

PLAY IT SAFE!

EVALUATION

WOMEN'S CENTER OF TARRANT COUNTY



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Executive Summary

Background: Childhood physical and sexual abuse continues to be a prevalent public health issue. Play It Safe![®] is a sexual and physical abuse prevention program delivered in a school setting that has shown potential beneficial outcomes, and strives to be classified as an evidence-based intervention. Following the Substance Abuse and Mental Health Services Administration's National Registry of Evidence-based Programs and Practices criteria for establishing an effective program, essential criteria include having *reliable* and *valid* assessment measures to evaluate a program. Consequently, this report has two objectives. First, this critical review summarizes characteristics of measurement tools from other school-based child abuse prevention programs, which can inform adaptations of the Play It Safe assessment. Second, the revision of the Play It Safe assessment is described, and includes corresponding rationale.

Critical Review of Measurement Tools for School-Based Child Abuse Prevention Programs: This search process revealed nine measurement tools for school-based childhood abuse prevention programs. Most studies on the measurement tools only establish reliability, which demonstrates consistency in the findings. Additionally, none of the measures track perfectly to the content of the Play It Safe program. Thus, based on this critical review, it was determined that an existing measurement tool would not be applicable for the Play It Safe evaluation.

Revised Evaluation Tool: As of 2018, the assessment strategy for Play It Safe included grade-specific questionnaires. Grades Kindergarten – 2nd grade had 5-items and grades 3rd – 6th grade had 10-items. The tool was revised to include the following characteristics: lower grade-level readings levels, key concepts from Play It Safe curriculum, “don’t know” response options, and vignettes addressing abuse prevention recognition, resistance, and reporting. The revised evaluation tools will be pilot tested prior to implementation in an evaluation study of Play It Safe.

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Evaluating School-Based Child Abuse Prevention Programs: A Critical Review

Background

Preventing Child Physical and Sexual Abuse. Childhood physical and sexual abuse continues to be a prevalent public health issue in today's society. In 2016, Child Protective Services received 676,000 reports of victims of child abuse and neglect nationally. As many as 1 in 4 children experience some form of child abuse or neglect in their lifetimes, with Behavioral Risk Factor Surveillance System (BRFSS) data from 2010 showing that 31.0% of female and 22.3% of male respondents had experienced an adverse childhood experience (ACE) (Center for Disease Control and Prevention, 2018).

Childhood physical and sexual abuse can have lifelong effects beyond only psychological distress. In one study, severe childhood sexual abuse had comparable effects on burden of illness to adding 8 years of age in adult psychiatric patients (Talbot et al., 2009). Additionally, ACEs are positively associated with continued sexual victimization in adulthood (Ports, Ford, & Merrick, 2017). More broadly speaking, the Centers for Disease Control and Prevention (2018) estimated the total lifetime economic cost to society of child abuse and neglect to be \$124 billion each year.

While physical abuse and neglect are the most common types of child maltreatment, many programs include an emphasis on sexual abuse because it tends to be a more hidden form of victimization (USDHHS, 2016). **Play it Safe!**[®] is a sexual and physical abuse prevention program that has shown potential beneficial outcomes (Blakey & Thigpen, 2015), and strives to be classified as an evidence-based intervention.

Evidence-Based Interventions. Public health interventions can be classified based on their level of evidence, which is driven by program evaluation. Four main levels of scientific evidence have been described by Brownson et al., 2009 for these interventions (Table 1). The first level includes **emerging** interventions, which are established from practice-based summaries or evaluations in progress. These evaluations are derived from formative evaluation, face validity, and indications that the intervention is plausible, low-cost, and replicable. The second level includes **promising** interventions, which are established from written program evaluations without formal peer review. The evidence supporting this classification come from the same types of data for emerging interventions with the addition of summative evidence of effectiveness. The third level includes **effective** interventions, which have undergone peer-review. These evaluations are reviewed for their study design, external validity, and cost-effectiveness. Finally, the top tier includes **evidence-based** interventions, which are established via systematic or narrative review using the same evaluation criteria for effective interventions (Brownson et al., 2009).

Table 1: Levels of Public Health Interventions

Level	Types of Evaluation
Emerging	Practice-based summaries or evaluations in progress
Promising	Written program evaluations without formal peer review
Effective	Written program evaluations that have undergone peer review
Evidence-Based	Systematic or narrative review using the same evaluation criteria for effective interventions

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In order to move up the evidence ladder, program evaluation should consider the Substance Abuse and Mental Health Services Administration (SAMHSA)'s National Registry of Evidence-based Programs and Practices (NREPP) criteria for establishing an *effective* program. There are four primary criteria to evaluate a program: (1) *rigor* – the strength of the study design; (2) *effect size* – measuring the impact of the study; (3) *program fidelity* – how the program was delivered; and (4) *conceptual framework* – components of the program. Table 1 describes each of these criteria and subcomponents of an effective program.

While all criteria are essential, an initial step is the identification or development of measures that are *reliable* and *valid*. Reliability refers to consistency of the measures when used repeatedly, while validity refers to whether the measure is assessing what it intends to measure. Validity can include sub-components, such as content validity, criterion-related validity, and construct validity. Without measurement reliability and validity, the rigor of a program cannot be evaluated.

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Table 2. Criteria for an Effective Program – adapted from the Substance Abuse and Mental Health Services Administration (SAMHSA) National Registry of Evidence-based Programs and Practices

Dimension	Construct	Description
Rigor	Design, Assignment	The equivalence of treatment and control groups prior to the intervention.
	Intent-to-Treat	The analysis considers intervention assignment for each group, even if a group did not fully implement the intervention.
	Statistical Precision	With bigger sample sizes, the evaluation of the intervention can more easily detect program impact.
	Pretest Equivalence	Determining if there are significant differences between groups during the pre-test phase.
	Pretest Adjustment	If groups are not equivalent and have some pre-existing differences, this must be taken into account in the analysis.
	Analysis Method	The analysis is appropriate to the data and study design.
	Other Threats to Internal Validity	Accounting for threats to validity that may be outside of study design control.
	Measurement Reliability	This reflects the consistency of the measures when implemented in similar settings and conditions.
	Measurement Validity	This reflects how the measurement tool is quantifying what it is intended to measure.
	Attrition	Accounting for how many participants leave (dropout) of the study over time.
Effect Size	--	Measures the association between the intervention and outcome under study.
Program Fidelity	Service Utilization	The use of the program by the intended target population.
	Service Delivery	The amount and type of the program received by the participants, and how well it adhered to the outlined program procedures.
Conceptual Framework	Program Goals	Clearly defined program goals that are the basis for what the intervention aims to change.
	Program Components	The intervention activities must be adequate to address the program goals.
	Theory of Change	The mechanism through which the intervention operates.

Current School-Based Childhood Abuse Prevention Interventions. A meta-analysis was conducted in 2015 to assess the effectiveness of school-based education programs for the prevention of child sexual abuse. This review included 24 studies, and found that school-based education interventions overall improved child self-protective skills, factual, and applied knowledge. However, the majority of the studies included in this review were from more than 10

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years ago. Only four studies were conducted in the last decade (Walsh et al., 2015). Similarly, an integrative review of school-based child sexual abuse prevention programs was conducted in 2013, and synthesized the evidence of 31 articles. Most of programs included in this review are also no longer available or accessible. The authors found that there were inconsistencies in the child outcome measures used in these programs, likely due to the complex topic and varying program content (Fryda & Hulme, 2015).

Based on these reviews (Fryda & Hulme, 2015; Walsh et al., 2015) and a literature review for this report, there are six school-based childhood abuse prevention programs that have been highlighted in the last decade. The details of these programs are described below and outlined in Table 3.

Kidpower began in 1989 in California and since then entities in nine other states have utilized the program. The content focuses on general safety including bullying, boundary setting, and physical and sexual abuse and has been adapted for preschoolers through high school. From 2002 to 2014 the program has been the subject of six research initiatives, with early studies focusing on reports from students, teachers, and parents, and more recent studies using a quasi-experimental study design with a pre and post-test evaluation (Brenick et al., 2014).

Learn to be Safe with Emmy and Friends is the protective behaviors program developed by ACT for Kids in 2007, an organization for the prevention of child abuse based in Australia. Over the course of five weekly 1-hour sessions, the program teaches identifying trusted adults, safe and unsafe secrets, public and private body parts, and emotional, situational, and body space awareness for 5 to 7-year-olds. The body of research evaluating the program was not available on the website, but two studies were published in 2016 outlining randomized control trials evaluating the program. The study conducted by Dale et al. found that children had increased knowledge of interpersonal safety and parents reported more use of safety skills. The White et al. study expanded on the previous article by randomizing at the school level to avoid cross-contamination and adding a simulation to observe protective behaviors (Dale, Shanley, Zimmer-Gembeck, Pickering, & White, 2016; White, Shanley, Zimmer-Gembeck, Lines, Walsh, & Hawkins, 2016).

The *Body Safety Training* program began in California in the 1980s. Workbooks for teachers or parents are available for purchase in English or Spanish. The program is targeted toward 3 to 8-year-olds and broken into 10 lessons lasting 15-20 minutes. The first half of the workbook covers general safety including fire, gun, pedestrian and poison safety, and the second half teaches about body safety (e.g. recognizing, resisting, and reporting inappropriate touching). The program was the subject of nine evaluation studies from 1989-1998 (Wurtele, Kast, Miller-Perrin, & Kondrick, 1989; Wurtele, 1990; Wurtele, Currier, Gillispie, & Franklin, 1991; Wurtele, Gillespie, Currier, & Franklin, 1992; Wurtele, Kast, & Melzer, 1992; Currier & Wurtele, 1996; Sarno & Wurtele, 1997; Lee & Tang, 1998), but since then has only been used in one research article looking at the effects of sexual abuse prevention education in Chinese preschoolers. The study showed that children participating in the intervention had increased knowledge of sexual abuse prevention and higher levels of self-protection skills (Zhang, Chen, Feng, Li, Liu, & Zhao, 2014).

Similarly, another program called *Who Do You Tell* held evaluations in 1997 and 2000, but was most recently studied in 2014. However, this article only assessed the impressions of children aged 6-12 years old of the program through focus groups; specifically, the assessment found children were able to recall sexual abuse prevention concepts from the program several months after implementation, and found components of the program favorable (e.g., staff, pictures, videos, role-

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playing) (Tutty, 2014). The program, which began and operates in Alberta Canada, focuses on recognizing abuse and telling an adult if something should happen to them.

A more recent program, *Safe Touches*, was established by The New York Society for the Prevention of Cruelty to Children in 2007. The program targets a racially and ethnically diverse, low-socioeconomic status urban student population and focuses on personal safety training for Kindergarten through 3rd grade and child sexual abuse prevention education. An evaluation by Pulido et al. (2015), which used the Children's Knowledge of Abuse Questionnaire, found significant improvement in the knowledge of inappropriate touch but no significant change in knowledge of appropriate touch between intervention and control groups.

The program, *Child Safety Matters*, is implemented in elementary schools at Florida and was developed by the Monique Burr Foundation for Children, Inc. This program focuses on prevention strategies for child abuse, cyberbullying, bullying, and digital safety. A randomized control evaluation was recently conducted by Finkelhor et al., 2018. This evaluation used newly developed 14-item measures with a reliability of 0.56 (0.67 for 12-items after two were dropped) and did not have a validation component for these measures. The evaluation reported statistically significant growth from pre to post-test for the treatment group (1-point increase on the questionnaire).

According to SAMHSA guidelines, none of the listed programs would meet evidence-based criteria, as measurement validity has not been effectively established. In contrast, all of the programs would be designated, at-best, as effective by the standards outlined by Brownson et al. (2009). Yet, this designation focuses only on whether an evaluation was peer-reviewed, which does not account for the complexity of program effectiveness as described by SAMHSA. Overall, the dearth of evidence-based and recent programs in the area of school-based child abuse prevention programs indicates an opportunity to develop or evaluate existing programs to meet these criteria.

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Table 3. Overview of School-Based Prevention Programs

Program	Topic	Region/State	Age Group	Measurements
KidPower (Brenick et al., 2014)	Bullying, harassment, molestation, assault, and abduction prevention	California, Colorado, Illinois, Maine, Maryland, North Carolina, Pennsylvania, Texas, Vermont, Virginia, Washington D.C.	Pre-school–high school	Knowledge of safety skills, including situational awareness, boundary setting, and help seeking, and knowledge of strangers and stranger safety
BE SAFE with Emmy (Dale et al., 2016)	Emotional recognition, early warning signs of fear, safe and unsafe secrets, personal space, private and public body parts, identify safe adults	Australia	5–7 years old	Knowledge of concepts, likeliness to engage in safe behavior (in the context of bullying), self-report measure of child's anxiety, parent's observation
Body Safety Training previously called Behavioral Skills Training (Sarno, 1997)	Body knowledge/awareness, general safety (e.g. home alone, poison, gun safety, etc.), interacting with others, name and location of private parts, appropriate and inappropriate touches, self-protection skills	California	3–8 years old	Children's abilities to discriminate between appropriate-touch and inappropriate-touch requests, prevention skills, and levels of emotional distress, parents' observations of children's reactions
Who Do You Tell (Tutty, 1997)	How to say no to unwanted touch, whether to be suspicious of all adults	Calgary, Alberta	1 st –6 th grade	Knowledge of child abuse prevention principles, parent's knowledge of sexual abuse
Safe Touches (Pulido, 2014)	Private parts of the body, differences between safe and not safe touches, secrets versus surprises, knowledge of perpetrators, persistence in reporting, not the child's fault	New York, New York	K–3 rd grade	Knowledge of inappropriate and appropriate touch

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Child Safety Matters (Finkelhor et al., 2018)	Safe and unsafe situations, child abuse, cyberbullying, bullying, and digital safety	Florida	Kinder garten –5 th grade	Knowledge assessment of safe and unsafe situations, bullying, and abuse reporting
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Limitations of Measuring Program Outcomes. No gold-standard program exists for the prevention of child sexual and physical abuse delivered in a school-based setting. Additionally, the measurement of program outcomes continues to be a major obstacle for evaluating these programs. First, a critique of program outcomes is the focus on knowledge, rather than actual behavior (Kenny & Wurtele, 2010). Yet, school-based childhood abuse prevention programs should be seen as a foundation for an integrative and comprehensive approach to the prevention of sexual abuse. Specifically, community-wide, political, and parental prevention approaches are also needed to address childhood sexual abuse (Fryda & Hulme, 2015). Moreover, program outcomes are assessing potential victim responses, rather than targeting perpetrators of sexual violence (Finkelhor, 2017). Unlike other childhood prevention behaviors (e.g., alcohol or tobacco use), which have some individual autonomy, violence is reliant on perpetrator behavior as well. This may be in part why interventions addressing child and adolescent alcohol, tobacco, and drug use are more common, compared to interventions addressing child and adolescent abuse prevention. Additionally, disclosure of sexual/physical abuse by children is low, which means an outcome of abuse disclosure would make it difficult to detect a change after a program implementation. Finally, implementing a school-based program has constraints on time and resources within the schools, and as a result, substantial time for outcome evaluation may be limited. Thus, program evaluators must prioritize program outcomes for evaluation. With the myriad of obstacles to measuring outcomes for school-based child abuse prevention programs, reliable and valid measures are needed that can address key prevention behaviors, such as recognition, resistance, and reporting of abuse.

