

## Evaluation of a Safety Awareness Group Program for Adults with Intellectual Disability

Rosemary B. Hughes, PhD (corresponding author)  
Senior Research Scientist, Rural Institute for Inclusive Communities  
Research Professor, Department of Psychology  
University of Montana  
52 Corbin Hall  
Missoula, Montana, 59812, USA  
Email: rosemary.hughes@mso.umt.edu

Susan Robinson-Whelen, PhD  
TIRR Memorial Hermann  
Baylor College of Medicine  
Houston, Texas, 77030, USA

Leigh Ann Davis, MSSW, MPA  
Criminal Justice Initiatives of The Arc  
Washington, DC, 20006, USA

James Meadours  
League of Self Advocates  
San Antonio, Texas, 78209, USA

Olivia Kinkaid  
Ravalli People First  
Hamilton, Montana, 59840, USA

Lisa Howard  
Ravalli People First  
Hamilton, Montana, 59840, USA

Mary Millin  
Summit Independent Living Center  
Hamilton, Montana, 59840, USA

Michelle Schwartz, MA  
SAFE - Disability Services  
Austin, Texas, 78760, USA

Katherine E. McDonald, PhD  
Syracuse University  
Syracuse, New York, 13235, USA

And,

The Safety Project Consortium: *Principal Investigator*: Rosemary B. Hughes; *Co-Investigator*:

Susan Robinson-Whelen; *Research Associate*: Rebecca Goe; *Community Advisory Board Members*: Jason Billehus, Andrea Heist, Lisa Howard, Tina Hunt, Olivia Kincaid, and Kelly Valentine; *National Advisory Board Members*: Katie Arnold, Eleanor Bailey, Michael Bailey, Lisa Cesal, Leigh Ann Davis, and James Meadours; *Consultants*: Katherine McDonald, Mary Millin, Terri O'Hare, Michelle Schwartz, and Paul Swank; *Research Assistants*: Tequilla Carnell, Kimmie Garner, Katie Kunkleman, Trinity Martel, Kaycie Murphy, and Cady Simpson.

#### Acknowledgments

This study was funded by the National Institute on Disability, Independent Living, and Rehabilitation Research, Grant Award #901F0057.

Portions of this manuscript were presented at the annual meetings of the Association of University Centers on Disabilities in 2016 and 2018, the annual meeting of the Texas Psychological Association in 2016, and the Association of Programs for Rural Independent Living in 2017.

## Evaluation of a Safety Awareness Group Program for Adults with Intellectual Disability

## Abstract

Using a participatory research approach, we enlisted 12 U.S. Centers for Independent Living (CILs) to recruit and enroll 170 adults with intellectual disability to be randomized to either *The Safety Class*, an abuse prevention group program, or usual care. Participants were asked to complete pre, post, and three-month follow-up questionnaires. CIL staff members facilitated the eight-session, interactive program. Quantitative and qualitative findings suggest that participation in a brief safety program may improve safety protective factors among men and women with intellectual disability. *The Safety Class* serves as one model for delivering an abuse prevention and education intervention to adults with significant safety needs but extremely limited access to relevant community resources.

Key words: intervention, abuse, violence, safety, intellectual disability

### Evaluation of a Safety Awareness Group Program for Adults with Intellectual Disability

People with intellectual disability experience disproportionately high levels of abuse (Harrell, 2017; Horner-Johnson & Drum, 2006; Hughes, Lund, Gabrielli, Powers, & Curry, 2011; Hughes et al., 2012), a disparity due, in part, to a lack of education about sexuality, abuse and safety; the failure of service systems to meet their unique safety needs; and social circumstances that increase their likelihood of being victimized (Fitzsimons, 2009; Khemka & Hickson, 2017; McCarthy, 2017; Petersilia, 2001; White, Holland, Marsland, & Oakes, 2003). According to a report by National Public Radio (2018) examining data from the Department of Justice, people with intellectual disability experience a seven times higher rate of sexual assault than people without disabilities. One approach to reducing this disparity is to equip people with intellectual disability with the knowledge, awareness, and skills to recognize and respond to abusive relationships and situations.

Although there is a notable body of research on behavioral and cognitive skill-based abuse prevention programs for people with intellectual disability, most programs address the prevention of sexual assault only, include only women, and have methodological weaknesses such as a lack of randomized controlled designs, follow-up evaluations, and/or adequate sample sizes (see reviews by Barger, Wacker, Macy, & Parish, 2009; Bruder & Kroese, 2005; Doughty & Kane, 2010; Lund, 2011; Mahoney & Poling, 2011; McEachern, 2012; Mikton, Maguire, & Shakespeare, 2014). Over the past two decades, Khemka, Hickson, and colleagues have advanced the field considerably by focusing on the prevention of diverse forms of abuse, using experimental designs, and including both male and female participants. Nevertheless, their studies to date have been limited to relatively small sample sizes, single geographic areas, and an

emphasis on decision-making skills (for summaries of their research in this area, see Hickson, Khemka, Golden, & Chatzistyli, 2015; and Khemka & Hickson, 2017).

We ([REDACTED]) previously developed and conducted a randomized, controlled evaluation of a safety awareness program for women with diverse disabilities ([REDACTED]). In close partnership with people with intellectual disability, we subsequently adapted that program to meet the safety protective needs of both men and women with intellectual disability while concurrently expanding upon the foundations noted in the relevant literature cited above ([REDACTED]). For example, our program is the first known to adhere to a robust community-based participatory (CBPR) approach in which people with intellectual disability were a valued part of the research team, sharing power and decision-making in all phases of the process with appropriate accommodations and supports.

The purpose of the current study was to examine the efficacy of that program, called *The Safety Class (TSC)*, in a randomized, controlled trial with a national sample of adults with intellectual disability. We hypothesized that *TSC* participants would report greater increases on safety and abuse knowledge, safety skills, and safety self-efficacy immediately following the intervention and three months after the intervention ended.

## Method

### Study Design

To examine the efficacy of *TSC*, we partnered with 12 Centers for Independent Living (CILs) across the U.S. The CILs recruited and enrolled 184 adults with intellectual disability. We randomly assigned participants to either the Control group (i.e., care as usual defined as access to routine CIL services), or *TSC* plus access to routine CIL services. The University of [REDACTED] Institutional Review Board approved the study.

## Procedures

As fully described in our article on the development of *TSP*, we worked in close partnership with people with intellectual disability throughout the study in keeping with our community-based participatory approach ( [REDACTED] ). For example, throughout the three years of the project, we regularly convened local and national Community Advisory Boards (CABs) involving a total of nine advisors with intellectual disability who met on a regular basis with the investigative staff. The local CAB met monthly, face-to-face, working to ensure that the content, language, images, and format of *TSP* materials were relevant and accessible to people with intellectual disability. The national board met quarterly by teleconference to review the work of the CAB and monitor overall progress on the project. Our CAB members have also been involved as co-presenters and co-authors in our dissemination activities including the current article. (For more detailed information, see [REDACTED] ).

