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RESEARCH ARTICLE

Effectiveness of the IMPACT:Ability Program to Improve Safety and Self-Advocacy Skills in High School Students With Disabilities

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ABSTRACT

BACKGROUND: Individuals with disabilities experience higher rates of abuse than the nondisabled. Few evidence-based prevention interventions have been published despite a need for such work. This study evaluated IMPACT:Ability, a safety and self-advocacy training for individuals with cognitive and/or physical disabilities.

METHODS: A quasi-experimental design was used to assess change in safety and self-advocacy knowledge, confidence, and behaviors among special education high school students in Boston, MA. Instruments were interviewer-administered at 3 time points. Analysis of covariance (ANCOVA) was used to compare change between the intervention (N = 21) and wait-list (N = 36) groups. Repeated measures analysis was used to test change in the complete sample (N = 57).

RESULTS: Students were diverse (58% males, 82% nonwhite) with a range of disabilities. Significantly greater improvement in key outcomes, including safety and self-advocacy knowledge, confidence, and behavior, were observed in intervention students compared to the wait-list group. Results in the complete sample showed evidence of further improvements in students' sense of safety and general self-efficacy.

CONCLUSIONS: These findings are encouraging given the effects were demonstrated in a heterogeneous urban population. IMPACT:Ability may be an effective safety and self-advocacy training for students with disabilities. Further research will be required to determine effectiveness within particular subpopulations of students.

Keywords: disability; safety; school; self-advocacy; training.

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Women with intellectual and physical disabilities are at increased risk of experiencing abuse than women without disabilities.[1-6] Because those with severe disabilities may be unable to participate in surveys used to collect surveillance data[7] and reports of abuse are likely underestimated,[8,9] it is challenging to develop a complete picture of the problem.[4] It has been estimated, however, that adolescent girls and adult women are 2-4 times more likely to experience abuse than their nondisabled peers.[1-5] Women may be at heightened risk because they feel the combined effects of violence against women and violence against people with disabilities.[10] Yet, this is not a problem that is confined to women.

Although there has been less research, it also appears that men and children with disabilities experience abuse at higher rates than those without disabilities.[11-14] One study found that men with disabilities were 4 times more likely to experience sexual abuse,[11] whereas children with disabilities are 2 to almost 5 times more likely to experience sexual abuse.[15-17] Broadening the category of abuse to maltreatment, 1 large study found a maltreatment prevalence rate of 64% for children with disabilities compared to 32% for children without disabilities.[16]

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This increased victimization may be due to a higher prevalence of risk factors for sexual assault among individuals with disabilities, including prior victimization, nonassertive behavior, low socioeconomic status, and lack of knowledge.[18,19] Additionally, many individuals with disabilities rely on others for care,[20] are often taught to be compliant to ease the role of caregivers,[9,21,22] and may, therefore, be considered less likely to report abuse,[23] all of which may ultimately increase their vulnerability to abuse.

Clearly, the abuse of people with disabilities is an important health priority that deserves attention. Evidence-based interventions aimed at preventing such abuse are needed; yet, extensive reviews of the literature[15,21,24] found only 13 published evaluations of prevention programs, of which most primarily evaluated participant satisfaction, had small sample sizes (ie, 5-10), and included only women and participants over the age of 18. Only 2 studies used control groups.[25,26] Obstacles to implementing more rigorous evaluations abound ranging from limited resources, to ethical issues of creating comparison groups, to finding appropriate evaluation methods to use with this population.[27,28] Despite these barriers, there is a justifiable call in the literature for more rigorously tested interventions for both sexes with diverse disabilities in a variety of settings.[15,21,24]

One such intervention is IMPACT:Ability, a 10-session safety and self-advocacy training for people with cognitive and/or physical disabilities. The aim of the program is to increase participants' knowledge, confidence, and skills to communicate assertively, protect themselves from imminent harm, resist isolation behaviors, and bribery that are common tactics used by perpetrators, and advocate for themselves. This program was started by the Boston chapter of IMPACT, an international affiliation of organizations dedicated to teaching self-defense as part of a comprehensive effort to prevent abuse and violence.