Purpose. In an effort to rigorously evaluate the Play it Safe![®] program, a first step is to examine the measurement tools and outcomes used for the program evaluation. While Play It Safe has previously relied on grade-specific questionnaires to assess changes after program content, a revision of these tools is needed. As a result, this report has two objectives. First, this critical review summarizes characteristics of measurement tools from other school-based child abuse prevention programs, which can inform adaptations of the Play It Safe assessment. Second, the revision of the Play It Safe assessment is described, and includes corresponding rationale. The revised assessment tools will permit an examination of the measurement validity and reliability, which is the next step in evaluating the program for effectiveness.

Critical Review of Measurement Tools for School-Based Child Abuse Prevention Programs

Search Process. In order to learn from other school-based child abuse prevention programs, a search was conducted. Programs that had the following criteria were sought out: (1) school-based program; (2) abuse prevention; (3) measured outcomes with children; (4) evaluation within the last 10 years; and (5) developed countries. The search was conducted using PubMed and Google Scholar for peer-review literature, and Google for programs in the grey literature. For programs that had limited information online, attempts were made to contact program staff. Out of 14 programs contacted via email and phone, 7 provided follow-up and 4 provided reports or documentation on program evaluation. Additionally, hand-searching (i.e., using references lists) of included publications and review articles was used as a strategy to identify additional articles. Once programs were identified, the corresponding measurement tools were identified for this critical review.

Identification of Existing Programs and Tools. This search process revealed nine measurement tools that were relevant to the search criteria. The original validation or reliability studies for these measurement tools, when available, were retrieved. A summary of each measurement tool is reported in Table 4. For each tool, the childhood abuse prevention programs that used the measure were listed for cross-referencing in Table 3. An overview of each measure is described, including the type of items used, the number of items used, and underlying constructs or concepts measured. Next, the method of administration is reported to detail how the measure is implemented in an evaluation. When measurement tools were written or scripted, the reading level of the instrument was estimated using the Flesh-Kincaid Readability Test Tool. Next, published and unpublished reports of the reliability and validity of these measurement tools were abstracted and reported in the table, since these are criteria for Evidence-Based Programs. Finally, limitations of each measure are reported. These limitations are based on the prior columns, including topic area, method of administration feasibility, reading level, and reliability and validity.

The California Evidence-Based Clearinghouse (CEBQ) for Child Welfare (2018) provides a Measurement Tools Rating Scale. This scale gives ratings based on the ability of published, peer-reviewed studies to establish a measure's psychometrics (e.g. reliability and validity, sensitivity and specificity) (Table 5). According to the rating scale, a measurement tool will earn: an A – Psychometrics Well-Demonstrated if two or more studies can establish psychometrics, a B – Psychometrics Demonstrated if one study establishes psychometrics, a C – Does Not Reach Acceptable Levels of Psychometrics if studies show that the measure does not reach acceptable measures of psychometrics, or NR – Not Able to Be Rated if studies establishing psychometrics are unavailable. While the CEBQ did not evaluate the measurement tools listed in Table 4, the Measurement Tools Rating Scale proved useful in gaging a tool's strength (CEBC, 2018).

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Table 4. Examination of Measurement Tools from School-Based Child Abuse Prevention Programs

Tool Name	Program	Overview	Method of Administration	Reading Level	Reliability & Validity	Limitations
Children's Knowledge of Abuse Questionnaire Revised (CKAQ-R)	Who Do You Tell Safe Touches	33-item true or false with 9-item subscale on appropriate touch and 24-item subscale on inappropriate touch.	Administered verbally to all participants by author. Administered to children in grades 1 and 2 individually and older children responded in groups of 5-15 students.	6.6	Internal consistency (KR-20) alpha of .87. Item-to-corrected-total correlations above .300. One-month test-retest reliability .88. (Tutty, 1997).	Pre-test had sensitizing effect on post-test results. Only tested knowledge, not behavior. Reading level higher than grade level with a true or false structure. Lack of validity information.
What If Situations (WIST)	Body Safety Training	Measures child's ability to recognize and respond in hypothetical abusive situations. Uses six vignettes with five open-ended questions.	Individual interviews, measuring intention.	6.4	For one study, one-month test-retest reliability (Pearson r based on controls' pre and posttest score) .86, $p < .01$. Interrater reliability (Kappa coefficient) was .93 (Wurtele, Kast, & Mezler, 1992)	Time intensive to administer. Difficult to implement in large group setting. Reading level higher than grade level. Lack of validity information.
Personal Safety Questionnaire (PSQ)	Behavior Skills Training Program	10 yes, no, or don't know questions assessing children's knowledge of sexual abuse. Includes items about attitudes toward sexuality.	Verbally administered to children.	Unable to determine since entire scale is not published	For one study, one-month test-retest reliability (Pearson r based on controls' pre and posttest scores) was .70, $p < .01$	Used for young children, so may be inappropriate measure for older children. Time intensive to administer. Unable to determine readability.

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					(Wurtele, Kast, & Mezler, 1992)	Lack of validity information.
Protective Behaviors Questionnaire (ProBeQ)	Learn to Be Safe with Emmy and Friends	12-items, 11 measuring six core protective behavior concepts: emotion recognition, early warning signs of fear, private and public body parts, personal space, safe and unsafe secrets, and identification of safe adults. Responses summed to produce a total score.	Trained research assistants with a background in early years education or psychology interviewed children individually in their classroom.	4.0	Test-retest reliability was good (ICC = .772, $p < .0001$). Internal consistency adequate (Cronbach's $\alpha = .55$). Validity study is in preparation for construct, content and criterion-related validity (Dale, Shanley, Zimmer-Gembeck, Lines, & Pickering, in preparation)	Time intensive to administer. Did not detect a difference between intervention and control group in ability to choose safe response option, and data on validity not reported.
Protective Behaviors Test (APBT)	Learn to Be Safe with Emmy and Friends	Four pictures of unsafe situations in bullying scenarios	Research assistant reads unsafe scenario to match the picture, ask children to rate how likely they are to: (a) fight, (b) cry, (c) report, (d) runaway.	Scale not available*	Not measured (Dale et al., 2016)	Topic is less relevant because related to bullying scenarios rather than abuse prevention. Time intensive to administer. No information on reliability and validity.
Observed Protective Behaviors Test (OBPT)	Learn to Be Safe with Emmy and Friends	Structured two-part in vivo behavioral situation assessing child's recognition of unsafe situation, application of learned safety skills	The interviewer leaves the room under false pretenses, during which time another confederate of the program unknown to the child enters the room and asks the	n/a	Not stated (White et al., 2016)	Time intensive to administer. No information on reliability and validity.

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		and disclosure of unsafe situation	child to leave with them. The confederate then tells the child to keep it a secret and leaves the room.			
Kidpower Evaluation Questions	Kidpower	15-items addressing safety skills, including autonomy, situational awareness, boundary setting, and help seeking, and 3-items for basic stranger knowledge in multiple choice or yes/no format.	Verbally administered with children reading along on their own scripts	4.2	Categorical Principle Components Analysis found one measure of acceptable reliability (Cronbach's $\alpha=.75$; the tool is "informed by previous validated measures") (Brenick et al., 2014)	No information on validity.
Child Safety Matters Questions	Child Safety Matters	14-items addressing safe and unsafe situations, reporting, abuse recognition, bullying, digital safety	Hard copies of questions provided to each student to circle responses, and questions were read out loud by researcher	4.1	Reliability assessment found $\alpha = 0.56$. Dropped two of the 14 items, and reliability increased to 0.67.	No validity assessment conducted. Weak reliability.
Play It Safe Questions	Play It Safe	10-item survey with Yes/No format, asks about definitions of concepts, three-part safety rule.	Read aloud for Kindergarten - 2 nd grade and individually read for 3 rd grade and up	7.1	Not stated (Blakey & Thigpen, 2015)	Reading level higher than grade level. Lack of validity and reliability information.

Footnote: *Scenarios were adapted from Smith et al. (2002), which had reading level of 3.2

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Table 5: California Evidence-Based Clearinghouse (CEBQ) for Child Welfare (2018)
Measurement Tools Rating Scale

<i>Level</i>	<i>Types of Evidence</i>
A	Psychometrics Well-Demonstrated if two or more studies can establish psychometrics
B	Psychometrics Demonstrated if one study establishes psychometrics
C	Does Not Reach Acceptable Levels of Psychometrics if studies show that the measure does not reach acceptable measures of psychometrics
NR	Not Able to Be Rated if studies establishing psychometrics are unavailable

Summary of Key Findings for Measurement Tools. Most studies on the measurement tools in Table 4 only establish reliability, which demonstrates consistency in the findings. Studies assessing validity, or a tool's ability to truly measure what it claims to are lacking. According to the CEBQ rating scale, these tools would have a rating of NR.

Aside from the rating, many of the existing measurement tools assess knowledge of personal safety skills. Some notable exceptions include the Observed Protective Behaviors Test (OPBT), which uses a simulation to assess how a child would respond to and report an unsafe situation, and the WIST, which measures a child's behavior intentions by asking open ended questions about a series of situations. Measurements using open-ended responses to get at a child's actual or intended behavior would be ideal, but ultimately not feasible for the purposes of Play It Safe, which must administer evaluations to large numbers of students. Additionally, none of the measures track perfectly to the content of the Play It Safe program. Thus, based on this critical review, it was determined that an existing measurement tool would not be applicable for the Play It Safe evaluation.

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Revised Evaluation Tool

Previous Assessment Tool. As of 2018, the assessment strategy for Play It Safe included grade-specific questionnaires. Grades Kindergarten – 2nd grade had 5-items and grades 3rd – 6th grade has 10-items. These assessments were administered prior to the Play It Safe curriculum and several weeks after the program was delivered. Each question was a statement, and students could respond with Yes or No. The questionnaires were handed out to each student, and each student read and responded independently.

Revision Process. Given that the assessment required independent student reading, the reading level of each item was assessed (see **Appendix A**). The reading level for each grade level was at least a 6.0 using the Flesh-Kincaid Readability Test Tool. Upon examining the readability of the current assessment tool, the first step of the revision process was spent adapting the current questions to a lower reading level. Given that not all students in a grade, especially at the beginning of a school year, are at that grade level reading ability, the goal was to create questions that were at least one grade level below.

Concurrently, it was apparent that similar questions were used across grade levels, but varied slightly in terms of wording and structure. Thus, concept mapping was conducted for assessment tools for grades 3rd – 6th, since these had 10-items. The concept mapping revealed themes across grade level (see **Appendix B**). These concepts included:

- Recognition:
 - Safe/Unsafe Touch
 - Confusing Touch
 - Taking Advantage
 - Online Safety
 - Not the Child's Fault
 - Perpetrator
- Resistance:
 - Safety Rule Part 1: Say No
 - Safety Rule Part 2: Get Away
 - Sharing Personal Information
- Reporting:
 - Safety Rule Part 3: Tell a Trusted Adult
 - Persistence Reporting
 - Assertiveness

Based on the critical review of measurement tools (see above), none of the existing tools aligned exactly with the topics needed for the Play It Safe program (Table 4). However, there were properties from each of these tools that were applicable for a redesign on the Play It Safe evaluation.

First, including a “don’t know” option permits students to select an option rather than guessing on the assessment. This technique was used by Pro-Be-Q (Dale et al., 2016) and KidPower (Brenick et al., 2014).

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Second, the What If Situations (Wurtele & Owens, 1998) was a good model of examining not only knowledge or recognition of abuse, but also the skills of resisting and reporting. Using vignettes of abuse situations permits students to describe how they intend or how someone should intend to react to a situation. However, the vignettes as presented by the What If Situations were administered via an interview method, and this would not be feasible for the Play It Safe assessment. Thus, vignettes were created that were applicable to the content in Play It Safe curriculum. Each vignette included several questions that align with the content of the original assessment. Each question had four response options: one correct answer, two distractor responses, and one don't know response.

The revised assessment tools were created for grades 3rd – 6th since these were the 10-item original surveys. The revised tools were shared with members of the Women's Center for content and clarity, based on their expertise with the curriculum. These edits were incorporated into the most recent versions of the assessment tools (see **Appendix C**).

Table 6. Concept Mapping of Revised Play It Safe Assessment Tools by Grade Level and Question Number

Major Concept	Content	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
Recognize	Types of touch	1.1	1.1	1.1	1.1
Report	Tell a trusted adult	1.2	1.2	1.2	1.2
Recognize	Unsafe touches not a child's fault	1.3	1.3	1.3	1.3
Resist	Showing private parts/Say no	2.1	2.1	2.1	2.1
Report	Keeping a secret for unsafe touches	2.2	2.2	2.2	2.2
Recognize	Private parts	3.1	3.1	3.1	3.1
Resist	Safety Rule Part 1 (Say No)	3.2	3.2	3.2	3.2
Resist	Safety Rule Part 2 (Get Away)	3.3	3.3	3.3	3.3
Report	Safety Rule Part 3 (Tell Trusted Adult)	3.4	3.4	3.4	3.4
Report	Never too late to tell	4.1	4.1	4.1	4.1
Report	Tell until someone believes you	4.2	4.2	4.2	4.2
Recognize	Confusing touches not the child's fault	4.3	4.3	4.3, 6.2	4.3, 6.2
Report	Online safety – tell a trusted adult	5.1	5.1	5.1	5.1
Resist	Online safety – don't share personal information	5.2	5.2	5.2	5.2
Report	Standing up for others			6.1	6.1

Next Steps. Now that the assessment tools for Play It Safe have been revised, several steps must follow to establish the reliability and validity of these tools. First, an initial pilot testing of the instruments in at least two classes per grade will permit an examination of feasibility (e.g., time) and any feedback from students. Once the pilot test has occurred, the items will be examined to look at the range of responses pre- and post-test. The tools will then be revised based on this pilot testing phase. Concurrently, the evaluation team will develop shorter vignettes for the Kindergarten to 2nd grade assessments with corresponding visuals to improve interpretability. These will also follow the same pilot testing process. After pilot testing, the assessment tools will

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be implemented in the Spring 2019 semester for validity and reliability testing. This will then permit a rigorous evaluation of Play It Safe in Fall 2019.