To implement the study, we selected three rural- and nine urban-located CILs based on their self-described interest, capacity to recruit participants with intellectual disability, adequate space to convene groups, as well as geographic and demographic diversity. Each CIL director signed an agreement to comply with project requirements such as recruiting participants and appointing two staff members to serve as co-facilitators and complete a two-day interactive group online training program on the curriculum, research ethics, procedures, protocol fidelity, consent process, and mandatory reporting of abuse. At least one facilitator of each facilitator dyad had prior experience in facilitating groups of people with disabilities. We instructed facilitators to start and end sessions on time, take attendance at every session, follow up with participants who missed sessions, neither add information not included in the manual nor bring in outside speakers, and contact the PI if/when any questions/problems arose. We supplied all materials needed to implement the intervention such as handouts, recruitment flyers, certificates

of course completion, resources for help with abuse, a 388-page bound scripted facilitator manual for each of the 26 facilitators, and PowerPoint presentations for each session. In addition, we mailed out pre- post- and follow-up questionnaires, recruitment flyers and scripts, contact information forms, photo authorization forms, and attendance forms. Throughout the study, we met regularly with the facilitators for updates, procedure clarification, and opportunities for them to share mutual experiences and problem-solving techniques. All facilitators completed the University ██████'s online protection of human subjects course and signed a confidentiality agreement.

Each CIL recruited, screened, and enrolled up to 22 participants by posting flyers seeking volunteers for a research study on personal safety and announcing the study at the CIL, community events, and local Arcs. CIL staff invited each interested individual to participate in a screening interview. If the person met basic eligibility criteria, the CIL interviewer read aloud the informed consent form written in plain language, responded to questions, and administered a comprehension of consent test (CoC). The CoC evaluated the person's ability to give consent by assessing their understanding of the purpose, requirements, random assignment, and voluntariness of the study. Only those who met all other eligibility criteria and were interested in participating were assessed for comprehension. Of these, only one person was determined to be ineligible based on the CoC alone; all others signed the consent form and completed the pre-test. All received information on abuse-related resources.

Using SPSS, we randomly assigned participants within each CIL to *TSC* or the Control group. CIL facilitators telephoned participants about their group assignment and provided the class schedule to *TSC* participants. All participants completed questionnaires via individual interviews at baseline (pre-test), immediately after the intervention ended (post-test), and at the

three-month follow-up. Participants received a cash payment of \$20 for each assessment completed. Control and intervention group members had access to the regular services of their CIL throughout the study. Although we encouraged the sites to offer TSP to the Control group after the completion of the three-month follow-up, we were unable to offer additional financial resources for them to do so and do not know how many of the centers did so before the study ended.

## Participants

**Participant Eligibility.** Community-living (including those living in community-based group or adult foster homes) adults were eligible who: 1) were at least 18 years of age, 2) had an intellectual disability as determined by a series of questions (e.g., had an individualized education program (IEP), had been in special education, were told they had an intellectual disability or mental retardation by schools, doctor, etc.), 3) demonstrated ability to give informed consent, and 4) could communicate in English at a level needed to understand the materials and answer in-person questions with accommodations provided. Individuals living in community-based group or adult foster homes were eligible. Exclusion criteria included self-reported: 1) residence in an institution, 2) current drug or alcohol misuse, 3) active suicidality, 4) having a guardian, and 5) plans to move from current location within the subsequent six months. Assistance in locating services were provided when indicated. Abuse experience was not an eligibility requirement.

**Study Enrollment, Randomization, and Completion.** As shown in Figure 1, the 12 CILs completed screening interviews with 207 individuals of whom 190 were eligible. Seventeen were ineligible due to: 1) legal guardianship ( $n = 8$ ), 2) inability to confirm intellectual disability ( $n = 4$ ), 3) inability to demonstrate comprehension of consent ( $n = 1$ ), or 4) multiple reasons ( $n = 4$ ). Six declined participation; thus, a sample of 184 completed the consent

process and the pre-test and were randomized to either *TSC* ( $n = 95$ ) or the Control group ( $n = 89$ ).

The primary analyses involved change over time in response to the intervention. Therefore, we conducted analyses on data from participants completing at least one post-test assessment. As shown in Figure 1, post-intervention data from 170 participants were included in our Intent-to-Treat (ITT) analyses, which included all participants regardless of their level of intervention participation. We conducted ITT analyses in order to reduce the risk of bias that can occur when only analyzing the subset of participants who fully participated and engaged in the intervention (McCoy, 2017). We also conducted Treatment-on-the-Treated (TOT) analyses on only those completing at least half of the intervention sessions. We thought this was important because 19 *TSC* participants attended no sessions and 12 attended three or fewer sessions due to reasons such as transportation issues, death in the family, and schedule conflicts.

**Sample Description.** The sample included 170 participants (79 men, 89 women, and 2 who did not disclose gender) ranging from 18 to 67 years of age, with a mean age of 33.17 ( $SD = 13.20$ ) years. The majority were White, and a quarter were Hispanic. Although all had an intellectual disability, many also had other disabilities. Most used a personal assistant/support person, and nearly one-fifth used at least one assistive device. Age was the only characteristic on which the two samples differed (the Control group was somewhat older than the *TSC* group). See Table 1 for details.

### ***The Safety Class Intervention Program***

As described in our earlier publication ( ), we used a participatory research approach to partner closely with both national and local Community Advisory Boards (CABs) comprised of people from the intellectual disability community. As fully described in

our recent publication ( [REDACTED] ), *TSP* is an interactive, structured, eight-session, weekly face-to-face group program. To develop *TSP*, we modified our original safety awareness program for women with disabilities to be optimally accessible to people with intellectual disability. For example, we used a slower pace; repetition of class guidelines and key topics; plain language; gender inclusive language; additional images; role-playing, games, and other features to provide optimal accessibility to people with intellectual disability. *TSP* topics included communication skills, healthy boundaries, nature and types of abuse, relaxation training, respect in relationships, warning signs of abuse, safety in relationships, safety planning, coping with trauma, help seeking, and disability rights. Facilitators followed detailed scripts in our 388-page facilitator manual along with PowerPoint slides for each session. Our feasibility study ( [REDACTED] ) ensured that *TSC* was ready for full-scale implementation.

### **Measures**

We collected demographics and disability-related information and lifetime abuse experience at pre-test. We assessed safety-related factors to compare change over time in *TSC* and Control group participants at pre-test, post-test, and follow-up. Due to the lack of measures standardized on this population, we created measures based on the literature and advisory/consultant input. We first generated a list of possible items which were then modified, clarified, and reduced to circumvent overlap. We aimed to provide a range of examples and avoid redundancy. Importantly, we gave careful consideration to using plain language, simplifying response options, and limiting response options to yes/no or true/not true. For most items, participants could choose “do not know.” Our iterative process involved several months with multiple revisions of items and cognitive interviews with our CAB. We documented difficulties with and solutions for increasing understandability. We made the recommended

modifications, reviewed the revisions with the CAB, and continued the process until the CAB had reached a consensus on revisions at which time the researchers finalized each measure.

When administering measures, interviewers read each measure out loud, instructing respondents to say or point to the answer on the answer card, or convey their answers in whatever way was best for them.

We assessed *Lifetime Abuse Experience* at pre-test by changing items on the Abuse Assessment Screen-Disability screen (McFarlane, Hughes, Nosek, Groff, Swedlund, & Mullen, 2001) to assess lifetime abuse and by adding an emotional abuse item. Our scale **assessed four types of abuse** including emotional **(one item)**, physical **(one item)**, sexual **(one item)**, and disability-related abuse **(two items)**. **The two disability-related abuse items** (withholding of necessary adaptive equipment or essential care) **were combined in our scoring such that endorsement of either item was considered endorsement of disability-related abuse**. Scores range from 0 to **4**. To offer anonymity, we asked respondents to mark their responses on an answer card (one card per question) and seal the cards in an envelope marked with only their ID number.