The IMPACT training methods place students in realistic simulations of unsafe and uncomfortable situations ranging from refusing unwanted help from a stranger to attempted sexual abuse and abduction. IMPACT's teaching team includes one instructor who coaches students through these scenarios and a second instructor who plays the role of an unsafe, untrustworthy, or challenging individual. The aim is to have students practice their responses to challenging situations and learn through experiential exercises that feel real so they will be more likely to use the skills in actual stressful situations. IMPACT Boston began in 1987, and in 2009, the team developed the IMPACT:Ability training, combining their curriculum with that of Massachusetts Advocates Standing Strong (MASS), a statewide organization that aims to empower people with disabilities through self-advocacy education. IMPACT:Ability is a program of Triangle, a Boston-area community-based disability support and advocacy organization.

The IMPACT:Ability training was first piloted among Triangle's School-To-Career participants (N = 17) in 2011-2012 and preliminary evidence suggested program effectiveness and feasibility.[29] The focus of this paper is the most recent study of the IMPACT:Ability program, which was conducted in 2012-2013 with Boston Public Schools special education students using more rigorous methodology. The aim was to determine intervention effects in participants' knowledge about safety and self-advocacy, confidence in their ability to defend themselves, feelings of safety and general self-efficacy, and behaviors related to self-advocacy and self-determination that may ultimately protect them from harm.

METHODS

Participants

In 2012, IMPACT:Ability asked the Boston Public Schools' high school special education director to identify schools that could host 6 IMPACT:Ability trainings. The director identified 5 schools that she felt were most in need of safety and self-advocacy training. Each had programs in place to help students with disabilities transition from high school to adulthood and all agreed to host the trainings. The special education director and teachers then identified students from each school they felt would be most appropriate for the training based on 2 criteria: (1) students had to be able to distinguish role play from reality; and (2) be receiving employment or transition services or expecting to receive those services in the near future. Additionally, administrators prioritized students that they felt were most in need of the training due to having experienced previous violence or abuse.

Study Design

A quasi-experimental design was used to assess changes in outcomes among students receiving the intervention compared to a wait-list comparison group of students. Students completed interviewer-administered questionnaires at baseline and follow-up. A subset of students who were interviewed 10 weeks prior to their baseline assessment comprised the wait-list comparison group. This subgroup was a non-random sample determined by the month the school was scheduled to start the intervention—students at the 3 schools starting intervention activities later in the school year were asked to complete the pre-baseline survey.

Instruments

The Institute for Community Health (ICH) developed a pre/post survey that included 31 questions

Table 1. **Scale Information for IMPACT:Ability Survey Questions**

Construct	Number of items	Sample Item(s)	Response Format
Safety and self-advocacy knowledge	7	What do you do when someone is standing too close to you and you do not like it?/What is a self-advocate?	Multiple choice and true/false
Confidence	2	How confident are you that you could defend yourself in a dangerous situation?	4-point scale (totally confident to not at all confident)
Sense of safety	3	How safe do you feel traveling to and from school when it is dark out (as in the winter time)?	4-point scale (totally safe to not at all safe)
Comfort saying no	2	If someone you are dating wants to do something sexually that you do not want to do, how comfortable are you saying "no"?	4-point scale (totally comfortable to not comfortable at all)
Self-determination	3	In the past week, when someone was bothering you or doing something you did not like how often were you able to say "stop"?	4-point scale (a lot to never)
Self-advocacy*	4	People will still like you even if you do not always agree with them	4-point scale (strongly agree to strongly disagree)
Self-efficacy †	10	You are confident you could deal with things that happen that surprise you	4-point scale (strongly agree to strongly disagree)

*Adapted from Wehmeyer.[30]
†Adapted from Schwarzer.[31]

on safety and self-advocacy knowledge, confidence in protecting one's self, self-determination behaviors, feelings of safety, self-advocacy, and general self-efficacy. Details are found in Table 1. The tool included program-specific measures, a recognized strategy for enhancing the evaluation's relevance to the program,[28] and standardized validated measures. It was first tested in a small group of young adults with disabilities and then used during the pilot study of IMPACT:Ability. Results of the pilot led to refinements and it was again tested with a small group of similar participants before being used in the current IMPACT:Ability evaluation.