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Appendix A: Reading Levels of Current Assessment Methods

Kindergarten		1 st Grade		2 nd Grade	
6.1 reading level		6.9 reading level		6.0 reading level	
Is your arm a private part of your body?	2.3	Private parts are parts of the body covered by a bathing suit.	4.8	Spankings that leave bruises are safe touches.	3.9
The three parts of the safety rule are: say no, get away, and tell a trusted adult.	6.3	Is a spanking okay when it leaves a bruise and the hurt doesn't go away quickly?	5.4	The 3 parts of the safety rule are: say no, get away, and tell a trusted adult.	6.3
If someone touches you in an unsafe or confusing way, should you tell a trusted adult?	8.3	If someone touches your private parts for no reason, you can say no, get away, and tell a trusted adult.	8.7	Private parts are parts of the body covered by a bathing suit.	4.8
Is a spanking okay when it leaves a bruise and the hurt doesn't go away quickly?	5.4	If someone touches you in an unsafe or confusing way, you should keep telling until someone believes you.	10.4	Parents, teachers, neighbors, and or a nurse are examples of trusted adults.	7.7
Is it your fault if someone touches your private parts in an unsafe or confusing way?	7.6	Is it your fault if someone touches your private parts?	4.8	If someone touches you in a way that is unsafe or confusing, you should keep it a secret.	7.8

LITERATURE REVIEW

3 rd Grade		4 th Grade	
6.7 reading level		7.5 reading level	
Spanking that leave bruises are safe touches.	3.9	You can use the safety rule with anyone who touches you in a way you don't like.	5.6
The 3 parts of the safety rule are: say no, get away, and tell a trusted adult.	6.3	If a child is touched in an unsafe or confusing way, it is the child's fault.	4.6
It is your fault if someone touches you on your private parts for no reason.	5.9	If you are online and someone is pretending to be someone they aren't, they are trying to take advantage of you.	10.0
Taking advantage of someone is when one person tries to trick or force another person into doing something they know is not right or safe.	11.6	You should keep telling a trusted adult about an unsafe or confusing touch until someone believes, or helps you.	10.4
If you have been touched in an unsafe or confusing way, you should keep it a secret.	5.6	The 3 parts of the safety rule for dealing with strangers are: keep quiet, hope they go away, and close your eyes.	8.0
A bully is someone who tries to take advantage of others.	6.9	Your name, age, and address are examples of personal information.	9.5
If someone gives you \$20 to do something you know is wrong, they are trying to bribe you.	6.5	If someone tells you that a confusing touch is a game, then that's a game you should play.	5.8
If you are online and someone asks you for your personal information, you should tell them.	8.3	Sometimes, even friends can be bullies who try to take advantage of you.	6.7
People can pretend to be anyone they want to be online, and may try to trick or fool you.	6.1	A spanking that leaves bruises, welts, cuts or even broken bones is a safe spanking.	5.9
The safety rule can be used with anyone, including people you know and love.	6.7	If someone give you money to keep unsafe and confusing touches a secret, you should still tell a trusted adult.	9.9

LITERATURE REVIEW

5 th Grade		6 th Grade	
6.9 reading level		7.1 reading level	
A safety rule to use for staying safe, even with people you know is say no, get away, and test a trusted adult.	9.2	A safety rule to use for staying safe, even with people you know is say no, get away, and tell a trusted adult.	9.2
Physical abuse is unsafe touch that leaves bruises, cuts, or broken bones, and the hurt doesn't go away very quickly.	9.3	The best way to help a friend who tells you he or she is being abused is to keep that friend's secret.	5.8
Confusing touches, called sexual abuse, happen when someone touches or looks at a child's private parts for no reason.	10.4	Touches that leave bruises, cuts, or broken bones are okay if given by someone you know.	7.6
Confusing and unsafe touches are touches that only come from strangers.	8.0	Confusing touches, called sexual abuse, happen when someone touches or looks at a child's private parts for no reason.	10.4
Being assertive means standing up for yourself.	5.6	If someone abuses you and bribes you not to tell, you should tell an adult you trust anyway.	7.8
You should give out personal information online to anyone who asks you for it.	7.5	Being assertive means standing up for yourself.	5.6
If a child has been abused, it is the child's fault.	1.5	It is a big red flag when someone you have met online what to keep the friendship a secret from your parents.	8.0
If the first person you tell doesn't believe you, you should just forget that it happened.	5.4	When a child has been taken advantage of by an adult, it is never the child's fault.	6.3
Taking advantage of someone is when you force them to do something they don't feel is right or safe.	7.9	If the first person you tell doesn't believe you, you should just forget that it happened.	5.4
If you are being abused, it is never too late to tell a trusted adult.	5.2	You should give out personal information online to anyone who asks you for it.	7.5

LITERATURE REVIEW

Appendix B: Concept Mapping

Topic	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
Physical Abuse Safe Touch	Spanking that leave bruises are safe touches.	A spanking that leaves bruises, welts, cuts or even broken bones is a safe spanking.	Physical abuse is unsafe touch that leaves bruises, cuts, or broken bones, and the hurt doesn't go away very quickly.	Touches that leave bruises, cuts, or broken bones are okay if given by someone you know.
Safety Rule	The 3 parts of the safety rule are: say no, get away, and tell a trusted adult.	The 3 parts of the safety rule for dealing with strangers are: keep quiet, hope they go away, and close your eyes.	A safety rule to use for staying safe, even with people you know is say no, get away, and test a trusted adult.	A safety rule to use for staying safe, even with people you know is say no, get away, and tell a trusted adult.
Fault	It is your fault if someone touches you on your private parts for no reason.	If a child is touched in an unsafe or confusing way, it is the child's fault.	If a child has been abused, it is the child's fault.	When a child has been taken advantage of by an adult, it is never the child's fault.
Personal Information	If you are online and someone asks you for your personal information, you should tell them.	Your name, age, and address are examples of personal information.	You should give out personal information online to anyone who asks you for it.	You should give out personal information online to anyone who asks you for it.
Take Advantage	Taking advantage of someone is when one person tries to trick or force another person into doing something they know is not right or safe.	If someone tells you that a confusing touch is a game, then that's a game you should play.	Taking advantage of someone is when you force them to do something they don't feel is right or safe.	
Perpetrator	The safety rule can be used with anyone, including people you know and love.	You can use the safety rule with anyone who touches you in a way you don't like.	Confusing and unsafe touches are touches that only come from strangers.	

LITERATURE REVIEW

Topic	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
Online Safety	People can pretend to be anyone they want to be online, and may try to trick or fool you.	If you are online and someone is pretending to be someone they aren't, they are trying to take advantage of you.		It is a big red flag when someone you have met online what to keep the friendship a secret from your parents.
Bribe	If someone gives you \$20 to do something you know is wrong, they are trying to bribe you.	If someone give you money to keep unsafe and confusing touches a secret, you should still tell a trusted adult.		If someone abuses you and bribes you not to tell, you should tell an adult you trust anyway.
Reporting		You should keep telling a trusted adult about an unsafe or confusing touch until someone believes, or helps you.	If the first person you tell doesn't believe you, you should just forget that it happened.	If the first person you tell doesn't believe you, you should just forget that it happened.
Bully	A bully is someone who tries to take advantage of others.	Sometimes, even friends can be bullies who try to take advantage of you.		
Confusing Touch			Confusing touches, called sexual abuse, happen when someone touches or looks at a child's private parts for no reason.	Confusing touches, called sexual abuse, happen when someone touches or looks at a child's private parts for no reason.
Assertive			Being assertive means standing up for yourself.	Being assertive means standing up for yourself.
Reporting	If you have been touched in an unsafe or confusing way, you should keep it a secret.		If you are being abused, it is never too late to tell a trusted adult.	The best way to help a friend who tells you he or she is being abused is to keep that friend's secret.

LITERATURE REVIEW

Appendix C: Revised Play It Safe Assessment Tools

Play It Safe Vignettes and Questionnaire – 3rd Grade

Vignette 1: grade reading level 2.2

Sara's mom told her to come home right after school. One day, Sara stayed at school very late to play with her friends. When she came home, her mom gave her a hard spanking. The spanking left a bruise and it hurt for a few days.

The spanking was:

- a. a safe touch
- *b. an unsafe touch
- c. a confusing touch
- d. don't know

Knowledge/skill tested: types of touch

Sara should:

- a. not tell anyone
- *b. tell her teacher or school nurse
- c. tell her baby brother
- d. don't know

Knowledge/skill tested: tell a trusted adult

Sara's bruise was:

- *a. her mom's fault
- b. Sara's fault
- c. her friend's fault
- d. don't know

Knowledge/skill tested: unsafe/confusing touches are not the child's fault

Vignette 2: reading level 2.3

Rose's neighbor Luis watches Rose after school. Rose likes to play games with Luis. One day, Luis said they could play a game and take pictures. Luis asked to take pictures of Rose's private parts.

Rose should:

- a. keep playing the game with Luis
- *b. say no
- c. ask to see the pictures
- d. don't know

Knowledge/skill tested: nobody should take pictures of your private parts/say no or stop

LITERATURE REVIEW

After Luis took pictures of Rose's private parts, Luis asked Rose to keep the game a secret. Rose should:

- *a. tell her parents
- b. keep the game a secret
- c. tell her best friend
- d. don't know

Knowledge/skill tested: you shouldn't keep secrets about unsafe/confusing touches

Vignette 3: reading level 3.1

Blake went swimming with his older cousin Tom. When they were in the pool, Tom touched Blake under his bathing suit.

Tom touched Blake:

- a. in a safe place
- b. in a friendly way
- *c. on his private parts
- d. don't know

Knowledge/skill tested: private parts are areas covered by a swimsuit

Blake should:

- a. not say anything
- b. pretend it didn't happen
- *c. say "No!"
- d. don't know

Knowledge/skill tested: step 1 of the 3 part safety rule

Next, Blake should:

- a. never go swimming again
- *b. get away from Tom
- c. stay where he is
- d. don't know

Knowledge/skill tested: step 2 of the 3 part safety rule

Then Blake should:

- *a. tell an adult he trusts
- b. tell friends about it
- c. keep it a secret
- d. don't know

Knowledge/skill tested: step 3 of the 3 part safety rule

LITERATURE REVIEW

Vignette 4: reading level 1.5

One day in the spring, Jen played with a friend from church named Rob. Rob gave Jen a confusing touch. Jen did not tell anyone, but now she is scared of Rob. In the fall, they were in the same Sunday school class.

Jen should:

- a. try to be friends with Rob
- b. do nothing because it happened a long time ago
- *c. tell her Sunday school teacher about what happened
- d. don't know

Knowledge/skill tested: it's never too late to tell

Jen chose to tell her Sunday school teacher, but he didn't believe her. Jen should:

- *a. tell her parents
- b. just talk to her friends about it instead
- c. pretend it did not happen
- d. don't know

Knowledge/skill tested: keep telling a trusted adult until someone believes you

The touches were:

- *a. Rob's fault
- b. Jen's fault
- c. nobody's fault
- d. don't know

Knowledge/skill tested: confusing touches not a child's fault

Vignette 5: reading level 1.5

Luke is eight years old and likes to play games online. While playing, he made a friend named Juan. Juan said he lived close to Luke. Juan asked Luke to keep their friendship a secret so that he could play games with him.

Luke should:

- a. keep playing with Juan in secret
- *b. tell his parents about his friend
- c. ask Juan how old he is to make sure he is safe
- d. don't know

Knowledge/skill tested: online safety/tell a trusted adult

Juan asked where Luke went to school so they could play at the playground. Luke should:

- a. trust Juan and give the school name
- b. invite Juan to his house instead
- *c. not tell Juan the school name
- d. don't know

Knowledge/skill tested: online safety/don't give out personal information

LITERATURE REVIEW

Play It Safe Vignettes and Questionnaire – 4th Grade

Vignette 1: reading level 1.9

Amy's mom told her to come home right after school. One day, Amy stayed at school very late to play with her friends. When she came home, her mom grabbed her arm and shook her hard. That left a bruise and hurt for a few days.

Amy's mom gave her:

- a. a safe touch
- *b. an unsafe touch
- c. a confusing touch
- d. don't know

Knowledge/skill tested: types of touch

Amy should:

- a. not tell anyone
- *b. tell the teacher or school nurse
- c. tell her younger cousin
- d. don't know

Knowledge/skill tested: tell a trusted adult

Amy's bruise was:

- *a. her mom's fault
- b. Amy's fault
- c. her friend's fault
- d. don't know

Knowledge/skill tested: unsafe/confusing touches are not the child's fault

Vignette 2: reading level 2.8

Kim likes to take goofy pictures. One day Kim's friend Sam took goofy pictures of Kim. Sam thought it would be funny to take a picture of Kim's private parts.

Kim should:

- a. keep playing because they are having fun
- *b. tell Sam no
- c. ask to see the pictures
- d. don't know

Knowledge/skill tested: nobody should take pictures of your private parts/say no or stop

After Sam took the pictures, he told Kim to keep it a secret. Kim should:

- *a. tell her parents about the pictures
- b. keep the pictures a secret
- c. tell his best friend
- d. don't know

Knowledge/skill tested: you shouldn't keep secrets about unsafe/confusing touches

LITERATURE REVIEW

Vignette 3: reading level 3.8

Brian went to the pool with his older cousin Jane. When they swam, Jane made Brian touch her under her bathing suit.

Jane made Brian touch her:

- a. in a safe place
- b. in a friendly way
- *c. on a private part
- d. don't know

Knowledge/skill tested: private parts are areas covered by a swimsuit

Brian should:

- a. not say anything
- b. never go swimming again
- *c. say "No!"
- d. don't know

Knowledge/skill tested: step 1 of the 3 part safety rule

Next, Brian should:

- a. make Jane touch him
- *b. leave the pool if he can
- c. stay where he is
- d. don't know

Knowledge/skill tested: step 2 of the 3 part safety rule

Then Brian should:

- *a. tell an adult he trusts
- b. tell his friends about it
- c. keep it a secret
- d. don't know

Knowledge/skill tested: step 3 of the 3 part safety rule

Vignette 4: reading level 3.6

One day in the spring, Taylor went to a movie with a friend from church named Mike. During the movie, Mike gave Taylor confusing touches. Taylor never told anyone, but now she is scared of Mike. In the fall, they were in the same Sunday school class.

Taylor should:

- a. try to be friends with Mike
- b. do nothing because it happened a long time ago
- *c. tell her Sunday school teacher about what happened
- d. don't know

Knowledge/skill tested: it's never too late to tell

LITERATURE REVIEW

Taylor decided to tell her Sunday school teacher what happened, but he didn't believe her.

Taylor should:

- *a. tell another adult
- b. tell her friends about it
- c. pretend it never happened
- d. don't know

Knowledge/skill tested: keep telling a trusted adult until someone believes you

The touches were:

- *a. Mike's fault
- b. Taylor's fault
- c. nobody's fault
- d. don't know

Knowledge/skill tested: confusing touches not a child's fault

Vignette 5: reading level 3.5

Logan is ten years old and likes to play games online. While playing online, he met a new friend who said he lived close to Logan. His friend asked for Logan's address so that he could come play games with him.