### **Safety and Abuse Knowledge.**

**The *Knowledge of Healthy Relationships* measure includes five yes/no/I do not know questions assessing their understanding of good, close relationships. The score range is 0 to 5, and the Cronbach's alpha is .56. One example is: "In a good, close relationship, do people always agree?"**

The *Key Facts About Abuse and Safety* measure includes eight items about abuse with true/false/don't know response options, resulting in a score range of 0 to 8, **with an internal consistency reliability (Cronbach's alpha) of .58**. An example is: "Abusers are usually strangers or people you do not know." The *Knowledge About Abuse* measure includes eleven short stories

to which respondents indicate yes/no/don't know as to whether abuse is taking place. The score range is 0 to 11, and the Cronbach's alpha is .70. An example is: "Your girlfriend or boyfriend makes you have sex with them when you do not want to." The *Knowledge of Warning Signs* measure involves six true/false/don't know questions about behaviors suggesting potential abuse. Scores range from 0 to 6, and the Cronbach's alpha is a meager .33. One example is: "They throw things when they get angry."

### **Safety Skills.**

The *Safety and Communication Skills* measure includes six situations after which respondents indicate what they would do to be safe, stop, or avoid abuse by choosing the best of three response options. Scores range from 0 to 6, and the Cronbach's alpha is .56. An example is: "What is the best thing to do if someone at the bus stop sits too close to you and makes you feel uncomfortable?" Response options are "push them away," "move away where you feel safer," or "yell loudly to scare them away." *Safety-Planning Skills* are assessed by asking, "If you are being hurt at home, what should you take with you if you have to leave to be safe?" The interviewer recorded participant responses, and the research team coded the responses as representing one of nine categories of items that would be helpful or important to take (e.g., important documents, medications). The *Safety-Planning Skills* score then represented a count of the number of categories mentioned, with scores ranging from 0 to 9. This strategy was used so that scores were not inflated by noting inappropriate items (e.g., my refrigerator) or by noting many individual items within the same category (e.g., socks, shoes, pants).

### **Safety Self-Efficacy.**

The *Safety-related Self-Efficacy* measure includes four yes/no/not sure questions assessing general perception that the individual knows ways to stay safe from abuse. The score

range is 0 to 4, and the Cronbach's alpha is .61. An example is: "Do you know how to keep yourself safe in relationships?"

### **Participant Feedback.**

At the follow-up interview, we asked *TSC* participants to evaluate *The Safety Class* by answering three open-ended questions about what they liked, what they disliked, and what was the most important thing they learned in the class. We also asked them to rate the class as a whole using a 3-point scale, whether they learned new things about safety and abuse, if they would recommend the class to others, whether they thought the class would help them be safe, and what they thought about the difficulty level of the program (e.g., "too hard", "too easy", "about right").

### **Statistical Analysis Plan**

We used repeated measures mixed models in order to retain cases with missing data. We examined pre-test to post-test results separately from post-test to follow-up results due to the complexity of the dataset, which required evaluating/interpreting potential quadratic models and considering site differences. The intervention trial was implemented at 12 Centers for Independent Living (CILs) that varied in terms of the time used both for recruitment and collection of follow-up data; therefore, we examined results from pre-test to post-test separately from those of the post-test to follow-up to consider/control for any CIL differences. In our primary analyses, we included all study participants randomized to the two conditions using Intent-to-Treat (ITT) analyses. We then repeated the analyses including only those who attended at least half (four or more) of the *TSC* classes. The second set of analyses are referred to as the Treatment-on-the-Treated (TOT) analyses.

## **Results**

### **Lifetime Abuse Experience of Study Participants**

Most participants ( $n = 102$ , 60.0%) reported past abuse including emotional (48.8%), physical (25.3%), sexual (21.2%), and disability-related abuse (18.8%). These rates are likely underestimates as some answered "I do not want to say" or "I do not know" or they did not answer at all. These non-response rates ranged from 10.6% to 12.4% for the four types of abuse assessed. *TSC* and Control groups did not differ significantly in past abuse experience (53.9% vs. 46.1%;  $\chi^2 = 1.57$ ,  $df = 1$ ,  $p = .21$ ) nor did they differ significantly in the average number of types of abuse reported (range 0-4; *TSC Mean* = 1.16,  $SD = 1.17$ ; Control, *Mean* = 1.12,  $SD = 1.21$ ;  $t = -0.26$ ,  $df = 168$ ,  $p = .80$ ).

### **Examining the Efficacy of *The Safety Class***

#### **Safety and Abuse Knowledge.**

##### ***Knowledge About Healthy Relationships.***

*Pre-test to post-test.* In the ITT analysis of pre- and post-test data, there was a change over time from pre-test to post-test that varied as a function of group assignment (*TSC* versus Control). Thus, there was both a significant effect of assessment period (pre- versus post-test;  $F [1, 132] = 16.98$ ,  $p < .001$ ) and a significant group by assessment effect ( $F [1, 132] = 12.07$ ,  $p < .001$ ). (See Figure 2.) Although not significant at pre-test ( $t [132] = 1.26$ ,  $p = .21$ ), the *TSC* group scored significantly higher on the Knowledge of Healthy Relationships scale at post-test ( $t [132] = 2.42$ ,  $p = 0.02$ ). The CIL site interaction terms (i.e., CIL by group, CIL by assessment, and three-way CIL by group by assessment) were not significant. When those terms were removed from the model, assessment period (pre- versus post-test;  $F [1, 143] = 16.98$ ,  $p < .001$ ) and group by assessment, reflecting group change from pre- to post-test ( $F [1, 143] = 14.29$ ,  $p < 0.001$ ), remained significant. When repeated using TOT analyses (including only *TSC* participants who

attended at least half of the *TSC* classes), results were similar. There was still a significant effect of assessment period ( $F [1, 128] = 17.55, p < .001$ ) and a significant group by assessment effect ( $F [1, 128] = 14.96, p < .001$ ). Again, although not different at pre-test, the *TSC* group had significantly higher scores on Knowledge of Healthy Relationships than Controls at post-test ( $t [131] = 2.91, p = 0.001$ ).

*Post-test to follow-up.* In the ITT analysis of post-test and follow-up data, the CIL and CIL interaction terms were not significant so we dropped those items from the model. In the resulting model, we found a significant group (*TSC* versus Control,  $F [1,139] = 4.05, p = .05$ ) and a significant group by assessment effect ( $F [1,139] = 4.08, p = .04$ ). The *TSC* group's Knowledge of Healthy Relationships score decreased significantly from post-test to follow-up ( $t [139] = 2.27, p = .02$ ) whereas the Control group scores did not change significantly ( $t [139] = 0.61; p = .54$ ). While the groups differed at post-test, they no longer differed significantly at follow-up ( $t [139] = -0.96, p = .34$ ), suggesting that improvements in the *TSC* group were not fully maintained among participants in the larger ITT sample (See Figure 2). Repeating analyses using the TOT sample, we again found a significant group effect ( $F [1,126] = 4.52, p = .04$ ) but the group by assessment interaction was no longer statistically significant ( $F [1,126] = 3.07, p = .08$ ).

### ***Key Facts About Abuse and Safety.***

*Pre-test to post-test.* For the ITT analysis of the Knowledge of Key Facts About Abuse and Safety scale, we found a significant assessment effect (pre- versus post-test;  $F [1,132] = 43.11, p < .001$ ), but no group or group by assessment interaction; thus, the *TSC* group did not show differential improvement over time relative to the Control group. There was a significant CIL by assessment effect ( $F [11,132] = 2.26, p = .01$ ) and a significant CIL by group by

assessment effect ( $F [11,132] = 2.91, p = .001$ ). This indicates that the change in group over time, from pre- to post-test, depended on the CIL. There was a significant difference over time between the *TSC* and Control groups in two of the 12 CILs. In these two CILs, the *TSC* group showed a greater increase from pre- to post-test than the Control group. Results were similar for the TOT analyses, with a similar significant CIL by group by assessment effect ( $F [11,117] = 2.46, p = .008$ ).