The knowledge, self-determination, confidence, safety, and comfort questions were developed with substantial input from the program staff and the target population (individuals with disabilities). Input from staff ensured the questions reflected key curriculum content and anticipated learning goals of the training while feedback from the target population was essential for increasing the questions' relevance and clarity. The majority of items that comprised the self-advocacy and self-efficacy components of the survey were adapted from validated scales. Three of the 4 self-advocacy questions were taken from the ''Self-Realization'' section of Wehmeyer's Self-Determination Scale[30] and adapted. The final part of the instrument was an adapted version of Schwarzer and Jerusalem's Generalized Self-Efficacy (GSE) scale.[31] All 10 questions from the original GSE scale were used. Feedback from the target population led the evaluators to lower the literacy level of the questions in order to increase comprehension.

Procedure

A packet containing an information letter, a school permission slip for the training, and a consent form for the evaluation was sent home with the selected students to their parents, inviting them to participate in the training and evaluation. All students that returned with a signed permission slip were allowed to participate in the classes. Consent was then obtained for the evaluation study from students and their parents/guardians, as needed.

The IMPACT:Ability intervention took place on site at each school and consisted of 10 90-minute weekly class sessions; 8 classes focused on IMPACT and 2 focused on MASS curriculum. IMPACT classes start with a demonstration in which instructors show a physical or verbal technique. The instructors then break the technique down into smaller pieces and give students the opportunity to practice each component. Because the majority of physical, sexual, and economic abuse against people with disabilities is perpetrated by people they know,[19,20] IMPACT instructors portray both strangers and familiar people. Classes progress from the least sensitive and challenging scenarios to more highly challenging scenarios and include a significant amount of repetition. The trainings are consistent across groups with the exception that specific skills and content may be tailored slightly to account for varying physical disabilities and maturity levels. These types of adaptations are acceptable and expected within the IMPACT:Ability training model. The same 2 instructors implemented all 6 classes included in this evaluation.

During the MASS classes, participants discuss the meaning of self-determination and self-advocacy with a facilitator, engage in creative activities around future goals, develop an action plan toward one goal, and identify people that can help them reach that goal. Students are also encouraged to participate in their individual education plan (IEP) meetings and in local

Table 2. **IMPACT:Ability Weekly Content Outline**

Week	Curriculum Type	Content Outline
1	IMPACT	*Introduction*—Basic principles, strong body language, safe distance, & scenario-based teaching & *Practice*—Scenarios involving a stranger
2	IMPACT	*Review*—Week 1 & *Teach*—Boundary setting, reporting, and using a loud voice in a dangerous situation
3	IMPACT	*Discuss*—Name-calling and associated feelings & *Teach*—Reporting & *Practice*—Scenarios involving a bully
4	IMPACT	*Discuss*—Rumors & *Practice*—Confronting someone who is spreading rumors
5	IMPACT	*Discuss*—Individual who is familiar, non-romantic partner inappropriately touching & *Teach*—Setting verbal boundaries & *Review*-Scenarios when familiar person says not to tell, bribes, threatens & *Practice*—Self-defense actions (eye strike/bite) to use when about to be hurt/forced into sexual activity (when physical skills are deemed appropriate for the group)
6	MASS advocate	*Discuss*—Meaning of self-advocate and how to advocate for oneself & *Practice*—Students advocating for themselves
7	MASS advocate	*Discuss*—Meaning of self-determination and goals & *Practice*—Creating plan to reach a goal
8	IMPACT	*Discuss*—Meaning of date rape, respecting boundaries in intimate partnerships & *Teach*—Setting verbal boundaries with intimate partners & *Review* - Scenarios when partner is understanding, begs, demands & *Practice*—Self-defense action (eye strike) to use if about to be hurt/forced into sexual activity by intimate partner (when physical skills are deemed appropriate for the group)
9	IMPACT	*Practice*—Self-defense action (eye strike) in scenario of attempted abduction and physical harm. Groups who don't learn physical skills review prior curriculum content
10	IMPACT	*Graduation*—Graduation event held for students