Logan should:

- a. give his address to his friend so they can play together
- *b. tell his parents about his new friend
- c. ask his new friend how old he is to make sure he is safe
- d. don't know

Knowledge/skill tested: don't give out personal information/tell a trusted adult

Logan asked his new friend how old he was. His friend said he was nine and told Logan they go to the same school. Now that his friend told him this:

- a. Logan can trust him and give the address
- b. Logan should tell his new friend what school he goes to, so they can see if it is the same
- *c. Logan should not trust him because he might be pretending to be someone else
- d. don't know

Knowledge/skill tested: don't give out personal information/perpetrators can try to trick you

LITERATURE REVIEW

Play It Safe Vignettes and Questionnaire – 5th Grade

Vignette 1: grade reading level 1.7

Mark's mom told him to not to throw his little brother's ball in the house. One day, Mark threw the ball and broke a lamp. When Mark's mom came home, she got mad and hit him with the lamp. That left a cut and bruise and it hurt for a few days.

Mark's mom gave him:

- a. a safe touch
- *b. an unsafe touch
- c. a confusing touch
- d. don't know

Knowledge/skill tested: types of touch

Mark should:

- a. not tell anyone
- *b. tell the teacher or school nurse
- c. tell his little brother
- d. don't know

Knowledge/skill tested: tell a trusted adult

Mark's bruise was:

- *a. his mom's fault
- b. Mark's fault
- c. his little brother's fault
- d. don't know

Knowledge/skill tested: unsafe touches are not the child's fault

Vignette 2: reading level 4.3

Tina's Aunt Lee took pictures of Tina for an album. Aunt Lee asked Tina if she wanted to earn money. Aunt Lee said if Tina took a picture with her top off she could make a lot of money.

Tina should:

- a. take the money for the pictures
- *b. tell Aunt Lee no
- c. ask to see the pictures
- d. don't know

Knowledge/skill tested: nobody should take pictures of your private parts/say no or stop

After they finished taking pictures, Aunt Lee told Tina to keep it a secret. Tina should:

- *a. tell her parents about the pictures
- b. keep the pictures a secret
- c. tell her best friend
- d. don't know

Knowledge/skill tested: you shouldn't keep secrets about unsafe/confusing touches

LITERATURE REVIEW

Vignette 3: reading level 2.4

Drew went to the lake with his step-dad Hank. While there, Hank started to touch Drew under his bathing suit.

Hank touched Drew:

- a. in a safe place
- b. in a friendly way
- *c. on his private parts
- d. don't know

Knowledge/skill tested: private parts are areas covered by a swimsuit

Drew should:

- a. not say anything
- b. pretend it didn't happen
- *c. say "No!"
- d. don't know

Knowledge/skill tested: step 1 of the 3 part safety rule

Next, Drew should:

- a. fight his step-dad
- *b. get away if he can
- c. stay where he is
- d. don't know

Knowledge/skill tested: step 2 of the 3 part safety rule

Then Drew should:

- *a. tell an adult he trusts
- b. tell friends about it
- c. keep it a secret
- d. don't know

Knowledge/skill tested: step 3 of the 3 part safety rule

Vignette 4: reading level 3.5

One day in the spring, Grace walked home with a classmate named Dan. Dan took Grace through a short cut and gave her confusing touches. Grace did not tell anyone, but now she is scared of Dan. In the fall, they were on the same track team.

Grace should:

- a. try to be friends with Dan
- b. do nothing because it happened a long time ago
- *c. tell her track coach about what happened
- d. don't know

Knowledge/skill tested: it's never too late to tell

LITERATURE REVIEW

Grace chose to tell her track coach, but he didn't believe her. Grace should:

- *a. tell another teacher
- b. tell her friends about it
- c. try to forget about it
- d. don't know

Knowledge/skill tested: keep telling a trusted adult until someone believes you

The touches were:

- *a. Dan's fault
- b. Grace's fault
- c. nobody's fault
- d. don't know

Knowledge/skill tested: confusing touches not a child's fault

Vignette 5: reading level 3.5

Marco likes to chat online. While chatting, he made a friend named Jake. Jake asked if Marco wanted to play at a park, which sounded fun to Marco. He told Marco that he should keep it a secret from his parents because they might not let him play.

Marco should:

- a. agree to go to the park in secret
- *b. tell his parents about his friend
- c. ask his new friend how old he is to make sure he is safe
- d. don't know

Knowledge/skill tested: online safety/tell a trusted adult

Jake asked where Marco lived so he could pick Marco up. Marco should:

- a. give Jake his address
- b. meet Jake at his school instead
- *c. not tell Jake anything
- d. don't know

Knowledge/skill tested: online safety/don't give out personal information

Vignette 6: reading level 3.9

Bella likes to hang out at her friend Julie's house. Julie hasn't asked Bella to come over in a while. Bella asked Julie about it. Julie said her dad gave her confusing touches, but she doesn't want anyone to know.

Bella should:

- a. keep Julie's secret
- *b. tell her mom
- c. tell her little sister
- d. don't know

Knowledge/skill tested: standing up for others

LITERATURE REVIEW

The touches were:

*a. the Dad's fault

b. Julie's fault

c. nobody's fault

d. don't know

Knowledge/skill tested: confusing touches not a child's fault

LITERATURE REVIEW

Play It Safe Vignettes and Questionnaire – 6th Grade

Vignette 1: grade reading level 2.1

Jose's dad told him to not roller skate in the house. One day, Jose skated in the house and knocked over a cup. When Jose's dad came home, he got mad and hit him on the back. That left a big bruise and it hurt for a few days.

Jose's dad gave him:

- a. a safe touch
- *b. an unsafe touch
- c. a confusing touch
- d. don't know

Knowledge/skill tested: types of touch

Jose should:

- a. not tell anyone
- *b. tell the teacher or school nurse
- c. tell his friend
- d. don't know

Knowledge/skill tested: tell a trusted adult

Jose's bruise was:

- *a. his dad's fault
- b. Jose's fault
- c. nobody's fault
- d. don't know

Knowledge/skill tested: unsafe/confusing touches are not the child's fault

Vignette 2: reading level 4.7

Nico's older cousin Carl likes to take pictures. Carl asked Nico to model for his photo album. Carl said if Nico took a picture with his clothes off that would be more artistic.

Nico should:

- a. take the pictures
- *b. tell Carl no
- c. ask to see the pictures
- d. don't know

Knowledge/skill tested: nobody should take pictures of your private parts/say no or stop

After they finished taking pictures, Carl told Nico to keep it a secret. Nico should:

- *a. tell his parents
- b. keep the pictures a secret
- c. tell his best friend
- d. don't know

Knowledge/skill tested: you shouldn't keep secrets about unsafe/confusing touches

LITERATURE REVIEW

Vignette 3: reading level 3.8

Ana went to the water park with friends and their parents. One of the friends' dad named Rick touched Ana under her bathing suit.

Rick touched Ana:

- a. in a safe place
- b. in a friendly way
- *c. on her private parts
- d. don't know

Knowledge/skill tested: private parts are areas covered by a swimsuit

Ana should:

- a. not say anything
- b. pretend it didn't happen
- *c. say "No!"
- d. don't know

Knowledge/skill tested: step 1 of the 3 part safety rule

Next, Ana should:

- a. fight Rick
- *b. get away if she can
- c. stay where she is
- d. don't know

Knowledge/skill tested: step 2 of the 3 part safety rule

Then Ana should:

- *a. tell an adult she trusts
- b. tell friends about it
- c. keep it a secret
- d. don't know

Knowledge/skill tested: step 3 of the 3 part safety rule

Vignette 4: reading level 3.3

Lynne and her friend Alex walk home each day from the bus stop. On the last day of school, Alex gave Lynne a confusing touch. Lynne did not tell anyone, but now she is scared of Alex. The new school year started, and Alex and Lynne are at the same bus stop again.

Lynne should:

- a. try to be friends with Alex
- b. do nothing because it happened a long time ago
- *c. tell a trusted adult about what happened
- d. don't know

Knowledge/skill tested: it's never too late to tell

LITERATURE REVIEW

Lynne chose to tell her bus driver, but he didn't believe her. Lynne should:

- *a. tell a teacher
- b. tell her friends about it
- c. try to forget about it
- d. don't know

Knowledge/skill tested: keep telling a trusted adult until someone believes you

The touches were:

- *a. Alex's fault
- b. Lynne's fault
- c. nobody's fault
- d. don't know

Knowledge/skill tested: fault with confusing touches

Vignette 5: reading level 3.7

Julie likes to chat online. While chatting, she made a friend named Ari. Ari asked Julie if she wanted to meet up at the mall. Ari told Julie she should keep it a secret from her parents because they might not let her go.

Julie should:

- a. agree to go to the mall in secret
- *b. tell her parents about her friend
- c. ask her new friend how old he is to make sure he is safe
- d. don't know

Knowledge/skill tested: online safety/tell a trusted adult

Ari asked where Julie lived so he could pick Julie up. Julie should:

- a. give Ari her address
- b. meet Ari at the mall instead
- *c. not tell Ari anything
- d. don't know

Knowledge/skill tested: online safety/don't give out personal information

Vignette 6: reading level 3.7

Callie plays on a soccer team after school with her best friend Lisa. The team has a good coach and the team wins a lot. One day after practice, Callie saw the coach give Lisa a confusing touch. Lisa doesn't want anyone to know.

Callie should:

- a. keep Lisa's secret
- *b. tell her parents
- c. stop going to practice
- d. don't know

Knowledge/skill tested: standing up for others

LITERATURE REVIEW

The touches were:

*a. the coach's fault

b. Lisa's fault

c. nobody's fault

d. don't know

Knowledge/skill tested: fault with confusing touches

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VALIDATION STUDY

VALIDATION OF ABUSE PREVENTION SCALE

Development and Validation of a Child Physical and Sexual Abuse Prevention Scale

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Development and Validation of a Child Physical and Sexual Abuse Prevention Scale

ABSTRACT

BACKGROUND: School-based child abuse primary prevention programs are delivered across the country; however, a validated measurement tool that is feasible to deliver to students is unavailable. This lack of validated tool is major obstacle for evaluating these types of primary prevention programs. The purpose of this study was to describe the development and validation of a measurement tool for knowledge and skills related to the primary prevention of child physical and sexual abuse.

METHODS: Two elementary schools and 404 students participated in this evaluation. Students completed five instruments: the Play it Safe!® scale, two scales related to abuse prevention, and two unrelated scales. Descriptive statistics were estimated for each scale. For assessment of the convergent and divergent validity, correlations were estimated and corresponding p-values in SAS version 9.4.

RESULTS: For the Play it Safe!® scale, the mean score was 10.87 out of 14 potential points (standard deviation = 2.73; higher scores = higher knowledge). The internal consistency of the scale was adequate with a Cronbach's alpha of 0.77. Strong correlations were observed for the two convergent validity scales, and weak correlations observed for the two divergent validity scales.

CONCLUSION: This study demonstrates the divergent and convergent validity of a child abuse primary prevention knowledge scale that can be used in school-settings. The use of vignettes to describe recognizing, responding to, and reporting abuse can assist in the measurement of primary prevention knowledge.

Development and Validation of a Child Physical and Sexual Abuse Prevention Scale

BACKGROUND

Childhood physical and sexual abuse is a prevalent public health issue in society. In the U.S. in 2017, Child Protective Services received 674,000 reports of victims of child abuse and neglect nationally, which is a rate of 9.1 victims per 1,000 children (US Department of Health & Human Services, Administration for Children and Families, Administration on Children, & Children's Bureau., 2019). Child sexual abuse is experienced by 6% of children aged 0 to 17 (Finkelhor, Turner, Ormrod, & Hamby, 2009) and increases risk of sexual revictimization (Ogloff, Cutajar, Mann, & Mullen, 2012). Childhood physical and sexual abuse can have lifelong effects beyond psychological distress (Talbot et al., 2009). Additionally, adverse childhood experiences are positively associated with continued sexual victimization in adulthood (Ports, Ford, & Merrick, 2016). Moreover, it is estimated that the total lifetime societal and economic costs of child abuse and neglect are \$124 billion each year (Fang, Brown, Florence, & Mercy, 2012).

Delivery of primary prevention programs for child physical and sexual abuse can occur in school settings to have adequate reach for children. While physical abuse and neglect are the most common types of child maltreatment, many programs include an emphasis on sexual abuse because it tends to be a more hidden form of victimization (US Department of Health & Human Services et al., 2019). A meta-analysis was conducted in 2015 to assess the effectiveness of school-based education programs for the prevention of child sexual abuse. This review included 24 studies and found that school-based education interventions overall improved child self-protective skills, factual, and applied knowledge. However, the majority of the studies included in this review were from more than ten years ago while only four studies were conducted in the last decade (Walsh, Zwi, Woolfenden, & Shlonsky, 2015). No gold-standard program exists for the primary prevention of child sexual and physical abuse delivered in a school-based setting.

The Play it Safe! ® Program is a school delivered primary prevention program for child physical and sexual abuse. The program has trained facilitators deliver 1-hour, grade-appropriate content on the recognition, response, and reporting of child abuse. The delivery of this material uses strategies, such as videos, role-playing with puppets, and coloring books. While an early evaluation of this program showed potential beneficial outcomes (Blakey & Thigpen, 2015), the evaluation was limited to true/false questions that did not capture all aspects of recognizing, responding, and reporting child abuse.

In an effort to improve the evaluation of the Play it Safe! Program, these measurement of knowledge outcomes needed to be improved. An integrative review of school-based child sexual abuse prevention programs that synthesized the evidence of 31 articles, reported that there were inconsistencies in the outcome measures used in these programs, likely due to the complex topic and varying program content (Fryda & Hulme, 2015). Measurement of program outcomes can also be limited by feasibility of evaluation in school settings. For example, the scale, Children's Knowledge of Abuse Questionnaire Revised, is a reliable instrument, but requires administration verbally to children one-on-one or in small groups (Tutty, 1997). Other tools also require interviews or verbal administration with children, such as the What if Situations, Protective Behaviors Questionnaire, and Observed Protective Behaviors scale (Dale et al., 2016; White et al., 2016; Wurtele, Kast, & Melzer, 1992). Moreover, many of these tools have high reading levels between the 4th and 6th grades (Dale et al., 2016; White et al., 2016; Wurtele et al., 1992),

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which makes it difficult to administer in writing to children in elementary school. Two newer evaluation tools have been recently described from the Kidpower and Child Safety Matters Programs; however, the validity of these measures have not yet been established. These measures may be more feasible to administer since it does not require a verbal or one-on-one administration and they have a 4th grade reading level (Brenick, Shattuck, Donlan, Duh, & Zurbriggen, 2014; Finkelhor, Bright, Huq, & Miller, 2018).