*Post-test to follow-up.* Our ITT analyses of post-test and follow-up data yielded a significant group by assessment effect ( $F [1,117] = 6.78, p = .01$ ) and a significant CIL by group by assessment interaction ( $F [1,117] = 1.92, p = .04$ ) which revealed significant group by assessment effects among 3 of the 12 CILs. In one CIL, the Control group significantly declined from post- to follow-up while the *TSC* group increased slightly. In two other CILs, the *TSC* group had significant increases from post- to follow-up compared to a decrease in the Control group. Results of the TOT analysis were similar to the ITT analysis, with a significant CIL by group by assessment interaction effect ( $F [11,104] = 2.08, p = .03$ ). The significantly greater improvement among *TSC* participants relative to Control participants was found in the same three CILs.

#### ***Knowledge about Abuse.***

*Pre-test to post-test.* Using the ITT model, the interaction of CIL and group and the interaction of CIL and assessment (pre- versus post-test) were not significant; thus, we dropped these interactions from the model. In the final model, we found a significant effect for assessment (pre- to post-test;  $F [1, 154] = 21.86, p < .001$ ) and a significant group by assessment interaction ( $F [1,154] = 5.68, p = .01$ ). (See Figure 3.) Results revealed a significant change from pre- to post-test among the *TSC* participants ( $t [143] = -5.01; p < .001$ ) but not among Control

participants ( $t [143] = 1.62; p < .11$ ). However, given that the *TSC* group had slightly lower Knowledge of Abuse scores at pre-test, the two groups did not differ significantly at post-test ( $t [154] = -1.15; p = .25$ ). Results were similar for the TOT analyses in which we found a significant effect of assessment (pre- to post-test;  $F [1, 128] = 19.86, p < .001$ ) and a significant group by assessment interaction ( $F [1,128] = 5.14, p = .03$ ). Again, despite a significant increase in knowledge about abuse in the *TSC* group ( $t [128] = 4.54; p < .001$ ) but not in the Control group ( $t [128] = 1.63; p = .10$ ), the difference in mean scores of the two groups at post-test did not achieve statistical significance ( $t [128] = 1.70; p = .09$ ).

*Post-test to follow-up.* In the ITT analyses of post-test and follow-up data, all of the interactions with CILs were non-significant and dropped from the model. We found a non-significant difference between the *TSC* and Control groups ( $F [1, 128] = 3.43; p = .07$ ). Assessment (post-test versus follow-up;  $F [1, 128] = 0.44; p = .51$ ) and the assessment by group interaction ( $F [1, 128] = 2.70; p = .10$ ) were also non-significant. Although neither group changed significantly from post-test to follow-up in Knowledge About Abuse, the *TSC* group had significantly higher scores at follow-up than the Control group ( $t [128] = 2.41; p = .02$ ) (See Figure 3.). TOT analyses were similar, and the *TSC* group was again found to have higher scores at follow-up than the Control group ( $t [115] = 2.23; p = .03$ ).

### ***Knowledge of Warning Signs.***

*Pre-test to post-test.* Our examination of pre-test and post-test data using the ITT model and controlling for CIL and time between assessments yielded a significant change over time from pre- to post-test ( $F [1,132] = 16.96. p < .001$ ) in scores on the Knowledge of Warning Signs scale; however, the significant effect did not vary by group. There was **not** a significant group effect ( $F [1,132] = 2.14, p = .15$ ) nor was there a significant group by assessment interaction

effect ( $F [1,132] = 1.22, p = .27$ ). Findings were the same when we examined the TOT dataset with only those TSC participants who attended at least half of the sessions.

*Post-test to follow-up.* Examining post-test and follow-up data using the larger ITT sample, we found no significant effects. Neither group ( $F [1, 128] = 0.63, p = .43$ ), assessment ( $F [1, 128] = 0.00, p = .96$ ), nor group by assessment interaction ( $F [1,128] = 0.35, p = .55$ ) terms were significant. The findings were the same when the TOT dataset was analyzed.

### **Safety Skills.**

#### ***Safety and Communication Skills.***

*Pre-test to post-test.* Examining pre- and post-test data using the ITT model, results on the Safety and Communication Skills scale were nearly identical to those of the Knowledge of Warning Signs scale. We found a significant change over time from pre- to post-test ( $F [1,154] = 19.95, p < .001$ ) but the change was similar among groups. We did not find a significant group effect ( $F [1,154] = 0.02, p = .88$ ) nor a significant group by assessment interaction effect ( $F [1,154] = 3.08, p = .08$ ). The findings were the same when we examined the TOT dataset.

*Post-test to follow-up.* Examining post-test and follow-up data, first using the ITT sample, neither group ( $F [1,139] = 1.83, p = .18$ ), assessment ( $F [1,139] = 0.26, p = .61$ ), nor group by assessment interaction ( $F [1,139] = 0.00, p = .95$ ) terms were significant. The findings were the same when the TOT dataset was analyzed.

#### ***Safety Planning Skills.***

*Pre-test to post-test.* Using the ITT analysis of the pre- and post-test data, we found the CIL by group interaction and the three-way interaction of CIL, group, and assessment were not significant, so we dropped these terms from the model. We did find a significant CIL ( $F [11,144] = 2.68, p < .01$ ) and CIL by wave ( $F [11,143] = 2.67, p < .01$ ) effect, so we retained these terms.

The resulting model indicated a significant effect of assessment (pre- versus post-test;  $F [1,144] = 31.50, p < .001$ ) and a significant group by assessment effect ( $F [1,143] = 15.98, p = .001$ ). (See Figure 4.) Results indicated that the Control group did not change significantly from pre- to post-test ( $t [143] = 1.22, p = .22$ ), but the *TSC* group did ( $t [143] = 6.79, p < .001$ ). Results further revealed that the two groups did not differ at pre-test, but they did differ at post-test ( $t [143] = 3.74, p = .001$ ). Examining CIL and CIL by assessment interaction effects more closely, we found that six of the 12 CILs showed significant improvement from pre- to post-test that did not depend on group assignment, indicating that both *TSC* and Control group participants at those CILs showed improvement over time in Safety-Planning Skills. We found similar results in the TOT analyses, again finding significant group by assessment interaction effects, indicating differential improvement in Safety Planning Skills for *TSC* participants and again finding significant CIL by assessment interaction effects, indicating improvement over time regardless of group assignment among those CILs.

*Post-test to follow-up.* Conducting the ITT analysis of the post- and follow-up data, we found the three-way interaction of group, assessment period, and CIL was significant ( $F [11,117] = 1.94, p = .04$ ). Although the group by assessment interaction approached significant ( $F [1,117] = 3.85, p = .052$ ), CIL differences must be considered in interpreting this effect. Examining the three-way interaction term more closely, results revealed that, among two CILs, the Control group increased from post-test to follow-up while the *TSC* group declined. The TOT analyses replicated the findings with the larger ITT analysis.

### **Safety Self-Efficacy.**

#### *Safety-related Self-Efficacy.*

*Pre-test to post-test.* In the ITT analysis of pre- and post-test Safety-related Self-Efficacy, the CIL by assessment and the three-way CIL by group by assessment interactions were not significant and were dropped from the model. In the final model, we found a significant effect of assessment (pre- to post-test;  $F [1, 132] = 14.48, p < .001$ ), CIL ( $F [11,132] = 2.28, p = .014$ ) and CIL by group ( $F [11, 132] = 2.10, p = 0.02$ ). The group by assessment effect approached significance ( $F [1,132] = 3.88 p = .051$ ) (See Figure 5.). Although the *TSC* group increased significantly more from pre- to post-test than the Control group, the two groups were not significantly different at post-test ( $t [132] = 1.47, p = .14$ ) because the *TSC* group was lower at pre-test. Looking more closely at the significant CIL effect revealed that one CIL had a significant group effect ( $F[1, 132] = 9.48; p = 0.0025$ ), although two were close to significance ( $F [1, 132] = 3.89; p = 0.051; F [1,132] = 3.32; p = 0.07$ ). When we repeated these analyses with the TOT sample, our results were consistent with the ITT analyses.