self-advocacy groups. Details of the IMPACT:Ability curriculum can be found in Table 2.

Surveys were administered to students by trained members of the research team in the week prior to and following the students' participation in the IMPACT:Ability intervention. The wait-list subset of students were administered the same survey 10 weeks prior to their baseline (the pre-baseline survey). Interviewers included a retired Boston Public Schools special education instructor who consented and surveyed English-speaking students and a native Spanish-speaking Boston Public Schools special education guidance counselor who consented and surveyed Spanish-speaking students in the study.

While the survey was interview-administered, students had access to a hard copy of the survey and could follow along if they were able and wanted to do so. Each question and its possible responses were read out loud twice to students. This implementation method was used to mitigate issues related to the high-memory load required of respondents when administering a survey interview style.[27] For Likert scale questions, once the question was read, each response was read aloud as a complete sentence to increase comprehension. For example, the question ''How safe do you feel at school?'' was followed with the possible responses: ''Do you feel *totally safe* at school?'' ''Do you feel *very safe* at school?'' ''Do you feel *a little safe* at school?'' ''Do you feel *not safe at all* at school?'' Verbal emphasis was placed on the Likert scale response portion of each question to clearly differentiate between response choices. For the questions that were accompanied by a ''strongly agree'' to ''strongly disagree'' Likert scale, the interviewer first read a statement and then asked if the participant agreed or disagreed with the statement. Once the participant responded, the interviewer then asked him or her to qualify it by asking if he or she, for example, agreed ''a lot'' or ''a little.'' If the respondent said ''a lot'' the interviewer documented it as ''strongly agreed'' with the statement and if the respondent said ''a little'' the interviewer recorded it as simply ''agreed'' with the statement. This administration style has been recommended in the literature as a way to increase reliability.[27,32] Additionally, alternative wording was included within the survey instrument in the event that a respondent expressed confusion over a word or phrase. This was done to ensure consistency among clarification efforts on the part of the interviewers.[27] For all questions, after an answer was selected, the interviewer confirmed it with the student by verbally reflecting the answer back and asking if that was the intended answer. If the student confirmed the response, the interviewer continued on to the next question. If not, the question was repeated and the process started again.

Student demographics were obtained through school records and included age, sex, race/ethnicity, and school-defined disability category. The disability categories provided by the school were broad, as the purpose is to categorize based upon perceived academic support required rather than specific disability diagnoses. Each disability category is also accompanied by a number 1-4 indicating the percentage of the day spent outside of the general classroom, 1 being 25% up to 4 indicating 100% of the school day. This number can serve as a proxy for the level of severity of each student's disability, 1-2 being less severe, and 3-4

being more severe. Student attendance and fidelity to curriculum was recorded after each session by program staff.

Data Analysis

Descriptive statistics were used to describe the study population's demographic and disability characteristics. Comparisons between the intervention-only group (students only completed baseline and follow-up surveys, N = 21) and the wait-list group (students completed pre-baseline, baseline, and follow-up surveys, N = 36) were conducted using chi-square tests and independent samples t-tests. For analyses, age was dichotomized into ''16 years or younger'' and ''17 years or older''; and race/ethnicity was categorized as ''black, non-Hispanic,'' ''Latino/Hispanic,'' ''white, non-Hispanic,'' or ''other'' (including multiracial individuals). School-based disability categories were collapsed into 4 groups: ''F,'' ''O,'' ''X,'' and ''A, U, L, or V'' based upon the feedback of Boston Public Schools special education administrative staff.