As such, a validated measure of child physical and sexual abuse primary prevention knowledge and skills that can be delivered feasibly in a school-based setting is lacking. In order to validly evaluate the Play it Safe! ® Program, the development of a measurement tool that can assess program outcomes for recognizing, responding to, and reporting child physical and sexual abuse is needed, as these are the skills children are expected to learn in the program. Moreover, this tool should be at an appropriate reading level and feasible to administer within the constraints of a school-based setting for continuous program evaluation. The purpose of this study is to describe the instrument development and assessment of convergent and divergent validity of a scale measuring the knowledge and skills for primary prevention of child physical and sexual abuse and utilized by children. We hypothesize that there will be a statistically significant positive correlation for the developed scale with two other child abuse prevention scales, and no or weak correlation with the two scales selected for divergent validity.

METHODS

Instrument Development

To develop the outcome measures for the Play it Safe!® program, programs for child sexual and physical abuse prevention were assessed in the peer-reviewed and grey literature. A total of 6 programs from the past decade and corresponding outcomes were reviewed (Brenick et al., 2014; Dale et al., 2016; Finkelhor et al., 2018; Pulido et al., 2015; Sarno & Wurtele, 1997; Tutty, 1997). Programs without information publicly available were contacted for follow-up. Additionally, the curriculum for Play it Safe!® was reviewed, and the key knowledge and skills that needed to be measured were related to the recognition, responding to, and reporting of child physical and sexual abuse. An iterative process to develop the instrument included feedback from the evaluation team, the Women's Center of Tarrant County, and Play it Safe!® facilitators.

Vignettes of different physical and sexual abuse scenarios were developed with questions based on these vignettes and four response items (one correct answer, one do not know answer, and two distractors). The vignettes were based on different types of abuse scenarios related to physical and sexual abuse, and the corresponding skills: recognizing, responding to, and reporting abuse. The instrument had a Flesch-Kincaid grade reading level of 2.1. Instruments were pilot tested among 13 3rd to 6th grade classes who have had the Play it Safe! program previously at their school. The students were administered the pre-test immediately prior to the delivery of the Play it Safe! program, and then had a post-test. The pilot test permitted an examination of overall group difference pre and post program implementation, and how long it took to administer the revised questionnaire. Additionally, facilitators shared any common questions they had from students while filling out the questionnaire with the evaluation team. The instruments were revised based on confusing questions or questions where the majority of students responded correctly. This resulted in a final instrument with 14 questions and five vignettes.

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Study Overview

This study utilized the Centers for Disease Control and Prevention (CDC) Validation and Reliability Plan (Dahlberg, Toal, Swahn, & Behrens, 2005) to assess convergent and divergent validity for the created Play it Safe!® scale. As a result, two instruments were selected for convergent validity and divergent validity, respectively. Based on the review of current measures of child abuse prevention, no validated instruments existed that could be delivered in paper format to this target audience. As a result, the instruments from the Child Safety Matters ® program (Finkelhor et al., 2018) (evaluation in progress) and Kidpower (Brenick et al., 2014) were used to assess the convergent measurement of child sexual and physical abuse prevention knowledge. These scales were used for assessing convergent validity because they are similar to the Play it Safe!® scale and target children within the same age groups. The divergent validity instruments were those that were theoretically unrelated to child sexual and physical abuse prevention knowledge, including Children's Hope Scale (Snyder et al., 1997) and the Physical Activity Enjoyment Scale (Moore et al., 2009). These scales assess students' physical and mental health; therefore, they are complementary to the Play it Safe!® scale and were hence used to evaluate divergent validity.

Measures

Play it Safe!®. The primary instrument being tested was the Play it Safe!® scale, which comprised 14 items with five vignettes responding to the recognition, responding to, and reporting of child physical and sexual abuse. The five vignettes described scenarios of physical or sexual abuse, including: (1) physical abuse from a parent, (2) babysitter taking photos of a child while undressing, (3) confusing touches in a swimming pool from an adult family member, (4) a confusing touch from an adult, and (5) meeting strangers online (see Table 1). The vignette questions aligned with the three Play it Safe! skills: recognize (5 scenarios), respond (3 scenarios), and report (6 scenarios). The reading level for the instrument was 2.1 grade level. For each correct response, one-point was assigned, and the total score summed up to 14 points.

Child Safety Matters. The Child Safety Matters program is designed for child abuse prevention for elementary school children (Finkelhor et al., 2018). While currently under evaluation, the survey tool used by this program contains 20 true/false statements regarding child safety, child abuse recognition, and child abuse reporting, such as "people you know can sometimes touch you in ways that feel weird", "strangers can hurt you, but people you know can also hurt you", "you have right to decide who can touch you", etc. Participants received one-point for a statement answered correctly and received zero-points answered incorrectly. Although the Child Safety Matters scale is un-validated, it was adopted in this study since no recently validated scale is available that could be used in this setting to assess the convergent validity.

Kidpower. The Kidpower Everyday Safety Skills Program is designed to prevent bullying, harassment, child abuse, and abduction among elementary school-age children (Brenick et al., 2014). The instrument used to evaluate this program comprises 15-items for child safety skills, including boundary setting, stranger safety, help-seeking, and awareness behaviors. For example, questions include "If a bunch of kids at school were teasing another kid in a very hurtful way, what would you do?", "If another kid called you an unkind name, what would you do?", "If you have a safety problem and your grownups are buys, what would you do?" Each item had four response options: one correct, two incorrect unsafe responses, and a do not know response. The correct responses received one point, and the items were summed. This scale was found to have acceptable reliability among third-grade students (Cronbach's $\alpha=0.75$) (Brenick et al., 2014). The

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Kidpower scale is also not validated, but was still used in this study due to the lack of available validated scales.

Children's Hope Scale. The Children's Hope Scale was selected to measure discriminant validity. It is a 6-item scale with statements on hope agency and pathways, and a 6-point Likert scale (None of the Time to All of the Time). For example, statements include: "I think I am doing pretty well." The validation of this instrument found it to be reliable and valid (Cronbach's $\alpha=0.72-0.86$) (Snyder et al., 1997). The instrument is scored by summing the 6-items.

Physical Activity Enjoyment Scale. The Physical Activity Enjoyment Scale was selected to measure discriminant validity. The scale includes the overall stem of "When I am physically active...." and 16-items, such as "I enjoy it," "It gives me energy," or "It's not interesting at all." Response options included a 5-point Likert scale of Disagree a lot to Agree a lot. The instrument has previously been evaluated for reliability and validity (Cronbach's $\alpha=0.87$) (Moore et al., 2009). The instrument is scored by summing the responses to the 16-items.

Participants

The sample for the validation study comprised 3rd – 5th grade public school students in Tarrant County, Texas, who were in schools that have had the Play it Safe![®] curriculum in previous years. A total of three schools with 25 classrooms and 404 students participated. The demographics of the school enrollment included: School 1 53% Black, 35% Hispanic, 5% White; School 2 8% Black, 90% Hispanic, 1% White; and School 3 1% Black, 96% Hispanic, 2% White. Of these participants, 389 students had complete responses for the Play it Safe![®] scale, 328 had complete responses for Child Safety Matters scale, 370 had complete responses for Kidpower scale, 369 had complete responses for Children's Hope Scale, 317 had complete responses for Physical Activity Enjoyment scale, and 246 had complete responses for all five scales tested in the validation study. The missing data could be attributed to the fact that the survey took approximately an hour to complete and the survey's length led to a lower response. Also, due to time constraints, many students at one school were not able to complete the survey. Prior to delivering the Play it Safe![®] program, a program facilitator, guidance counselor, or teacher administered survey instruments for validation. The survey took approximately 1-hour to complete. The validation study occurred in the Spring semester of 2019. This study was approved from the (blind) Institutional Review Board.

Data Analysis

Descriptive statistics were estimated for each scale, including means, standard deviations, ranges, and inter-item correlations. Additionally, frequencies of correct responses to each of the items on the Play it Safe![®] scale were calculated. We performed complete case analysis and excluded participants with missing data for the variables of interest. For assessment of the convergent and divergent validity, correlations were estimated and corresponding p-values in SAS version 9.4. A post-hoc sample size estimate determined that there was sufficient power to detect a 0.18 effect with an alpha of 0.05 and power above 80%.

RESULTS

A total of 404 students participated in the validation study; however, only 389 completed the entire Play it Safe![®] scale and only 246 participants completed all five scales. Among the entire sample, 175 (43.3%) of participants were from 5th grade, 147 (36.4%) from 4th grade, and 82

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(20.3%) from 3rd grade. Nearly half of respondents (n=198; 49.0%) reported as female, 178 (44.1%) reported as male, and 28 (6.9%) declined to answer.

Among the 389 participants who completed the Play it Safe![®] scale, the mean score was 10.87 out of 14 potential points (standard deviation = 2.73). The data were right-skewed with a median of 12. When examining the mean scores according to the grades of the students, among students from 3rd grade, the mean score was 9.26 (standard deviation = 2.93). For students from 4th grade the mean score was 11.14 (standard deviation = 2.68). While students from 5th grade had a mean score of 11.38 (standard deviation = 2.39). Internal consistency of all the scales were calculated. The internal consistency of the Play it Safe![®] scale was adequate with a Cronbach's alpha of 0.77. The Cronbach's alpha of other scales was as follows: Child Safety Matters scale – 0.63, Kidpower – 0.75, Children's Hope Scale – 0.74, and Physical Activity Enjoyment scale – 0.87. The proportion of each item correct on the scale is presented in Table 1 and ranged from 50% to 93% correct. The item that only a few of the students correctly answered was from the vignette regarding physical abuse from a parent, where only 50% correctly identified that the physical abuse was the parent's fault. The correlations for each item within the Play it Safe![®] scale is presented in Table 2. The average inter-item correlation was 0.21 for the correlation matrix. The correlation between most of the items was statistically significant, except for the first item from the first vignette regarding physical abuse from a parent, which showed non-significant associations with most of the items. The highest correlation was observed between items 3.1 and 3.2 (0.48) from the vignette regarding confusing touches in a swimming pool from an adult family member.

The mean scores for each scale and the correlations between the scales are provided in Table 3. The correlations between all five scales were statistically significant, except for Child Safety Matters, which showed non-significant associations with the Children's Hope Scale and the Physical Activity Enjoyment Scale. A strong correlation was observed between Play It Safe![®] and the convergent scales, Child Safety Matters ($r=0.49$, $p\text{-value}\leq 0.01$) and Kidpower ($r=0.56$, $p\text{-value}\leq 0.01$). A weak correlation was observed between Play It Safe![®] and the divergent scales, Children's Hope Scale ($r=0.19$, $p\text{-value}\leq 0.01$) and Physical Activity Enjoyment Scale ($r=0.17$, $p\text{-value}\leq 0.01$).

DISCUSSION

Given the need to prevent child sexual and physical abuse in the U.S., school-based programs can assist in the prevention of abuse by educating children on recognizing, responding to, and reporting abuse when it occurs. Despite decades of prevention programming in schools, validated measurement tools to assess outcomes for these programs is limited (Kenny, 2010; Walsh et al., 2015). This study assessed the validity of the Play it Safe![®] instrument for measuring child abuse prevention knowledge and skills and adds to the validation literature for two other self-administered tools (Kidpower and Child Safety Matters). Collectively, these tools were designed to assess knowledge and situational decision-making around child abuse and sexual abuse. However, each tool utilizes different strategies: the vignette-based Play it Safe! tool takes an outside-observer perspective and asks the child to choose the most correct answer regarding a specific scenario, the Kidpower tool takes an inside situational perspective and asks the child to choose the best safety strategy, and the Child Safety Matters tool measures factual (true/false) statements from both insider and outsider perspectives.

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This study confirms the utility of this developed scale for child abuse prevention knowledge and skills based on criteria from the CDC Validation and Reliability Plan (Dahlberg et al., 2005). First, the instrument had a Cronbach's alpha coefficient of 0.77, indicating acceptable internal consistency of the scale, and the inter-item correlation for the correlation matrix was 0.21. Second, convergent validity was observed with the strong correlations observed with the Play it Safe!® scale and the Kidpower and Child Safety Matters scales, confirming the study hypothesis. While there are limited data available on the validity of these scales, the intent is to measure child abuse prevention, and represent a similar scope of the topic area. The convergence of these tools offers construct validation for the measurement of child abuse knowledge and prevention skills from factual, situational, and vignette-based perspectives. Moreover, this study demonstrated weak correlations between the Play it Safe!® scale and the Children's Hope Scale and Physical Activity Enjoyment scales, respectively. While statistically significant correlations were observed for these weak correlations, this may be attributed to the sample size being powered to detect these weak associations, and the Kidpower scale performed similarly. As such, divergent validity was assessed and confirmed. The test-retest reliability criterion that was not assessed in this study due to the single survey point but can be assessed in future program evaluation.

IMPLICATIONS FOR SCHOOL HEALTH

Schools provide an important context for children who are being abused to disclose to adults who can facilitate investigation and intervention (Thulin, Kjellgren, & Nilsson, 2019; Vanderfaeillie, De Ruyck, Galle, Van Dooren, & Schotte, 2018). A key step towards identification of effective school-based prevention programs is establishing outcome assessment tools that are reliable and valid. This study contributes to the convergent and divergent validation of three self-administered measurement tools that are being used in three child abuse prevention programs.

Limitations

There are limitations to consider for this validation study. Due to the paper and pencil administration of this survey, missing data were observed. Less than 4% missing data were observed for the Play it Safe!® scale; however, more missing data was observed for all five instruments likely due to the length of the survey. In deciding which instruments to use for convergent and divergent validity, the feasibility and burden on the participant were considered. However, when these tools were administered in classrooms, some classes lacked the adequate amount of time to complete all five scales, which may introduce some selection bias in these results. Moreover, the lack of validated child abuse prevention knowledge and skills instruments that could be administered in a school setting limited the options for convergent validity assessment.

Conclusions

Prevention of child physical and sexual abuse requires a multifaceted approach, and school-based prevention programs are one of those options. Educating children on abuse recognition, response, and reporting behaviors is critical for the prevention of abuse (Wortley, Leclerc, Reynald, & Smallbone, 2019) This study validates a scale to measure prevention knowledge and skills in order to evaluate school-based programs rigorously.

