 (*n* = 1617) | 25.6% |
| | Grade 5 (*n* = 1514) | 24.9% |
| | Grade 6 (*n* = 1489) | 23.6% |
| **Combined Grades 3–6** | ***N* = 6319** | **100%** |
| **Total** | 7646 | |

scale would be 9 items instead of ten, this makes sense as coefficient alpha is sensitive to scale length (DeVellis, 1991).

With respect to the CKAQ-10-Gr 3-6, 6319 students completed the CKAQ-10-Gr 3-6. The Cronbach alpha for the CKAQ-10-Gr 3-6 (N = 5765) is .70.

In the principle components factor analyses, the first two factors, as identified by the eigenvalue 1.00 rule and the SCREE test (Field, 2009), were then rotated using a varimax procedure. On both scales, two major factors were identified accounting for 21% and 13% of the variance in CKAQ-10-Gr 1-2 and 28% and 15% for CKAQ-10-Gr 3-6, respectively. All items loaded on both factors, but Factor 1 had the stronger factor loadings in both measures. In both scales, one item had a factor loading lower than .40 on Factor 1. In the CKAQ-10-Gr 1-2, item 7 had a factor loading of only .212, and in the CKAQ-10-Gr 3-6, item 1 had a factor loading of .398, which is very close to the generally proposed cutoff of .40 (Field, 2009).

## Discussion

Although child-focused sexual abuse prevention education programs are less commonly offered in schools, the need to teach children these concepts is arguably more important than ever. Children, themselves, have voiced their right to be taught these ideas (Bustamante et al., 2019; Tutty, 2014). New school-based programs are being developed and evaluated in North America (e.g. Pulido et al., 2015) as well as internationally (e.g. Bustamante et al., 2019; White et al., 2018).

Researchers interested in assessing the knowledge of children receiving such programs currently have few options with respect to outcome measures. Evaluators are always looking for short but psychometrically-sound versions of measures. A case in point is Saslawsky and Wurtele's Personal Safety Questionnaire (PSQ) (1986). The most current citations use a 4-item verion rather than the original 13-items (Kenny, Wurtele, & Alonso, 2012; Tunc et al., 2018; Zhang et al., 2014) allowing for additional measures such as vignettes to assess recognizing potentially abusive situtations, and body safety. Nevertheless, one must be careful to include sufficient numbers of knowledge items to assess the

**Table 3.** CKAQ-10 item means, corrected item-scale correlations, alpha if item deleted and factor loadings.

| | Grades 1–2 ($N$ = 1327) | | | | Grades 3–6 ($N$ = 6319) | | | |
|---|---|---|---|---|---|---|---|---|
| Item | Item Mean* | Corrected Item-Scale $r$ | α if Item deleted | Factor Loading | Item Mean* | Corrected Item-Scale $r$ | α if Item deleted | Factor Loading |
| 1. You always have to keep secrets. | .49 | .23 | .548 | **.427** | .62 | .26 | .696 | .398 |
| 2. Sometimes it's OK to say "no" to a grown-up. | .50 | .26 | .540 | **.457** | .76 | .34 | .682 | **.495** |
| 3. Even hugs and kisses can turn into not OK touches if they go on too long. | .39 | .28 | .535 | **.461** | .63 | .40 | .672 | **.563** |
| 4. If a grown-up tells you to do something you **always** have to do it. | .28 | .33 | .523 | **.565** | .63 | .42 | .668 | **.583** |
| 5. Even someone you like could touch you in a way that feels bad. | .48 | .27 | .536 | **.471** | .54 | .37 | .678 | **.536** |
| 6. You **have** to let grown-ups touch you whether you like it or not. | .47 | .28 | .534 | **.519** | .76 | .33 | .684 | **.479** |
| 7. If someone touches you in a way that does not feel good, you should keep on telling until someone believes you. | .52 | .12 | .578 | .212 | .65 | .28 | .693 | **.415** |
| 8. Someone you know, even a relative, might want to touch your private parts in a way that feels confusing. | .25 | .24 | .544 | **.422** | .36 | .46 | .661 | **.632** |
| 9a. If someone touches you in a way you don't like, it's your own fault. | .71 | .24 | .544 | **.460** | N/A | NA | NA | NA |
| 10a. If someone touches you in a way you don't like, you should just keep quiet about it. | .60 | .28 | .534 | **.496** | N/A | NA | NA | NA |
| 9b. Some touches start out feeling good then turn confusing. | N/A | NA | NA | NA | .51 | .37 | .676 | **.542** |
| 10b. Sometimes someone in your family might want to touch you in a way you don't like. | N/A | NA | NA | NA | .51 | .38 | .676 | **.550** |

*Item scores range from 0 (incorrect) to 1 (correct)

developmentally sensitive and complex issues conveyed in CSA prevention education programs (Tutty, 2000; Wurtele, 2009).