All survey items were treated continuously. A total knowledge score was calculated based upon the number of correct responses out of 7 knowledge questions. Nonresponses were coded as incorrect. All other survey items contained 4-point responses with higher values indicating more positive/desirable outcome and lower values indicating more negative/less desirable outcomes. The self-advocacy score was calculated as the sum of responses to 4 individual questions for a total of 20 points possible. The GSE scale score was calculated as the sum of responses to 10 individual questions for a total of 40 points possible (Cronbach alpha = 0.79).

To test the effect of the intervention (group effect), analysis of covariance (ANCOVA) was used to compare change in outcomes between the intervention-only and the wait-list groups. Change scores (follow-up minus baseline for intervention group and baseline minus pre-baseline for wait-list group) were computed for each measure. Each ANCOVA model contained the baseline/pre-baseline value of the item being modeled and further adjusted for age, sex, race/ethnicity, and disability category. Adjusted mean change, standard errors, and p-values were reported.

To confirm the group effects and capitalize on a larger sample size, an analysis of the entire study sample was then conducted using the baseline and follow-up data from both the intervention-only and the wait-list groups. Paired t-tests were conducted to determine if significant change in outcomes occurred within-individuals. Means, standard deviation, and p-values were reported. Finally, repeated measures analyses were conducted to test the effect of time (baseline to follow-up) while adjusting for school, age, sex, race/ethnicity, and disability category. The p-values were reported. All analyses were conducted using SAS 9.3 (SAS Institute, Inc, Cary, NC) and the criterion used for statistical significance was $p < .05$.

RESULTS

Six IMPACT:Ability classes (9 to 12 students each) were conducted at 5 schools. Three classes included all boys, 2 classes included all girls, and 1 class contained both girls and boys. Adherence to the curriculum occurred in all classes; instructors opted not to demonstrate certain physical skills (eg, eye strike) with 2 classes which they felt lacked the judgment/impulse control to use them appropriately. Additionally, the date rape lesson was not given in 3 classes because the instructors felt it was inappropriate for the group. These adaptations were not considered by IMPACT staff to alter the overall message of the training.

Of 64 students receiving IMPACT:Ability training, 57 (89%) completed baseline and follow-up surveys. Thirty-six (63%) also completed the pre-baseline survey and comprised the wait-list comparison group. As detailed in Table 3, participants averaged 17 years old (range 13-21 years), were mostly boys (58%), and represented a diverse racial and ethnic background (44% black, 28% Latino/Hispanic). The wait-list group was younger than the intervention-only group (55% age 16 or younger versus 19%), more likely to be of black race (56% versus 24%) and less likely to be Latino/Hispanic (17% versus 48%). Attendance averaged 8.4 sessions. Two classes experienced 2 snow days over the course of the 10 weeks, which limited the number of sessions those students were able to attend (8 instead of 10). Aside from these snow days, there was little variation in attendance. Seventy-five percent (N = 43) attended at least 8 sessions (81.6% when snow-affected classes are excluded) and all but one student attended at least 6 sessions.

While students' disabilities ranged from visual and language-based disabilities to autism spectrum disabilities, all were considered by Boston Public Schools to have general intellectual disabilities. All participants were also in a 'substantially separate' environment, meaning they were in separate classrooms from their nondisabled peers 75% to 100% of the day (severity categories 3 and 4) with over 90% in the completely separate category. Attendance, disability category, and disability severity were all statistically similar between the intervention-only and wait-list groups.