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VALIDATION OF ABUSE PREVENTION SCALE

Table 1. Play it Safe!® Scale Items and Percent Correct for Responses (N=389)

Vignette/Question		Correct Response	Skills	% Correct
	<i>Vignette 1. Jose's dad told him to not roller skate in the house. One day, Jose skated in the house and knocked over a cup. When Jose's dad came home, he got mad and hit him on the back. That left a big bruise and it hurt for a few days.</i>			
1.1 Jose's dad gave him:		an unsafe touch	Recognize	92.0
1.2 Jose should:		tell the school nurse	Report	60.4
1.3 Jose's bruise was:		his dad's fault	Recognize	50.4
	<i>Vignette 2. Kim's neighbor Sam watches Kim after school. Kim likes to try on outfits with Sam. One day, Sam took pictures of Kim in her outfits. Sam took pictures when Kim was changing as a joke.</i>			
2.1 Kim should:		tell Sam not to take pictures	Respond	84.8
2.2 After Sam took the pictures, he told Kim to keep it a secret. Kim should:		tell her grown-ups about the pictures	Report	81.8
	<i>Vignette 3. May played tag in the pool with her Uncle Troy. He rubbed May on the bottom of her bathing suit three times.</i>			
3.1 May should:		say "No" when Uncle Troy rubs her	Respond	92.5
3.2 Next, May should:		get away from Uncle Troy	Respond	90.5
3.3 Then May should:		tell an adult she trusts about the rubbing	Report	87.7
3.4 Uncle Troy touched May:		on her private parts	Recognize	77.6
	<i>Vignette 4. Last year, Lynne rode on the bus for a field trip. On the bus, a parent sat next to Lynne. He kept his hand on her lap during the ride. Lynne felt scared but did not tell anyone. Now she does not want to go on the next field trip.</i>			
4.1 Lynne should:		tell a trusted adult about the touch	Report	90.0
4.2 Lynne chose to tell her bus driver and mom, but they didn't believe her. Lynne should:		tell a teacher about it.	Report	85.6
4.3 The touches were:		the parent's fault	Recognize	58.1
	<i>Vignette 5. Logan likes to play games online. While playing online, he met a new friend Paul who said he lived close to Logan. Paul asked for Logan's address so that he could come play games with him.</i>			
5.1 Logan should:		tell his grown-ups about his new friend	Report	55.5
5.2 Logan asked how old he was. Paul said he was nine and told Logan they go to the same school. Now that Paul told him this:		Logan should not trust Paul because he might be pretending to be someone else	Recognize	80.2

VALIDATION OF ABUSE PREVENTION SCALE

Table 2. Correlation Coefficients for Play it Safe![®] Scale (N=389)

	1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2
1.1														
1.2	0.15**													
1.3	0.16**	0.21**												
2.1	0.06	0.17**	0.04											
2.2	0.06	0.26**	0.14**	0.26**										
3.1	0.06	0.13**	0.11*	0.37**	0.37**									
3.2	0.07	0.19**	0.19**	0.33**	0.3**	0.48**								
3.3	0.06	0.14**	0.13**	0.26**	0.25**	0.37**	0.46**							
3.4	0.07	0.17**	0.16**	0.32**	0.39**	0.41**	0.37**	0.36**						
4.1	0.03	0.11*	0.11*	0.22**	0.26**	0.23**	0.33**	0.37**	0.35**					
4.2	0.07	0.18**	0.13**	0.26**	0.26**	0.39**	0.37**	0.29**	0.38**	0.33**				
4.3	0.08	0.06	0.23**	0.16**	0.12**	0.20**	0.17**	0.19**	0.24**	0.22**	0.17**			
5.1	-0.02	0.15**	-0.01	0.17**	0.21**	0.18**	0.15**	0.17**	0.15**	0.15**	0.16**	0.12*		
5.2	0.02	0.15**	0.15**	0.20**	0.32**	0.30**	0.26**	0.25**	0.32**	0.33**	0.24**	0.22**	0.19**	

** p-value \leq 0.01, * p-value \leq 0.05

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Table 3. Correlation between Different Scales (n=246)

Scale	Mean (SD)	α	Range	Potential Range	Play It Safe!®	Child Safety Matters	Kidpower	Children's Hope Scale
Play It Safe!®	11.39 (2.17)	0.77	3-14	0-14	-			
Child Safety Matters	17.37 (2.02)	0.63	11-20	0-20	0.49**	-		
Kidpower	11.51 (2.74)	0.75	2-15	0-15	0.56**	0.48**	-	
Children's Hope Scale	25.59 (5.74)	0.74	10-36	6-36	0.19**	0.07	0.21**	-
Physical Activity Enjoyment Scale	58.76 (10.44)	0.87	26-75	15-75	0.17**	0.05	0.16*	0.29**

** p-value \leq 0.01, * p-value \leq 0.05

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Evaluation of a school-based child physical and sexual abuse prevention program

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Evaluation of a school-based child physical and sexual abuse prevention program

Abstract

Background: Evidence-based child sexual and physical abuse prevention programs delivered in schools are needed, and require rigorous evaluation of program effects prior to widespread dissemination. The Play it Safe! program is a one-time session delivered by trained facilitators to teach students about recognizing, resisting, and reporting abuse.

Objective: The purpose of this study is to describe the evaluation of a school-based child sexual and physical abuse prevention intervention Play it Safe! among elementary school students using a cluster randomized design.

Participants and Setting: Six elementary schools in Texas were matched on demographic characteristics, and then randomized to intervention or wait-list control groups. Participants included 3-5th graders (n=539).

Methods: The study was conducted in February-March 2020. Participants received the pre-test assessing vignette-based knowledge of physical and sexual abuse prevention (14-items). The intervention group immediately had the program. One-month later, both groups received a post-test using the same validated scale. Multilevel linear regression analyses were estimated, and interaction effects were used to evaluate the effect of Play it Safe! while controlling for other factors.

Results: A statistically significant interaction between the treatment group and time ($b=1.30$, $p<0.01$) indicated a greater increase in the knowledge score over time in the intervention group. Moderating effect of grade was also observed as the intervention tended to have less effect for 5th grade compared to 3rd grade ($b=-1.04$, $p=0.01$).

Conclusion: This study provides evidence to support the efficacy of the Play it Safe! program for increasing children's physical and sexual abuse prevention knowledge and skills among a racially and ethnically diverse sample of elementary school students.

INTRODUCTION

Childhood physical and sexual abuse, which falls under the umbrella of child maltreatment, is a concerning public health issue due to its prevalence and adverse consequences. In 2018, Child Protective Services (CPS) agencies across the U.S classified 678,000 children as victims of child maltreatment. However, CPS agencies only investigate reported cases; therefore, the true occurrence of child maltreatment is likely underestimated (Hussey, Chang, & Kotch, 2006; US Department of Health & Human Services, 2020). Moreover, child maltreatment has a significant economic burden in the United States; the estimated annual economic burden of child maltreatment was \$2 trillion in 2015 (Peterson, Florence, & Klevens, 2018).

Childhood sexual abuse is often not the focal point within the discussion of child maltreatment. Nevertheless, it is estimated that 1 in 4 girls and 1 in 20 boys experience childhood sexual abuse before their 18th birthday (Finkelhor, Shattuck, Turner, & Hamby, 2014; Letourneau, Eaton, Bass, Berlin, & Moore, 2014). Due to its hidden nature of victimization, childhood sexual abuse is an important area of focus (US Department of Health & Human Services, 2020). The negative effects of childhood sexual abuse extend beyond short-term trauma and include long-term consequences, such as post-traumatic stress disorder, depression, substance abuse, and obesity (Adams, Mrug, & Knight, 2018; Collin-Vézina, Daigneault, & Hébert, 2013; Dube et al., 2003; Kristman-Valente, Brown, & Herrenkohl, 2013; Mullers & Dowling, 2008; Nichols & Harlow, 2004; Noll, Trickett, Harris, & Putnam, 2008; Widom, 1999). Moreover, childhood sexual abuse is considered an adverse childhood experience (ACE), and ACEs are associated with impacts across the life course, such as an increased risk for developing health conditions and an increased risk for sexual victimization as an adult (Ports, Ford, & Merrick, 2016).

Prevention of childhood sexual abuse requires recognizing the socioecological factors influencing the occurrence of abuse. The Centers for Disease Control and Prevention's socioecological framework promotes the examination of factors at the individual, relationship, community, and society levels in order to understand how to prevent violence (Centers for Disease Control and Prevention, 2020). An extension of this framework includes focusing on primary prevention to minimize health burdens caused by childhood sexual abuse (Lynas & Hawkins, 2017). Often this is reflected in delivering child abuse prevention interventions in the school setting through programs or curriculum. The school setting serves as an accessible way to reach a significant proportion of children without stigmatizing high-risk groups (Kenny & Wurtele, 2010). These programs also support secondary prevention by encouraging reporting and help-seeking among children who are currently being abused.

Walsh, Zwi, Woolfenden, and Shlonsky (2015) reviewed 15 school-based sexual abuse prevention programs in 24 studies to assess the evidence of efficacy for these programs. Overall, the meta-analysis found moderate evidence for school-based education programs to prevent child sexual abuse. Most programs reviewed focused on attaining knowledge of sexual abuse and its prevention as the primary outcome – knowledge was measured through questionnaires or vignettes. Children who participated in the programs demonstrated an increase in knowledge in both areas, and knowledge was maintained for 1-6 months afterwards (Walsh, Zwi, Woolfenden, & Shlonsky, 2018). Despite the numerous school-based programs reviewed, none are regarded as a gold-standard program. Programs vary in how they address the unique needs of individual

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communities and audiences, and widely differ in their methods of delivery, topic coverage, and populations of interest (Walsh et al., 2015). Moreover, only a small fraction of programs has been evaluated within the last decade. Thus, researchers must continue to test school-based primary prevention interventions using rigorous scientific evaluation and synthesis prior to extensive dissemination (Walsh et al., 2015).

Play it Safe! is a school-based primary prevention intervention aimed at addressing sexual and physical child abuse among Pre-K-12 students. The intervention utilizes a grade-specific curriculum that focuses on students' recognition, response, and reporting of abusive situations and evaluates knowledge gained through assessment tools. Though a prior study showed promising outcomes for this intervention (Blakey & Thigpen, 2015), this paper aims to more specifically capture students' understanding of sexual and physical child abuse by using a revised assessment tool using knowledge-based vignettes and a rigorous cluster randomized trial design. Evaluation of the Play it Safe! program, with its revised assessment tools, will not only establish the efficacy of the program, but also provide evidence of rigorous evaluation of a school-based child abuse prevention program to move the field forward. The purpose of this paper is to describe the evaluation of Play it Safe! among elementary school students. Schools were randomized to either receive the Play it Safe! program or serve as a wait-list control, and were assessed pre-program delivery and at a one-month follow-up. We hypothesized that schools that had the Play it Safe! program would have higher vignette-based knowledge scores at the one-month follow-up compared to the control group.

METHODS

Play it Safe! Overview

Play it Safe! is a school-based child abuse prevention program developed in 1983 by The Women's Center of Tarrant County, Texas, for Pre-K-12 students. The grade appropriate curriculum focuses on the three-part safety rule to teach students how to: (1) recognize, (2) respond, and (3) report a potentially abusive situation as well as emphasize abuse is never a child's fault. More specifically, the curriculum for elementary students teaches students to recognize different kinds of touches and the three-part safety rule. As students enter middle and high school, the curriculum shifts from a broad overview of child abuse to presentations on specific topics, such as sexting and dating violence. The curriculum is taught in a one-hour session and trained personnel use grade-level specific and age appropriate scripts and videos in all grade levels, although additional methods such as role-playing with dolls and coloring books are also utilized with younger students. Program content is delivered by a trained facilitator with the Women's Center of Tarrant County. Facilitators use checklists to prepare materials for sessions and read from scripts to ensure all content is covered in sessions.

Participants and Procedure

This was a cluster randomized controlled trial because randomization was not viable at the individual level due to the school-based delivery. The evaluation was sponsored by the State of Texas Office of the Governor as part of a Victims of Crimes Act grant award made to the Women's Center of Tarrant County. The study was approved by the North Texas Regional Institutional Review Board and the Fort Worth Independent School District Institutional Review Board.

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This study included students from grades 3rd to 5th in Tarrant and Johnson counties in Texas. The consent procedures were determined by each of the participating school districts. All students had either parental opt-in or opt-out consent to participate. The parents received a letter from the Women's Center of Tarrant County describing the evaluation study and an option to opt-in (or opt-out in select schools) for their child to participate in the study.

The intervention evaluation was planned with 10 schools scheduled to participate starting in February 2020 until April 2020. The schools were matched 1:1 on school demographics (i.e., proportion of children at risk, proportion of children identified as Black, proportion of children identified as Hispanic, and proportion of children identified as White) and were randomly assigned to the intervention or wait-list control group. However, due to the COVID-19 shelter-at-home orders during March 2020 and students not returning to school, schools were no longer in session during a portion of this study. As a result, three schools could not participate as planned, resulting in one of the participating schools not having a matched control. Thus, a total of 7 schools participated in the study with 4 schools in the intervention group and 3 schools in the control group. Ultimately, we had three matched pairs, and one school without a matched comparison school. For all analyses, the six matched schools were used, and in the sensitivity analysis, the unmatched school was also included. None of the selected schools had previously received the Play it Safe! program; however, it should be noted the schools may have offered an alternative violence prevention program to their students in previous years.

Students in the intervention groups received a pre-test, the intervention, and a one-month post-test. The control groups received a pre-test, and another pre-test within a week of their matched intervention groups receiving the one-month post-program post-test. To protect the confidentiality of child participants in this study, pre- and post-tests were matched using the first initials of students' names, birth month, and a sticker. The surveys and intervention were administered by trained Play it Safe! program personnel. At least two personnel were present for the pre-test (and intervention delivery) for time point one. The control group sessions lasted 30-45 minutes for the pre-test and 55-60 minutes for the second pre-test and intervention delivery. The intervention group sessions lasted 60-90 minutes for pre-test and intervention delivery, and the post-test lasted 30 minutes.

As presented in Figure 1, 692 students were enrolled in the study. Out of those, 153 students allocated to the intervention group did not have a matched control group due to the recent pandemic. Therefore, those students were excluded from the primary analysis but were included in the sensitivity analysis (see Data Analysis). After that exclusion, at the baseline, there were 318 students in the intervention group and 221 students in the control group who completed the pre-intervention questionnaire. There was approximately 11% and 10% attrition in the intervention and control groups, respectively.

Similar to the limitations described with losing school participation due to school closures associated with COVID-19, this project also had a planned 2-month follow-up period to receive a second post-test for longer-term evaluation of study findings. Due to COVID-19 stay at home orders and school closures, the study was interrupted prior to conducting the last post-test. Thus, the original design could not be followed, and the results described in this study have a one-month follow-up only.

Measures

The evaluation used a valid and reliable instrument to measure participant knowledge and skills related to the recognition, resistance, and reporting of child physical and sexual abuse (*Blind for Review*). Briefly, this instrument was assessed for convergent and divergent validity, and reliability among a similar population of children (*Blind for Review*). Participants were presented with five vignettes describing different abuse scenarios, and provided four response options (1 correct, 2 incorrect distractors, and 1 don't know) for each question about the scenarios. Each question was then operationalized as correct or incorrect for each item, and the number of correct answers were summed for a possible 14 points. The pre-test and post-test questions were identical.