While the original CKAQ-33 has been used extensively and may be particularly appropriate when assessing the in-depth knowledge of core prevention concepts included in CSA prevention education programs, a briefer but reliable and valid version may be preferable for some, especially when knowledge is only

one aspect of a more comprehensive evaluation of a CSA prevention education program or when monitoring program outcomes. The two short CKAQ-10 measures were created systematically, focused on core concepts taught in the "WDYT?"™ program, especially those that had previously been shown to be difficult to learn. Other researchers have used shortened versions of the CKAQ-33 (Czerwinski et al., 2018; Müller et al., 2014) but this necessitates reanalyzing the psychometrics of the new scales, as was done in the current article, because shortened versions may have different reliability or validity (DeVellis, 1991).

The current psychometric assessment of the CKAQ-10-Gr 3-6 provides general support for its use, with an acceptable internal consistency (Cronbach alpha of .70) and strong factor loadings for all ten items on one factor. However, as currently constructed, the CKAQ-10-Gr 1-2 is not as strong psychometrically. The Cronbach alpha of .57 is lower than desired, although similar to the alpha of .55 described for the Protective Behaviors Questionnaire (ProB) (Dale et al., 2016), which was used with Grade 1 students, similar to the current analysis.

Item 7 (If someone touches you in a way that does not feel good, you should keep on telling until someone believes you.) has a low factor loading (.212) and the Cronbach alpha of the total scale would improve very slightly from .57 to .578 if the item were deleted. Notably though, children in grades 1 and 2 significantly improved their score on this item (from 52% to 82% correct post-program; N = 1116) in a recent monitoring study using this measure (Tutty et al., 2019). Nevertheless, although this item conveys one of the key messages of most prevention education programs, it may be too complex for young children in grades 1 and 2 as written. This item was not a problem for the older children in the CKAQ-10-Gr.3-6 (factor loading of .415 and relatively little impact on the total scale Cronbach alpha if deleted. The item could be deleted or at the very least, simplified for use with the younger children. It could be rewritten as "If a touch does not feel good, keep on telling until someone believes you."

Another factor that influences the psychometric properties is scale administration. As originally constructed and acknowledging their developmental abilities such as newly developing reading skills (Tutty, 1997), children in the lowest grades (kindergarten to Grade 2) were administered the CKAQ-33 items individually. This meant that reading skills were not a factor and the one-on-one nature of the administration led to good concentration and attention. The shift to using the CKAQ-10 measures for monitoring purposes precluded individual administration. However, there may be a way to simplify the responses on the CKAQ-10-Gr 1-2 so that the children do not respond to a true-false format, which is conceptually abstract, but responded to symbols (e.g. thumbs up/thumbs down) representing true/false equivalents.

Additional psychometric assessment of the two short measures is recommended; in particular, test-retest reliability and concurrent validity by correlating the scores with a similar CSA knowledge measure such as the Personal Safety Questionnaire (PSQ) (Saslawsky & Wurtele, 1986). With a dearth of available

measures to evaluate child-focused CSA prevention education programs, new options will likely be of interest, especially as such programs proliferate worldwide. Nevertheless, researchers must ensure that measure's content is consistent within each program so as to be valid. Continued psychometric assessment of available measures is needed to ensure that they remain relevant as well as valid and reliable.

A limitation of the current study is that the measures were tested in a program outcome monitoring study. As mentioned previously, monitoring occurs after a program has been rigorously evaluated (Bond & Carmola Hauf, 2004), as was the case with "WDYT? ™" (Tutty, 1997). When monitoring, one typically collects little or no demographic information such as race/ethnicity or socio-economic background, as two examples that might impact a measure's psychometric properties. For example, in Holloway and Pulido's (2018) study, children from low-income families had lower CKAQ-33 scores at both baseline and posttest. Continued research with the two short CKAQ-10 measures is needed in studies with a broader range of background information.

In conclusion, child-directed CSA prevention education programs remain necessary, even after almost 50 years of implementation. This unfortunate fact reminds us of the importance of both evaluating the available programs and searching for additional venues to alert everyone that child sexual abused remains prevalent and we need all prevention options, preferably well-evaluated, to be more widely available for all audiences.

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## Disclosure of Interest

No conflicts to report

## Ethical standards and informed consent

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation [institutional and national] and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all parents of students included in the study."

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