As shown in Table 4, ANCOVA analyses testing the group effect showed the intervention-only group had significantly greater increases across 3 key outcomes compared to the wait-list comparison

Table 3. **Characteristics of Study Participants**

	All Students (N = 57)		Intervention-Only (N = 21)		Wait-List (N = 36)		
	N	%	N	%	N	%	p-Value*
Age							
16 years or younger	24	42.1%	4	19.0%	20	55.6%	.012
17 years or older	33	57.9%	17	81.0%	16	44.4%	
Years, median (min. and max.)	17.0 (13 to 21)		19.0 (13 to 21)		16.0 (13 to 21)		
Sex							
Female	24	42.1%	11	52.4%	13	36.1%	.27
Male	33	57.9%	10	47.6%	23	63.9%	
Race/ethnicity							
Black, non-Hispanic	25	43.9%	5	23.8%	20	55.6%	.047
Latino/Hispanic	16	28.1%	10	47.6%	6	16.7%	
White, non-Hispanic	10	17.5%	4	19.0%	6	16.7%	
Other	6	10.5%	2	9.5%	4	11.1%	
School disability category							
F-education and social development	20	35.1%	6	28.6%	14	38.9%	.40
O-education and social development	17	29.8%	9	42.9%	8	22.2%	
X-autism spectrum disability	11	19.3%	4	19.0%	7	19.4%	
A, U, L, or V	9	15.8%	2	9.5%	7	19.4%	
A-social and academic remediation	4	7.0%	0	0.0%	4	11.1%	—
U-language-based disability	3	5.3%	1	4.8%	2	5.6%	
L-learning disability	1	1.8%	1	4.8%	0	0.0%	
V-vision	1	1.8%	0	0.0%	1	2.8%	
School disability severity category							
3 (75% of day outside general class)	5	8.8%	0	0.0%	5	13.9%	.15
4 (100% of day outside general class)	52	91.2%	21	100.0%	31	86.1%	
Attendance							
Number of sessions, mean (SD)	8.4 (1.5)		8.9 (1.5)		8.2 (1.4)		.11

*p-value determined from chi-square tests (categorical variables) or Independent Samples t-tests (continuous variables) comparing intervention-only to wait-list group.

group. More specifically, after controlling for baseline score, age, sex, race, and disability category the intervention students improved their safety and self-advocacy knowledge (+1.6 points versus −0.26 points; $p < .0001$), confidence in ability to defend self in a dangerous situation (+0.48 points versus −0.12 points; $p = .033$), and speaking up to stop unwanted attention (+1.0 points versus +0.20; $p = .017$). No significant group effects were found for the other questions and constructs.

As detailed in Table 5, paired samples t-tests conducted with all students ($N = 57$) substantiated the group effect findings. Statistically significant improvements in safety and self-advocacy knowledge ($p < .0001$), confidence in ability to defend self in a dangerous situation ($p = .0075$), and speaking up to stop unwanted attention ($p = .004$) were observed. Two additional items also were found to improve significantly: sense of safety traveling to and from school in the dark ($p = .0066$), and GSE ($p = .046$). These within-subject effects were then confirmed using repeated measures analyses controlling for school, age, sex, race/ethnicity, and disability category. The time effect (baseline to follow-up) was statistically significant for each of the above questions/scores with the exception of traveling in the dark, which was attenuated ($p = .07$).

DISCUSSION

Findings demonstrated significant positive impacts on students participating in the IMPACT:Ability training compared to the wait-list comparison group in areas that are a primary focus of the curriculum. Specifically, impact was demonstrated in safety and self-advocacy knowledge, participants' confidence to defend themselves, and perhaps most importantly, their behavior, speaking up to say ''stop'' to unwanted attention more frequently after participating in the training. Additional significant improvements were observed from secondary analyses that suggested students' sense of safety and general self-efficacy, which others have indicated is an essential component in abuse prevention efforts,[21,26] also may be an important effect of participation in IMPACT:Ability training and may be findings that larger experimental or quasi-experimental studies can confirm.