*Post-test to follow-up.* Examining post-test and follow-up data using ITT analyses, we found no significant interactions with CIL. In the resulting model, we found a trend toward a group effect ( $F [1,128] = 3.32, p = .07$ ) but did not find a significant group by assessment interaction ( $F [1,128] = 0.32, p = .57$ ). Comparing the two groups, we found that the *TSC* and Control groups did not differ at post-test ( $t [128] = 1.41, p = .16$ ) or at follow-up ( $t [128] = 1.87, p = .06$ ). In our TOT analysis, we again found no significant effects for any variables; however, the group effect was close to significant ( $F [1, 125] = 3.81, p = .053$ ) in the TOT sample.

### **Participant Satisfaction**

*TSC* participants ( $n = 72$ ) responded to questions asking for their opinions of *TSC* with 94% indicating the class was good or very good, 96% agreeing that they had learned new things about safety and abuse, 96% agreeing that *TSC* would help them be safe, and 88% saying they

would recommend the class to others. Regarding the class difficulty, most said the class was "about right" (65%), with a few indicating that the class was either "too hard" (9%) or "too easy" (20%). When asked what they liked about *TSC*, aspects most often mentioned included learning about safety (49%), the classroom environment (21%), learning new things without being specific (21%), and relationships with other class members (17%). When asked what they did **not** like about *TSC*, participants most often responded that that they liked everything about the class (49%), that the class was too short or they wanted more information (10%), that the class was too long and the content overly redundant (8%), or that they disliked discussing uncomfortable topics (4%). When asked about the most important thing learned, participants identified: things to help them stay safe (51%), communication/assertiveness (22%), relationships (12%), new skills (13%), and disability/personal rights (6%).

### **Discussion**

This study provides empirical support for the imperative to address abuse against people with intellectual disability and offers support for the efficacy of *TSC* in a national sample of people with intellectual disability. Similar to other reports (e.g., Harrell, 2017; National Public Radio, 2018; Petersilia, 2001; Sobsey & Doe, 1991), victimization was highly prevalent in our sample with 60% reporting experience with emotional, physical, sexual, and/or disability-related abuse, which is likely an underestimate as many declined to answer the questions on abuse.

We were encouraged to find evidence that *TSC* participants improved more over time than Control group participants on measures of knowledge of healthy relationships, knowledge about abuse, safety planning skills, and safety-related self-efficacy. There was evidence that gains in knowledge were maintained in some domains (e.g., knowledge about abuse), but gains were not fully maintained on other measures (e.g., knowledge of healthy relationships). We

believe that adding booster sessions or using a reminder system in future iterations of *TSC* may help in maintaining the gains if not resulting in further improvements. In addition, we could consider dividing practice and learning time into multiple shortened sessions versus compressing learning activities into a few sessions. On several measures, both groups demonstrated improved scores over time (e.g., knowledge of warning signs, safety and communication skills). Although we can only speculate on the reason for these findings, we suggest that improvements may have resulted from a) increased comfort with the interview/interviewer which allowed participants to more fully process questions and/or more comfortably share their responses, or b) sharing information learned in *TSC* group with acquaintances in the Control group.

Our method of providing an intervention to community-living people with intellectual disability, offered through community-based organizations and utilizing those organizations' staff as program facilitators, can be seen as a strength and a limitation. In addition to the above noted potential for group contamination, differences between CILs (e.g., culture, demographics, group facilitator experience, access to target populations) likely contributed to differences observed over time on some outcomes. Although these differences complicate the interpretation of findings, our methodology also allows for a closer approximation to real world application of such intervention programs than is possible in more tightly controlled single-site (e.g., Hickson et al., 2015) or laboratory-type (e.g., Lumley et al., 1998 cited in review by Bruder & Kroese, 2005) studies.

Due to the lack of existing appropriate outcome measures available that tap the constructs we sought to measure, we partnered closely with people with intellectual disability to create outcome measures for this study. We incorporated ideas proposed by the literature (e.g., Finlay & Lyons, 2001; Jen-Yi, Krishnasamy, & Der-Thang, 2015) and adhered to methods found

effective in our earlier work ( [REDACTED] ) by using plain language, short statements, easy answer formats, affirmative statements, familiar words, and non-conditional statements. Nevertheless, we were challenged by generating items either so easy to understand that the correct answer was obvious or easy to guess correctly or, alternatively, too difficult for many participants to comprehend. To make items understandable, most of our measures utilized a simple 'yes/no/don't know' or 'true/not true/don't know' response option. The limited response options combined with the limited number of items per measure contributed to measures with very low internal consistency reliabilities and sensitivity to change over time. Moving forward, we recommend additional measurement development to better evaluate the efficacy of *TSC*.

Although this study focused on community-living people with intellectual disability, we acknowledge the need to also provide safety programming to the substantial proportion of institutional-living people with intellectual disability and those with legal guardians whose signature or presence would be required for participation. Broadening the targeted population would necessitate changes such as additional safety precautions, content, scenarios, and role-playing opportunities that incorporate the life experience of people either living in institutions or having guardians who may potentially be an abuser. When asked to identify limitations of the intervention, our CABs recommended amplifying some content areas, including the definition of consent and information on bullying, safety with strangers, texting/sexting, and social media/other Internet safety. There was a consensus among advisors that sexual education should be included in the next iteration of *TSC*.

Despite its limitations, our study contributes significantly to the growing body of research addressing abuse prevention in people with intellectual disability (e.g., Frawley & Bigby, 2014; Hickson, Khemka, Golden, & Chatzistyli, 2015; Khemka & Hickson, 2017; Mazzucchelli, 2001;

Miltenberger et al., 1999; Ward, Atkinson, Smith, & Windsor, 2013). In fact, this study goes beyond the scope of most published studies in terms of sample size, controlled conditions, follow-up, gender-inclusiveness, and **robust** participatory research methods (see reviews by **Barger, Wacker, Macy, & Parish, 2009; Bruder & Kroese, 2005; Doughty & Kane, 2010; Lund, 2011; Mahoney & Poling, 2011; McEachern, 2012; Mikton, Maguire, & Shakespeare, 2014**).

We have provided evidence that community-living people with intellectual disability are capable of participating fully in a randomized, controlled trial and potentially benefit from a structured, optimally accessible, multi-session group program designed to develop knowledge and skills essential to living a life free of violence.

In summary, our study suggests that *TSC* holds promise for increasing safety protective factors among adults with intellectual disability. Future research is needed to determine the extent to which enhancing safety protective factors reduces the risks for future victimization. We acknowledge that, while this individual-level risk reduction is critical, the reduction of actual victimization also demands accompanying focus on primary prevention and changes in societal beliefs and social circumstances that allow or tolerate the victimization of people with intellectual disability.

**Acknowledgements:** We extend our appreciation to the people with intellectual disability who served on our Community Advisory Boards and those who voluntarily participated in the study. We are grateful to the 12 Centers of Independent Living who partnered with us to implement the intervention: ABLE South Carolina, Accessible Resources for Independence, Alliance Center for Independence, Alliance of Disability Advocates, Atlantis Community, Brazoria County Center for Independent Living, Center for Independence of the Disabled-New York, Dayle McIntosh

Center, Lifetime Independence for Everyone, Montana Independent Living Project, San Juan Center for Independence, and Service Center for Independent Life.