Data Analysis

Prior to selecting schools to participate, a power analysis was conducted. We planned for two time-points for data collection and randomization at the school level. The alpha level was set to 0.05 (two-sided) and power set to 80%. We estimated the proportion of subjects in each group to be 50%. We estimated the group by time interaction to be 1.50 (equivalent to an effect size of 0.250 – similar to Child Safety Matters estimate 0.307 (Finkelhor, Bright, Huq, & Miller, 2018). Based on pilot data from one school, we estimated the mean score to be 11 points and a variance of 9. Based on these criteria, and having at least 6 schools participate, we would need 43 students per school to achieve 80% power.

We conducted a descriptive analysis of participants who had been randomized to groups (n=539). Descriptive statistics, including the proportions in terms of gender, race, and grade in school for control and intervention groups were calculated to examine the participant characteristics at baseline. To evaluate the intervention effect of the Play it Safe! program in increasing the knowledge scores for the participants, we conducted inferential analysis on participants who had completed at least 7 questions in the survey at both assessments (n=487). Because of the multilevel structure of the cluster randomized trial (i.e., multiple participants clustered under every school), mixed effects multilevel linear regression models with a random intercept for schools were performed. The predictors of interest were the participants' group assignment, assessment time, and their interaction. We also controlled and tested for other covariates, including race, gender, grade in school, grade by group interaction, and grade by time interaction to adjust for potential confounding and moderating effects. The same model was conducted using the 6 schools that were matched, and the 1 unmatched school as a sensitivity analysis.

RESULTS

After school randomization, there were 221 participants in the 3 control schools and 318 participants in the 3 intervention schools. Table 1 presents the demographic characteristics of the participants at baseline, and the characteristics of the schools selected to participate. Approximately half (51.1%) of the participants in the intervention group and 57.5% in the control group were girls. The majority of the students were of Hispanic ethnicity, 82.4% in the intervention group and 74.7% in the control group. There was a relatively even distribution of the participants from different grades in the intervention group. In contrast, the control group had more participants from the 5th grade and fewer from the 4th grade.

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The pre-test mean vignette-based knowledge scores were comparable for intervention and control groups. At pre-test, the mean vignette-based knowledge scores were 8.0 (SD 3.4) for 3rd grade, 10.1 (SD 3.1) for 4th grade, and 11.5 (SD 2.2) for 5th grade in the control group and were 8.1 (SD 2.8) for 3rd grade, 9.9 (SD 2.9) for 4th grade, and 11.1 (SD 2.1) for 5th grade in the intervention group. At post-test, the mean vignette-based knowledge scores were 8.7 (SD 3.4) for 3rd grade, 10.5 (SD 2.9) for 4th grade, and 11.6 (SD 2.5) for 5th grade in the control group. And, for the intervention group, the mean vignette-based knowledge scores were 10.4 (SD 2.7) for 3rd grade, 11.7 (SD 1.9) for 4th grade, and 12.1 (SD 1.7) for 5th grade. To evaluate the item-level results, the proportions of participants who had correct answer for each item on the 14-item scale are included in the supplemental materials stratified by grade (Supplemental Tables 1-3).

The multilevel linear regression analysis of the knowledge scores revealed a statistically significant interaction effect between the intervention group and time ($b = 1.30, p < 0.01$), indicating a strong intervention effect that led to greater increase in the knowledge score between pre- and post-assessments (Table 2). A statistically significant interaction effect was also observed between 5th grades and the intervention group, compared to that of 3rd grade ($b = -1.04, p = 0.01$), suggesting a moderating effect of grade that the intervention tended to have less effect for higher grade. A statistically significant interaction was observed between grade 5 and time, indicating that over time, grade 5 had a lower increase in vignette knowledge scores compared to grade 3 ($b = -0.94, p = 0.02$). In terms of other covariates, participants in higher grades (e.g., $b = 4.77, p < 0.01$ for 5th grade vs. 3rd grade) and/or those who are female tended to have higher knowledge scores. There was no statistically significant race/ethnicity difference in knowledge scores.

The grade-stratified predicted mean vignette-based knowledge score for a typical participant was estimated to visualize the intervention effect (Figure 2). For each grade, the slope of the intervention group (red dashed line) was higher than the control (black solid line), indicating a greater increase in the knowledge scores for participants receiving intervention. The predicted mean knowledge score was highest for 5th grade intervention group post-intervention; however, 3rd grade demonstrated the largest gains in the knowledge score from intervention over time.

A sensitivity analysis was also performed using the same model and included 153 participants in the intervention group that did not have a matched control, and it yielded the same conclusions as the primary analysis (Supplemental Table 4).

DISCUSSION

This study sought to evaluate the Play it Safe! program – a school-based child sexual and physical abuse prevention program – using a cluster randomized design. Overall, the hypothesis was confirmed that schools that participated the Play it Safe! program had higher vignette-based knowledge scores at follow-up compared to the wait-list control group. Moreover, we found that the effect for the intervention was also moderated by grade level.

This study demonstrated that the Play it Safe! program of delivering a 1-hour child abuse prevention session significantly increased the knowledge scores for the intervention group at 1-month post program. While this study was originally designed to have an additional month of follow-up, but could not because of school closures from COVID-19, the effects at 1-month

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show promise that knowledge and skills learned during this session had lasting effects. Additionally, younger grade level students had a larger growth in scores at the post-test, signaling that earlier intervention delivery may be more beneficial. These findings are similar to the Child Safety Matters ® program and Child Protection Unit program, where program impact was stronger among younger children (Finkelhor et al., 2018; Nickerson et al., 2019). The moderating effect of the program by grade may be due to older children already being exposed to some of these topics either through other child abuse prevention programming or outside of school. Regardless, programming for child abuse prevention should occur at earlier ages when kids may benefit the most.

An additional finding from this program evaluation was that girls performed better compared to boys in our sample. Gender differences may be related to more communication with girls about child sexual abuse compared to boys as girls are more often victimized (Chen & Chen, 2005; Finkelhor, Turner, Shattuck, & Hamby, 2013). Other studies have observed similar differences by gender with school-based programs (Finkelhor & Dziuba-Leatherman, 1995; Hazzard, Webb, Kleemeier, Angert, & Pohl, 1991; Nickerson et al., 2019). The program evaluation did not show any significant effect for race/ethnicity in the main analysis and sensitivity analysis. This study is strengthened by including a racially and ethnically diverse sample of students, whereas other program evaluations comprised mainly white, non-Hispanic samples (Topping & Barron, 2009).

Moreover, with the strength of the effect being similar to other programs, the Play it Safe! program benefits from a brief and feasible delivery of the program. Other school-based child abuse prevention programs include several lessons in length and require a train the trainers model for teachers to deliver the program (Dale et al., 2016; Morris et al., 2017; Nickerson et al., 2019; Topping & Barron, 2009; Wurtele & Owens, 1997). While the train the trainers model can increase the adoption of a program, the fidelity of the program implementation may suffer limitations as teachers may report difficulty delivering these sensitive, complex, and challenging topics outside of their trained discipline (Johnson, 1994; Scholes, Jones, Stieler-Hunt, Rolfe, & Pozzebon, 2012; Weingarten et al., 2018). Utilizing external, trained child abuse prevention educators who can deliver a program within one lesson can help feasibly integrate this information into the school curriculum. Furthermore, an external multi-service organization such as the Women's Center of Tarrant County, which also offers counseling and support for victims, may help facilitate linkages to care for students who disclose victimization.

This study should be considered in the context of its limitations. First, the study had an original design of 5 matched-pair schools with follow-up at 1-month and 2-months post-intervention. Due to COVID-19 stay at home orders and school closures starting in March 2020, we were unable to include three of the initially scheduled schools, resulting in an unmatched school that was used in the sensitivity analysis. Additionally, we were unable to collect the 2-month follow-up data and were limited to a 1-month follow-up only. Future studies should attempt to replicate this study with longer follow-up. An additional limitation was the measurement of race/ethnicity among elementary school children. With feedback from the facilitators, students struggled with self-identifying their race/ethnicity, and many Hispanic children did not complete the race question, but did answer the question about Hispanic ethnicity status. While it is important to have racially and ethnically diverse samples of students for these programs, recognizing the potential limitations of measuring race and ethnicity for children is warranted. Finally, this study

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measured vignette-based knowledge of child physical and sexual abuse prevention and did not directly measure disclosure of abuse or the child's ability to use the strategy that was learned, which is a limitation for the field of school-based child abuse prevention programs (Walsh et al., 2015).

CONCLUSIONS

While a majority of school districts in the United States offer child sexual abuse prevention programs, many of these programs are not rigorously assessed (Pulido et al., 2015; Topping & Barron, 2009). The lack of rigor for these evaluations limits the evidence to support the widespread dissemination of effective programs (Dale et al., 2016). This study provides evidence to support the efficacy of the Play it Safe! program for increasing children's physical and sexual abuse prevention knowledge and skills among a racially and ethnically diverse sample of elementary school students. Using vignette-based scenarios in the evaluation tool also provides indicators of the likelihood that children will act on these skills if they were to be in similar situations. Schools will remain to be an important venue for disseminating prevention messages for child physical and sexual abuse in the broader socioecological prevention framework.

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Table 1. Participant Characteristics at Baseline^a

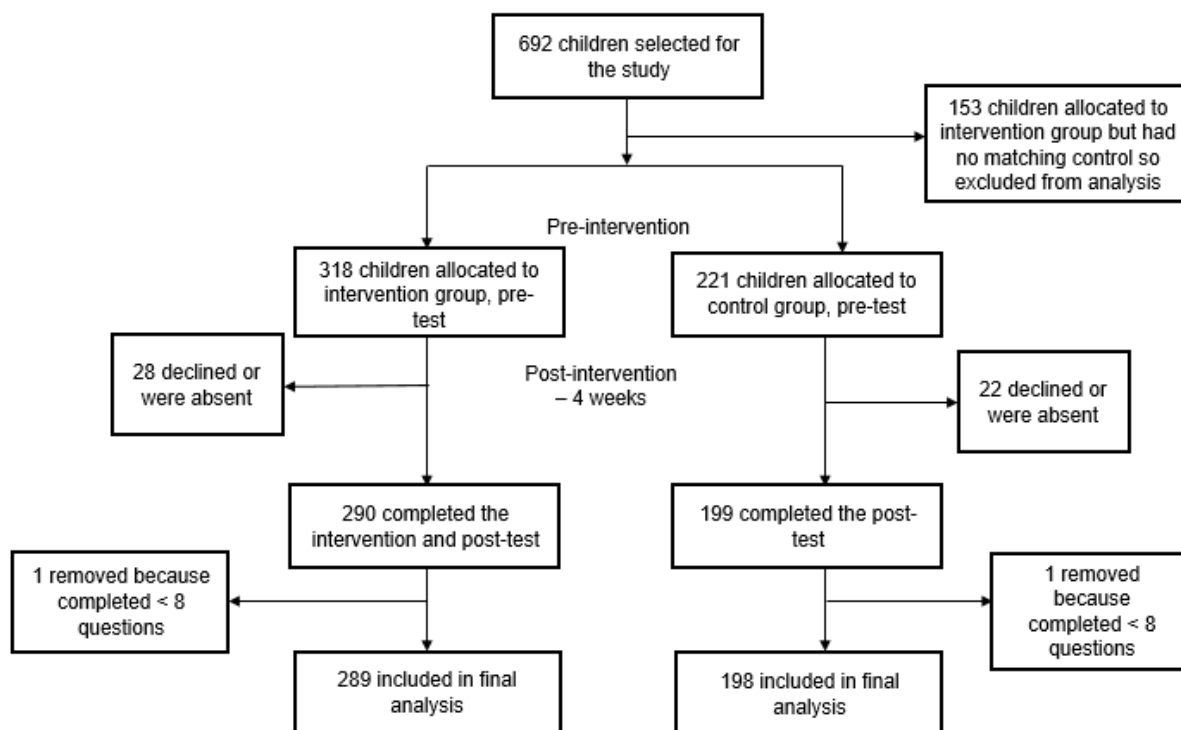
Variable	Control Group (n=221)	Intervention Group (n=318)
<i>Participant Demographics</i>		
Girls, %	57.5	51.1
Race, %		
Black, NH	11.3	4.4
Hispanic	74.7	82.4
Other, NH	8.6	9.7
White, NH	5.4	3.4
Grade, %		
Grade 3	30.8	34.0
Grade 4	28.5	32.7
Grade 5	40.7	33.3
<i>School Demographics^b</i>		
Number of schools	3	3
Average school size	470	500
Average % Black	23.7	11.1
Average % White	3.1	5.4
Average % Hispanic	71.4	81.7
Average % of students <i>at risk</i> ^b	81.4	84.3

^aSome percentages do not total 100 because of rounding^bBased on 2018 Texas Education Agency Data^cStudents at risk represent a student at-risk of dropping out of school based on Texas Education Agency definitions (Texas Education Agency, 2010).

Table 2. Multilevel Linear Regression Analyses on Vignette-Based Knowledge Scores for Play it Safe! (Fixed Effects)

Predictor	Estimate	Standard Error	95% CI Lower	95% CI Upper	P-value
Group	-0.82	0.61	-2.53	0.88	0.25
Time	0.87	0.36	0.17	1.57	0.02
Gender (Males is ref)	0.89	0.17	0.56	1.23	<0.01
Race (Black, NH as ref)					
Hispanic	-0.51	0.35	-1.20	0.18	0.15
Other, NH	-0.48	0.45	-1.36	0.40	0.28
White, NH	-0.69	0.52	-1.70	0.33	0.19
Grade (Grade = 3 is ref)					
Grade 4	2.87	0.71	1.48	4.26	<0.01
Grade 5	4.77	0.68	3.43	6.11	<0.01
Group X Time	1.30	0.34	0.64	1.96	<0.01
Grade X Time					
Grade 4 X Time	-0.39	0.41	-1.20	0.42	0.35
Grade 5 X Time	-0.94	0.40	-1.73	-0.16	0.02
Grade X Group					
Grade 4 X Group	-0.85	0.44	-1.70	0.01	0.05
Grade 5 X Group	-1.04	0.42	-1.86	-0.21	0.01

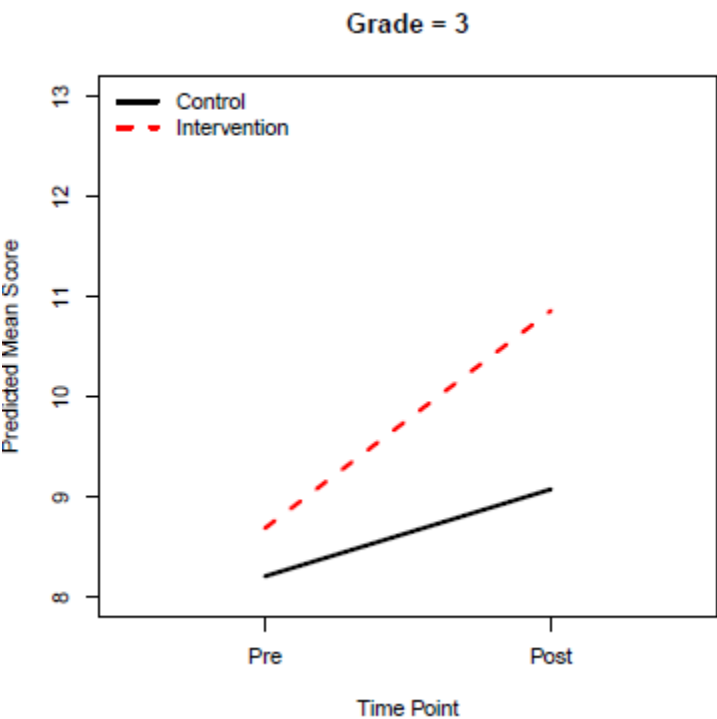
Figure 1. CONSORT diagram for study participation