Several survey items, however, were not impacted by intervention activities. The lack of effect in the 2 remaining safety questions and the self-advocacy score may be due, in part, to high baseline scores. Most participants (85%) had scores of 3 or 4 for feeling safe at school or while traveling to and from school when it is light. For 3 of the 4 self-advocacy items (''It is healthy to speak up for oneself,'' ''You like yourself,'' and ''You are confident in your abilities'') between

Table 4. **Comparison of Change—Intervention-Only Versus Wait-List Comparison Group**

	Intervention-Only Baseline Versus Follow-Up			Wait-List Pre-Baseline Versus Baseline			ANCOVA p-Value †
	N	Mean Change *	SE	N	Mean Change *	SE	
Knowledge score (out of 7 points possible)	21	1.61	0.31	36	−0.26	0.25	<.0001
Prior week, how often demonstrated self determination (1 to 4 points)							
Say stop when someone bothering them	21	0.48	0.22	35	−0.12	0.18	.033
Choose which clothes to wear	21	0.02	0.28	34	−0.39	0.23	.25
Decided how to spend free time	21	0.43	0.20	33	0.41	0.16	.95
Confidence (1 to 4 points)							
In defending self in dangerous situation	21	1.01	0.26	34	0.20	0.21	.017
In knowing where to get help if being hurt	21	0.00	0.23	34	−0.05	0.19	.88
Feeling of safety (1 to 4 points)							
At school	21	0.08	0.20	35	0.07	0.16	.94
Traveling to and from school when it is light out	21	0.00	0.19	34	−0.02	0.15	.93
Traveling to and from school when it is dark out	21	0.47	0.27	32	0.03	0.23	.22
Comfortable saying no (1 to 4 points)							
If touched inappropriately	21	0.50	0.27	34	0.11	0.22	.26
Regarding sexual activity to someone they are dating	21	0.28	0.25	33	0.30	0.20	.95
Self Advocacy Score (out of 20 points possible)	21	0.30	0.54	34	0.25	0.44	.94
General Self Efficacy Scale (out of 40 points possible)	21	2.50	0.98	34	1.52	0.81	.44

ANCOVA, analysis of covariance; SE, standard error.
*ANCOVA model adjusted for baseline score, age, sex, race, and disability category.
†p-value determined from adjusted ANCOVA model comparing the mean change in score between intervention-only and wait-list groups.

Table 5. **Overall Change From Baseline to Follow-Up**

	All Students Intervention (N = 57)						
		Baseline		Follow-Up		Paired Samples t-test	Repeated Measures
	N	Mean	SD	Mean	SD	p-Value *	p-Value †
Knowledge score (out of 7 points possible)	57	2.9	1.2	4.5	1.4	<.0001	.0002
Prior week, how often demonstrated self determination (1 to 4 points)							
Say stop when someone bothering them	57	3.1	1.0	3.6	0.7	.004	.02
Choose which clothes to wear	55	3.2	1.1	3.3	1.0	.43	.85
Decided how to spend free time	54	3.4	0.8	3.4	0.8	.73	.37
Confidence (1 to 4 points)							
In defending self in dangerous situation	55	2.8	1.1	3.2	1.1	.0075	.037
In knowing where to get help if being hurt	55	3.1	1.0	3.3	0.9	.083	.55
Feeling of safety (1 to 4 points)							
At school	56	3.4	0.8	3.4	0.7	1.00	.60
Traveling to and from school when it is light out	55	3.3	0.8	3.4	0.8	.57	.79
Traveling to and from school when it is dark out	55	2.2	1.1	2.7	1.1	.0066	.074
Comfortable saying no (1 to 4 points)							
If touched inappropriately	55	3.0	1.0	3.0	1.2	.82	.52
Regarding sexual activity to someone they are dating	55	3.0	1.0	2.9	1.1	.43	.76
Self advocacy score (out of 20 points possible)	55	12.7	2.4	12.8	2.3	.60	.29
General self efficacy scale (out of 40 points possible)	53	30.8	4.9	32.1	5.2	.046	.019

ANOVA, analysis of variance; SD, standard deviation.
*p-value determined from paired samples t-tests of change between baseline and follow-up score.
†p-value determined from repeated measures ANOVA testing within-subjects effect of time between baseline and follow-up score, controlling for school, age, sex, race, and disability category.