## References

- Barger, E., Wacker, J., Macy, R., & Parish, R. (2009). Sexual assault prevention for women with intellectual disabilities: A critical review of the evidence. *Intellectual and Developmental Disabilities, 47*(4), 249-262. doi: 10.1352/1934-9556-47.4.249
- Bruder, C., & Kroese, B. S. (2005). The efficacy of interventions to prevent and protect people with intellectual disabilities from sexual abuse: A review of the literature. *The Journal of Adult Protection, 7*(2), 13-27. doi:10.1108=14668203200500009
- Doughty, A. H., & Kane, L. M. (2010). Teaching abuse-protection skills to people with intellectual, disabilities: A review of the literature. *Research in Developmental Disabilities 31*, 331–337. doi:10.1016/j.ridd.2009.12.007
- Finlay, W. M., & Lyons, E. (2001). Methodological issues in interviewing and using self-report questionnaires with people with mental retardation. *Psychological Assessment, 13*(3), 319-335. PMID: 11556269
- Fitzsimons, N. M. (2009). *Combating Violence and Abuse of People with Disabilities: A Call to Action*. Baltimore: Brookes.
- Frawley, P., & Bigby, C. (2014). “I’m in their shoes”: Experiences of peer educators in sexuality and relationship education. *Journal of Intellectual and Developmental Disability, 39*(2), 167-176. doi: 10.3109/13668250.2014.890701
- Harrell, E. (2017). *Crime Against Persons with Disabilities, 2009-2015 - Statistical Tables*. Washington, DC: U.S. Department of Justice.
- Hickson, L., Khemka, I., Golden, H., & Chatzistyli, A. (2015). Randomized controlled trial to evaluate an abuse prevention curriculum for women and men with intellectual and

developmental disabilities. *American Journal on Intellectual and Developmental Disabilities*, 120(6), 490-503. doi: 10.1352/1944-7558-120.6.490

Horner-Johnson, W., & Drum, C. E. (2006). Prevalence of maltreatment of people with intellectual disabilities: A review of recently published research. *Mental Retardation and Developmental Disabilities*, 12, 57-69. doi: 10.1002/mrdd.20097

Hughes, K., Bellis, M. A., Jones, L., Wood, S., Bates, G., Eckley, L., ... Officer, A. (2012). Prevalence and risk of violence against adults with disabilities: A systematic review and meta-analysis of observational studies. *The Lancet*, 379, 1621-1629. doi:10.1016/S0410-6736(11)61851-5.

Hughes, R. B., Lund, E. M., Gabrielli, J., Powers, L. E., & Curry, M. A. (2011). Prevalence of violence against community-living adults with disabilities: A literature review. *Rehabilitation Psychology*, 56(4), 302-319. doi: 10.1037/a0025620

Hughes, R. B., Robinson-Whelen, S., Goe, R., Schwartz, M., Cesal, L., Arnold, K., ... The Safety Project Consortium. (2018). "I really want people to use our work to be safe" ... Using participatory research to develop a safety intervention for adults with intellectual disability. *Journal of Intellectual Disabilities*. Advance online publication. <https://doi.org/10.1177/1744629518793466>

Jen-Yi, L., Krishnasamy, M., Der-Thanq, C. (2015). Research with persons with intellectual disabilities: An inclusive adaptation of Tourangeau's model. *Alter*, 9(4), 304-316. <https://doi.org/10.1016/j.alter.2015.07.006>

Khemka, I., & Hickson, L. (2017). Empowering women with intellectual and developmental disabilities to resist abuse in interpersonal relationships: Promising interventions and

practices. In A. J. Johnson, J. R. Nelson, & E. M. Lund (Eds.), *Religion, disability, and interpersonal violence* (pp. 67-86). Cham, Switzerland: Springer International Publishing.

Lund, E. M. (2011). Community-based services and interventions for adults with disabilities who have experienced interpersonal violence: A review of the literature. *Trauma, Violence, and Abuse, 12*(4), 171-182. doi: 10.1177/1524838011416377

Mahoney, A., & Poling, A. (2011). Sexual abuse prevention for people with severe developmental disabilities. *Journal of Developmental and Physical Disabilities, 23*(4), 369-376. doi 10.1007/s10882-011-9244-2

Mazzucchelli, T. G. (2001). Feel Safe: A pilot study of a protective behaviours programme for people with intellectual disability. *Journal of Intellectual and Developmental Disabilities, 26*, 115-126. <https://doi.org/10.1080/13668250020054431>

McCarthy, M. (2017). 'What kind of abuse is him spitting in my food?': reflections on the similarities between disability hate crime, so-called 'mate' crime and domestic violence against women with intellectual disabilities. *Disability & Society, 32*(4), 595-600.

McCoy, C. E. (2017). Understanding the intention-to-treat principle in randomized controlled trials. *Western Journal of Emergency Medicine, 18*(6), 1075-1078. doi: 10.5811/westjem.2017.8.35985

McEachern, A. G. (2012). Sexual abuse of individuals with disabilities: Prevention strategies for clinical practice. *Journal of Child Sexual Abuse, 21*(4), 386-398. doi: 10.1080/10538712.2012.675425

McFarlane, J., Hughes, R. B., Nosek, M. A., Groff, J. Y., Swedlund, N., & Mullen, P. D. (2001). Abuse Assessment Screen-Disability (AAS-D): Measuring frequency, type and

perpetrator of abuse toward women with physical disabilities. *Journal of Women's Health and Gender-Based Medicine*, 10(9), 861-866. doi: 10.1089/152460901753285750

Mikton, C., Maguire, H., & Shakespeare, T. (2014). A systematic review of the effectiveness of interventions to prevent and respond to violence against persons with disabilities. *Journal of Interpersonal Violence*, 29(17), 3207-3226. doi: 10.1177/0886260514534530

Miltenberger, R. G., Roberts, J. A., Ellingson, S., Glalensky, T., Rapp, J. T., Long, E. S., ...

Lumley, V. A. (1999). Training and generalization of sexual abuse prevention skills for women with mental retardation. *Journal of Applied Behavior Analysis*, 32, 385-388.

doi: 10.1901/jaba.1999.32-385

National Public Radio. (2018). Abused and Betrayed. Retrieved from

<https://www.npr.org/series/575502633/abused-and-betrayed>

Nicolaidis, C., Raymaker, D., Katz, M., Oschwald, M., Goe, R., Leotti, S., Grantham, L.,

Ploarde, E., Salomon, J., Hughes, R. B., Powers, L. E., & Partnering with People with Disabilities to Address Violence Consortium. (2015). Community-based participatory research to adapt health measures for use by people with developmental disabilities.

*Progress in Community Health Partnerships: Research, Education, and Action*, 9(2), 157-170. doi: 10.1353/cpr.2015.0037

Petersilia, J. R. (2001). Crime victims with developmental disabilities. *Criminal Justice and Behavior*, 28(6), 655-694. <https://doi.org/10.1177/009385480102800601>

Robinson-Whelen, S., Hughes, R. B., Gabrielli, J., Lund, E. M., Abramson, W., & Swank, P.