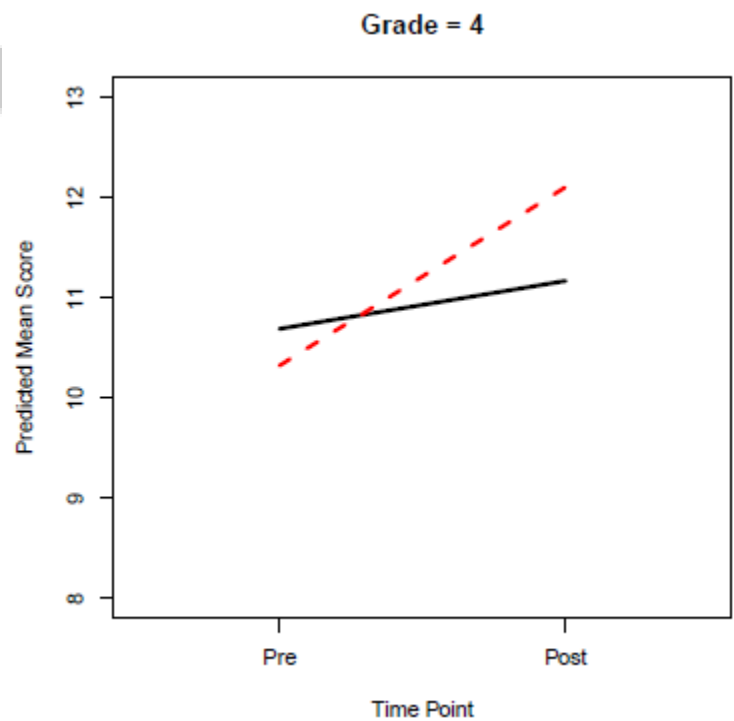
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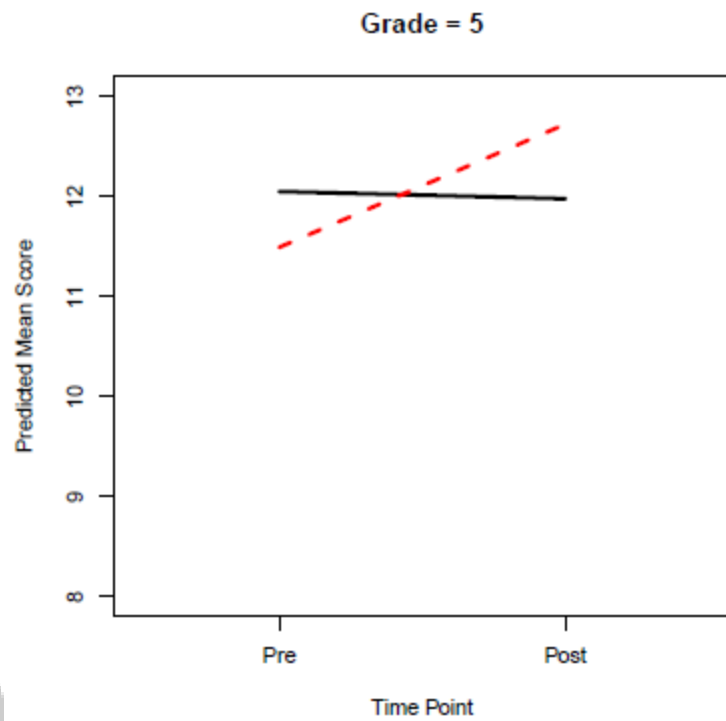
Figure 2. Predicted mean vignette-based knowledge score for Play it Safe by grade
A



B



C



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Supplemental Table 1. Proportion of Participants in Grade 3 Correctly Responding to Vignette-Based Knowledge Questions for Play it Safe by Time and Group

Vignette/Question	Correct Response	Skills	% Correct Control Pre-Test	% Correct Control Post-Test	% Correct Interv. Pre-Test	% Correct Interv. Post-Test
<i>Vignette 1. Jose's dad told him to not roller skate in the house. One day, Jose skated in the house and knocked over a cup. When Jose's dad came home, he got mad and hit him on the back. That left a big bruise and it hurt for a few days.</i>						
1.1 Jose's dad gave him:	an unsafe touch	Recognize	80.0%	81.7%	87.0%	95.0%
1.2 Jose should:	tell the school nurse	Report	38.3%	45.0%	34.0%	58.0%
1.3 Jose's bruise was:	his dad's fault	Recognize	33.3%	31.7%	23.0%	39.0%
<i>Vignette 2. Kim's neighbor Sam watches Kim after school. Kim likes to try on outfits with Sam. One day, Sam took pictures of Kim in her outfits. Sam took pictures when Kim was changing as a joke.</i>						
2.1 Kim should:	tell Sam not to take pictures	Respond	66.7%	63.3%	72.0%	88.0%
2.2 After Sam took the pictures, he told Kim to keep it a secret. Kim should:	tell her grown-ups about the pictures	Report	48.3%	58.3%	55.0%	85.0%
<i>Vignette 3. May played tag in the pool with her Uncle Troy. He rubbed May on the bottom of her bathing suit three times.</i>						
3.1 May should:	say "No" when Uncle Troy rubs her	Respond	78.3%	80.0%	71.0%	91.0%
3.2 Next, May should:	get away from Uncle Troy	Respond	71.7%	71.7%	62.0%	85.0%
3.3 Then May should:	tell an adult she trusts about the rubbing	Report	66.7%	71.7%	62.0%	79.0%
3.4 Uncle Troy touched May:	on her private parts	Recognize	56.7%	68.3%	46.0%	75.0%
<i>Vignette 4. Last year, Lynne rode on the bus for a field trip. On the bus, a parent sat next to Lynne. He kept his hand on her lap during the ride. Lynne felt scared but did not tell anyone. Now she does not want to go on the next field trip.</i>						
4.1 Lynne should:	tell a trusted adult about the touch	Report	70.0%	81.7%	75.0%	82.0%
4.2 Lynne chose to tell her bus driver and mom, but they didn't believe her. Lynne should:	tell a teacher about it.	Report	58.3%	61.7%	67.0%	83.0%
4.3 The touches were:	the parent's fault	Recognize	31.7%	40.0%	41.0%	51.0%
<i>Vignette 5. Logan likes to play games online. While playing online, he met a new friend Paul who said he lived close to Logan. Paul asked for Logan's address so that he could come play games with him.</i>						
5.1 Logan should:	tell his grown-ups about his new friend	Report	40.0%	40.0%	47.0%	52.0%
5.2 Logan asked how old he was. Paul said he was nine and told Logan they go to the same school. Now that Paul told him this:	Logan should not trust Paul because he might be pretending to be someone else	Recognize	60.0%	75.0%	68.0%	74.0%

Supplemental Table 2. Proportion of Participants in Grade 4 Correctly Responding to Vignette-Based Knowledge Questions for Play it Safe by Time and Group

Vignette/Question	Correct Response	Skills	% Correct Control Pre-Test	% Correct Control Post-Test	% Correct Interv. Pre-Test	% Correct Interv. Post-Test
<i>Vignette 1. Jose's dad told him to not roller skate in the house. One day, Jose skated in the house and knocked over a cup. When Jose's dad came home, he got mad and hit him on the back. That left a big bruise and it hurt for a few days.</i>						
1.1 Jose's dad gave him:	an unsafe touch	Recognize	84.5%	82.8%	81.9%	98.9%
1.2 Jose should:	tell the school nurse	Report	46.6%	51.7%	42.6%	69.1%
1.3 Jose's bruise was:	his dad's fault	Recognize	32.8%	44.8%	35.1%	53.2%
<i>Vignette 2. Kim's neighbor Sam watches Kim after school. Kim likes to try on outfits with Sam. One day, Sam took pictures of Kim in her outfits. Sam took pictures when Kim was changing as a joke.</i>						
2.1 Kim should:	tell Sam not to take pictures	Respond	82.8%	84.5%	81.9%	92.6%
2.2 After Sam took the pictures, he told Kim to keep it a secret. Kim should:	tell her grown-ups about the pictures	Report	79.3%	82.8%	78.7%	91.5%
<i>Vignette 3. May played tag in the pool with her Uncle Troy. He rubbed May on the bottom of her bathing suit three times.</i>						
3.1 May should:	say "No" when Uncle Troy rubs her	Respond	93.1%	89.7%	92.6%	98.9%
3.2 Next, May should:	get away from Uncle Troy	Respond	79.3%	84.5%	87.2%	97.9%
3.3 Then May should:	tell an adult she trusts about the rubbing	Report	79.3%	84.5%	77.7%	93.6%
3.4 Uncle Troy touched May:	on her private parts	Recognize	72.4%	82.8%	66.0%	84.0%
<i>Vignette 4. Last year, Lynne rode on the bus for a field trip. On the bus, a parent sat next to Lynne. He kept his hand on her lap during the ride. Lynne felt scared but did not tell anyone. Now she does not want to go on the next field trip.</i>						
4.1 Lynne should:	tell a trusted adult about the touch	Report	84.5%	87.9%	87.2%	92.6%
4.2 Lynne chose to tell her bus driver and mom, but they didn't believe her. Lynne should:	tell a teacher about it.	Report	74.1%	79.3%	79.8%	95.7%
4.3 The touches were:	the parent's fault	Recognize	62.1%	65.5%	48.9%	66.0%
<i>Vignette 5. Logan likes to play games online. While playing online, he met a new friend Paul who said he lived close to Logan. Paul asked for Logan's address so that he could come play games with him.</i>						
5.1 Logan should:	tell his grown-ups about his new friend	Report	58.6%	51.7%	55.3%	56.4%
5.2 Logan asked how old he was. Paul said he was nine and told Logan they go to the same school. Now that Paul told him this:	Logan should not trust Paul because he might be pretending to be someone else	Recognize	79.3%	79.3%	72.3%	77.7%

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Supplemental Table 3. Proportion of Participants in Grade 5 Correctly Responding to Vignette-Based Knowledge Questions for Play it Safe by Time and Group

Vignette/Question	Correct Response	Skills	% Correct Control Pre-Test	% Correct Control Post-Test	% Correct Interv. Pre-Test	% Correct Interv. Post-Test
<i>Vignette 1. Jose's dad told him to not roller skate in the house. One day, Jose skated in the house and knocked over a cup. When Jose's dad came home, he got mad and hit him on the back. That left a big bruise and it hurt for a few days.</i>						
1.1 Jose's dad gave him:	an unsafe touch	Recognize	91.2%	90.0%	91.6%	94.7%
1.2 Jose should:	tell the school nurse	Report	50.0%	61.2%	50.5%	67.4%
1.3 Jose's bruise was:	his dad's fault	Recognize	50.0%	52.5%	48.4%	64.2%
<i>Vignette 2. Kim's neighbor Sam watches Kim after school. Kim likes to try on outfits with Sam. One day, Sam took pictures of Kim in her outfits. Sam took pictures when Kim was changing as a joke.</i>						
2.1 Kim should:	tell Sam not to take pictures	Respond	93.8%	90.0%	93.7%	97.9%
2.2 After Sam took the pictures, he told Kim to keep it a secret. Kim should:	tell her grown-ups about the pictures	Report	85.0%	90.0%	90.5%	97.9%
<i>Vignette 3. May played tag in the pool with her Uncle Troy. He rubbed May on the bottom of her bathing suit three times.</i>						
3.1 May should:	say "No" when Uncle Troy rubs her	Respond	96.2%	100.0%	98.9%	97.9%
3.2 Next, May should:	get away from Uncle Troy	Respond	96.2%	93.8%	93.7%	97.9%
3.3 Then May should:	tell an adult she trusts about the rubbing	Report	91.2%	90.0%	87.4%	94.7%
3.4 Uncle Troy touched May:	on her private parts	Recognize	81.2%	88.8%	69.5%	91.6%
<i>Vignette 4. Last year, Lynne rode on the bus for a field trip. On the bus, a parent sat next to Lynne. He kept his hand on her lap during the ride. Lynne felt scared but did not tell anyone. Now she does not want to go on the next field trip.</i>						
4.1 Lynne should:	tell a trusted adult about the touch	Report	91.2%	88.8%	96.8%	98.9%
4.2 Lynne chose to tell her bus driver and mom, but they didn't believe her. Lynne should:	tell a teacher about it.	Report	87.5%	88.8%	83.2%	93.7%
4.3 The touches were:	the parent's fault	Recognize	72.5%	75.0%	55.8%	68.4%
<i>Vignette 5. Logan likes to play games online. While playing online, he met a new friend Paul who said he lived close to Logan. Paul asked for Logan's address so that he could come play games with him.</i>						
5.1 Logan should:	tell his grown-ups about his new friend	Report	73.8%	63.8%	60.0%	66.3%
5.2 Logan asked how old he was. Paul said he was nine and told Logan they go to the same school. Now that Paul told him this:	Logan should not trust Paul because he might be pretending to be someone else	Recognize	88.8%	85.0%	85.3%	83.2%

Supplemental Table 4. Multilevel Linear Regression Analyses on Vignette-Based Knowledge Scores for Play it Safe! Sensitivity Analysis (Fixed Effects) (n=692)

Predictor	Estimate	Standard Error	95% CI Lower	95% CI Upper	P-value
Group	-0.89	0.58	-2.37	0.59	0.18
Time	0.87	0.33	0.22	1.52	0.01
Gender (Males is ref)	0.90	0.14	0.61	1.18	<0.01
Race (Black, NH as ref)					
Hispanic	-0.42	0.32	-1.05	0.21	0.19
Other, NH	-0.61	0.37	-1.34	0.12	0.10
White, NH	-0.32	0.37	-1.06	0.41	0.39
Grade (Grade = 3 is ref)					
Grade 4	2.84	0.63	1.60	4.08	<0.01
Grade 5	4.82	0.61	3.61	6.02	<0.01
Group X Time	1.38	0.31	0.78	1.98	<0.01
Grade X Time					
Grade 4 X Time	-0.36	0.36	-1.06	0.34	0.31
Grade 5 X Time	-0.97	0.35	-1.66	-0.29	0.01
Grade X Group					
Grade 4 X Group	-0.73	0.40	-1.52	0.05	0.07
Grade 5 X Group	-0.96	0.39	-1.72	-0.20	0.01

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