85% and 93% of students rated themselves a 3 or 4 at baseline. Although these findings are reassuring for the population in general, they may indicate the survey is not capturing the constructs effectively and/or the curriculum is not focused on the most needed aspects of self-advocacy for this population. Additional research may be needed to tailor the self-advocacy curriculum and related evaluation measures for this particular population. The lack of effects in the ''confidence in saying no'' to unwanted sexual activity questions are less clear. Interviewers themselves noted they were uncomfortable administering that portion of the survey, and thus, the reliability of the responses may be low.

Literature reviews show a dearth of articles about abuse prevention interventions for people with

disabilities. Critiques of existing evaluations include that most program participants are at low risk for being assaulted[21] and they rarely include adolescents and boys.[15,21,24] This study contributes to the literature in that it included a racially heterogeneous population from an urban environment with a broad range of disabilities. On the basis of their school assigned disability categories, all students who participated in this study were substantially impacted by their disability given most spend their entire day separated from their nondisabled peers. Additionally, participants included younger adolescents, boys and, by the nature of the participant selection, those either known to be at greater risk for abuse or who known to have been abused in the past.

Our results are encouraging given that significant impact could be demonstrated within a diverse urban population with considerable special needs. Program staff are currently using evaluation results to improve the IMPACT:Ability curriculum, especially around self-advocacy. A 1-year follow-up is being conducted to determine if the positive effects are maintained over the long term. Additionally, efforts are being made to adapt the curriculum for specific disabilities, particularly autism.

Limitations

Although results are encouraging, this study is subject to a number of limitations. First, the intervention and evaluation methods may be more or less appropriate for people with particular disabilities.[27] While a number of techniques culled from the literature to increase the reliability and validity of the findings were employed, this is a noteworthy concern because the study was conducted in a heterogeneous population of students. Further study will be required to determine if outcomes differ between disability subgroups. The way in which the schools and participants were chosen also may limit the generalizeability of the findings. However, findings from the given sample may demonstrate that the IMPACT:Ability training can be effective for possibly the neediest group of students with disabilities who are at higher risk of experiencing abuse.

The use of a nonrandom sample as the wait-list comparison group may have yielded noncomparable groups and biased our results. Although age and race were found to differ significantly between groups, all demographic and disability characteristics were controlled for in analyses and results of the complete sample analyses did confirm the group-effect helping to mitigate this concern. Despite our inability to randomize due to resource constraints, the quasi-experimental study design remains a sound choice given the challenge of finding well-matched outside comparison groups for this population.

Finally, beyond the self-report from participants that they were more likely to say ''stop'' to prevent potentially abusive situations after participating in IMPACT:Ability, there is no way to know how the observed improvements in knowledge, beliefs, and confidence translate into more natural settings. However, a number of participants have reported to Boston Public Schools staff that they used these skills in actual unsafe situations, and at least one was observed doing so.

IMPLICATIONS FOR SCHOOL HEALTH

Given their increased risk for abuse, safety and self-advocacy skills are needed for individuals with disabilities to ensure their health and well being while at school and to increase their chances of success while transitioning from school to adult life. As concerns about abuse, including bullying, in and out of the school environment have grown recently, our findings may be of interest to school administrators who are looking for ways to try to address this serious issue. The IMPACT:Ability trainings conducted in the Boston Public Schools during 2012-2013 have produced evidence of significant impact on participants. They improved their safety and self-advocacy knowledge, their confidence to defend themselves, and perhaps the most compelling outcome, they spoke up more to stop potentially abusive situations. Results suggested students' beliefs in their personal abilities and their sense of safety improved, as well. Despite its limitations, this study shows that IMPACT:Ability is a promising safety and self-advocacy training for students with disabilities, possibly the school population most vulnerable to abuse.

Human Subjects Approval Statement

This study was approved by Cambridge Health Alliance's Institutional Review Board for Human Subjects Protection.

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