(2014). A safety awareness program for women with diverse disabilities: A randomized controlled trial. *Violence Against Women*, 20(7), 846-869. doi:

10.1177/1077801214543387

Sobsey, D., & Doe, T. (1991). Patterns of sexual abuse and assault. *Journal of Sexuality and Disability* 9(3), 243-259. <https://doi.org/10.1007/BF01102395>

Ward, K. M., Atkinson, J. P., Smith, C. A., & Windsor, R. (2013). A friendships and dating program for adults with intellectual and developmental disabilities: A formative evaluation. *Intellectual and Developmental Disabilities*, 51(1), 22-32. doi: 10.1352/1934-9556-51.01.022

White, C., Holland, E., Marsland, D., & Oakes, P. (2003). The identification of environments and cultures that promote the abuse of people with intellectual disabilities: A review of the literature. *Journal of Applied Research in Intellectual Disabilities*, 16(1), 1-9. doi: 10.1046/j.1468-3148.2003.00147.x

Figure 1. Consort Flow Diagram

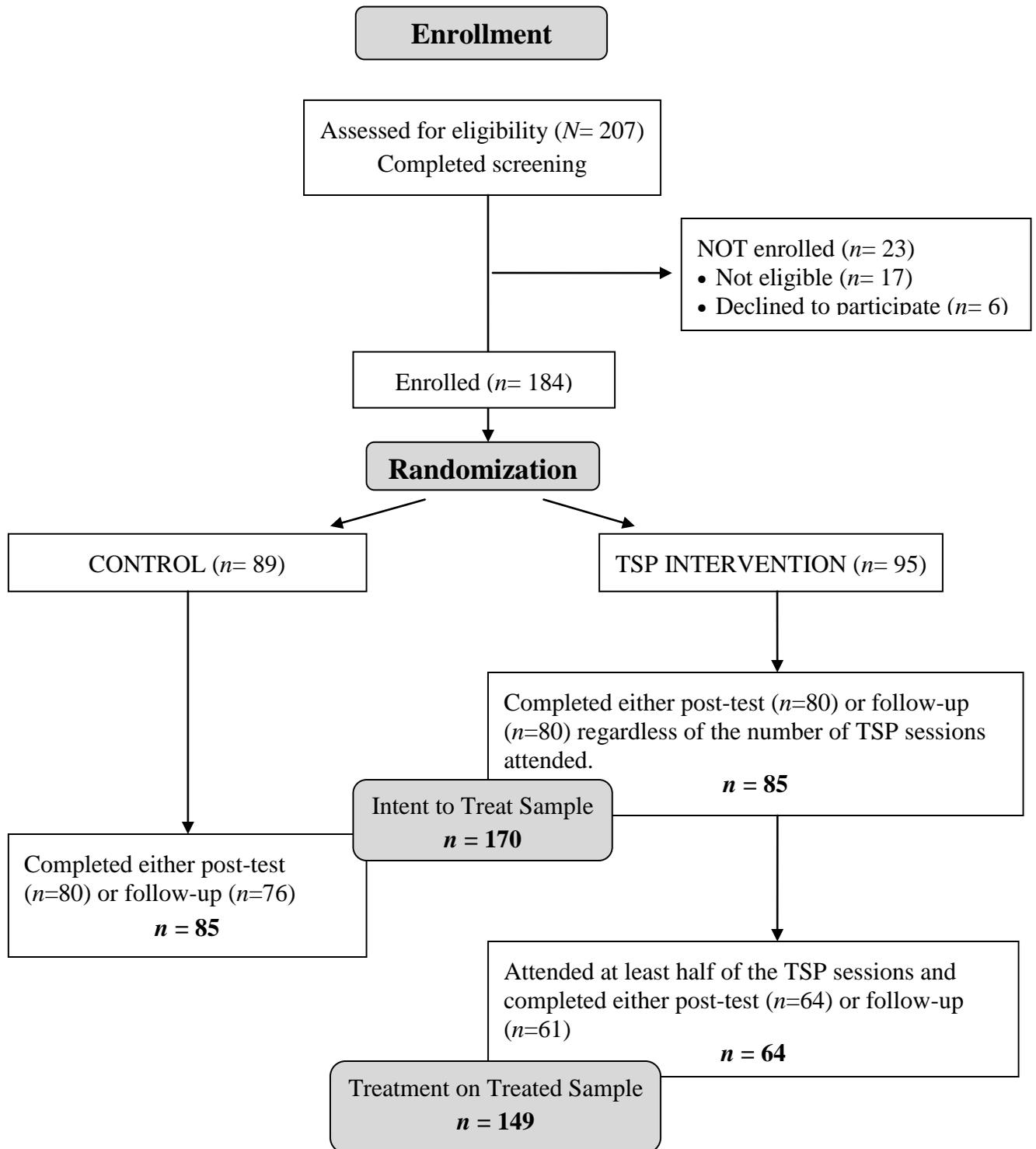
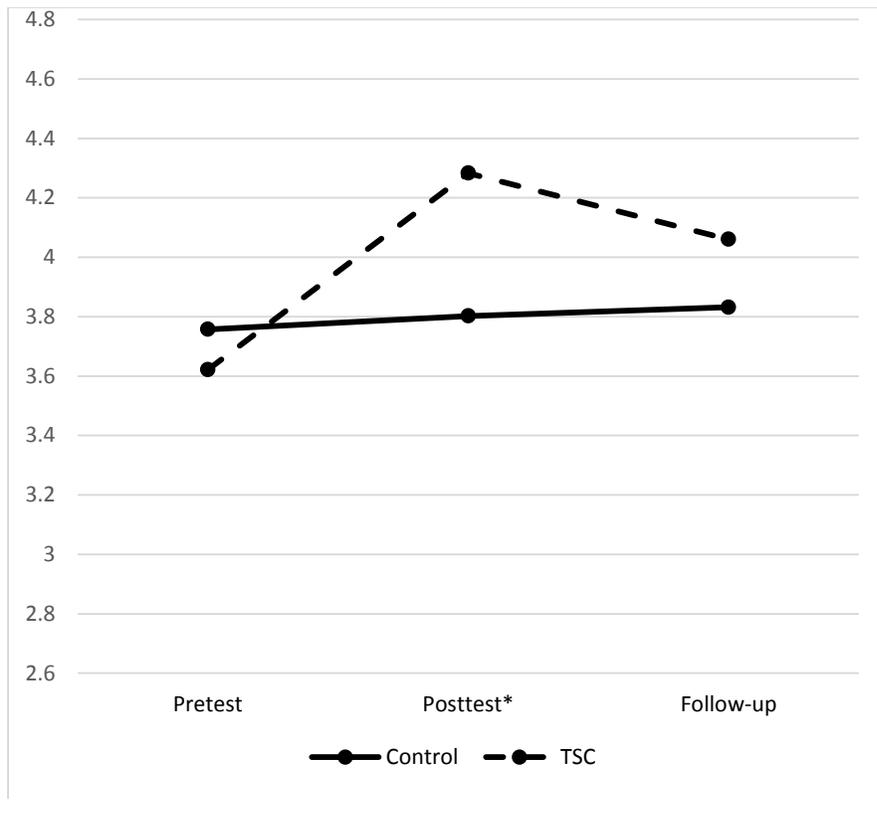
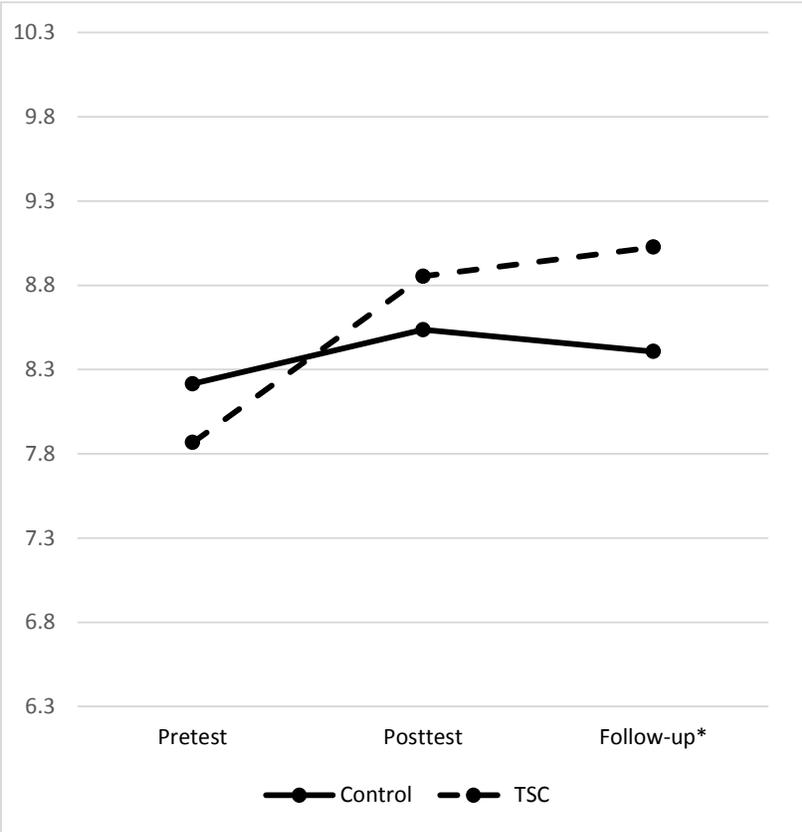


Figure 2. Mean Knowledge about Healthy Relationships by Group, Intent-to-Treat Analysis, N=170



\*  $p < .05$

Figure 3. Mean Knowledge about Abuse by Group, Intent-to-Treat Analysis, N=170



\*  $p < .05$

Figure 4. Mean Safety Planning Skills by Group, Intent-to-Treat Analysis, N=170

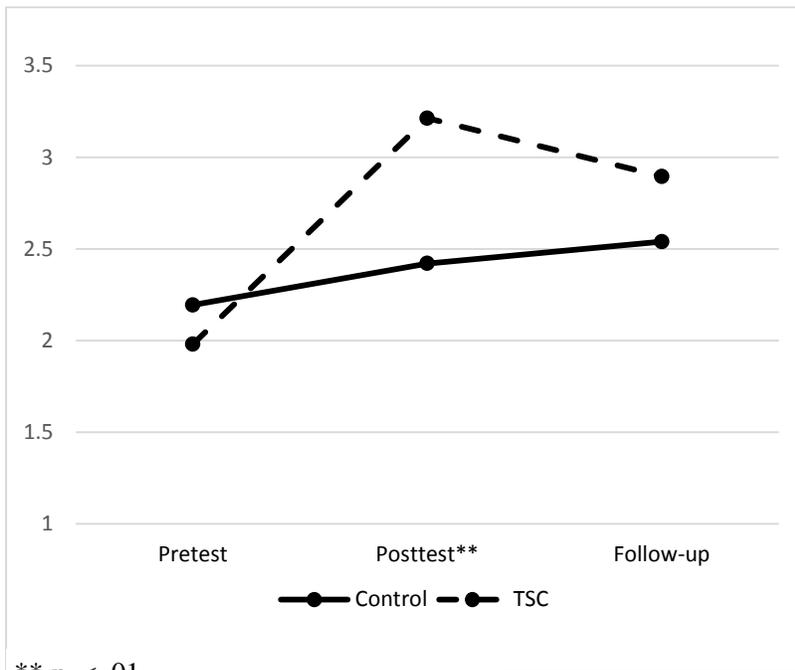
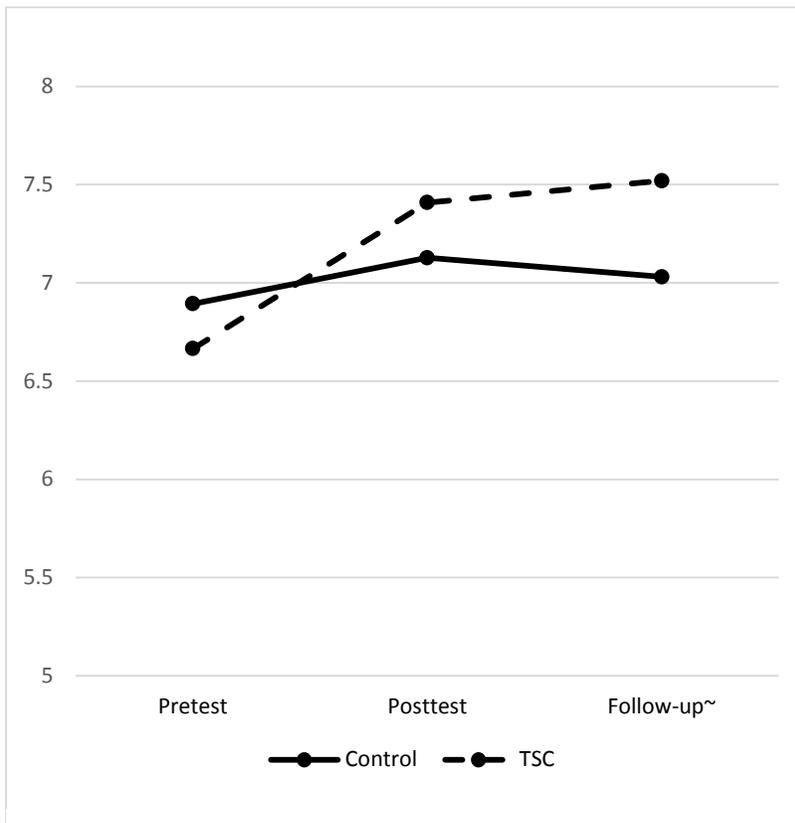


Figure 5. Mean Safety-related Self-efficacy by Group, Intent-to-Treat Analysis, N=170



~  $p = .06$

Table 1

*Sample Characteristics (N = 170)*

Variable	Mean (SD)	Median	Range
Age in years	33.17 (13.20)	28	18-67
	<i>N</i>	Percent	
		( <i>N</i> = 170)	
Gender			
Male	79	46.5	
Female	89	52.4	
Do not want to say	2	1.2	
Ethnicity			
Non Hispanic or Latino	103	60.6	
Hispanic or Latino	42	24.7	
Missing/bad data/don't know	25	13.6	
Race			
Amer Indian/AK Native/Pacific Islander	12	7.1	
Asian	3	1.8	
Black/African American	37	21.8	
White	104	61.2	
Mixed or Multi-race	4	2.4	
Missing	10	5.9	
Relationship status			
Married	12	7.1	
Single, never married	139	81.8	
Divorced/widowed/separated	13	7.2	
Missing/bad data	6	3.6	
Employment			
I work	73	42.9	
Missing	1	0.6	
I work for pay	62	36.5	
Missing/bad data/N/A	30	17.5	
Sexual Orientation			
Straight	148	87.1	
Gay/Lesbian	3	1.8	
Bisexual	4	2.4	

Other	3	1.8
Do not want to say	12	7.1
Highest education completed		
Less than high school	5	5.4
Some high school/no diploma	31	18.2
High school graduate	106	62.4
Some post high school	24	14.1
College degree	3	1.8
Missing	1	0.6
Uses personal assistant or support person	105	61.8
Uses assistive equipment	33	19.4
Other Disabilities <sup>a</sup>		
Mental health disability	69	40.6
Physical disability	67	39.4
Blind/Visual impairment	29	17.1
Deaf/Hard-of-Hearing	18	10.6
Other Disability	28	16.5