

# Effectiveness of a sexual assault awareness and prevention workshop for youth: A 3-month follow-up pragmatic cluster randomization study

Isabelle Daigneault,<sup>1,4,5</sup> Martine Hébert,<sup>2,4,5</sup> Pierre McDuff,<sup>1,4</sup> Francine Michaud,<sup>3</sup>  
Pascale Vézina-Gagnon,<sup>1,4,5</sup> Anne Henry,<sup>1</sup> and Élyse Porter-Vignola<sup>1,4</sup>

<sup>1</sup> Psychology Department Université de Montréal, Montréal QC

<sup>2</sup> Sexology Department, Université du Québec à Montréal, Montréal QC

<sup>3</sup> Agence de la santé et des services sociaux de la Capitale-Nationale, Québec QC

<sup>4</sup> Centre de recherche interdisciplinaire sur les problèmes conjugaux et les agressions sexuelles (CRIPCAS). Interdisciplinary research center for conjugal problems and sexual abuse. University. Montréal, Montréal QC

<sup>5</sup> Équipe Violence Sexuelle et Santé (EVISSA). Sexual violence and Health Team. Department of Sexology, University du Quebec à Montréal, Montréal QC

Sexual violence and other forms of sexual assault and coercion have a pervasive presence in the lives of many young people. School and community services and programs that are geared toward sexual assault awareness and prevention of sexual violence have thus been offered to youth in high-school settings. The goal of the present study was to assess the effectiveness of one such sexual assault awareness and prevention workshop designed and presented specifically for male and female youth aged 15 to 17 over a three month follow-up. A sample of 794 youth recruited from two schools were randomly assigned to two experimental conditions. Participants completed self-report outcome measures that assessed their knowledge of sexual assault, awareness of available resources, attitudes toward sexual assault, ability to identify sexual assault and to respond appropriately to a disclosure of sexual assault as well as sexual victimization. The data were analyzed using random coefficient analyses, which revealed that the workshop was effective in improving general knowledge regarding sexual assault, awareness of resources in the event of experiencing sexual assault, and attitudes regarding sexual assault. Participation in the program was also shown to enhance youth's ability to recognize sexual assault in a dating context and to diminish hypothetical responses that deny or minimize sexual assault in a dating situation disclosed by a peer. With one exception, these improvements were similar for male and female youth. The results indicate that the workshop was effective and that revision of some aspects of the implementation could further maximize its impact.

KEY WORDS: Sexual assault, adolescence, awareness, prevention, random coefficient analysis

## INTRODUCTION

Sexual violence and abuse have a pervasive presence in the lives of many young people. A global meta-analysis (Stoltenborgh, van Ijzendoorn, Euser, & Bakermans-Kranenburg, 2011) found that 12.7% of youth reported experiencing sexual abuse before age 18 (18.0% girls and 7.6% boys). Although a high proportion of such experiences occur during formative dating relationships, few studies have specifically documented

the prevalence of youth sexual dating violence and estimates vary widely (1–59%) because the varied and ambiguous definitions, e.g., rape, attempted rape, coercion, etc. (Foshee & Reyes, 2011a) make it difficult to compare across studies. Recent representative surveys revealed that 20.3% of high school girls and 6.7% of boys experienced sexual coercion in romantic relationships (Hébert, Van Camp, Lavoie, & Blais, 2012) and that 6.4% of all youth experienced teen dating violence (Hamby, Finkelhor, & Turner, 2012). Several programs have

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**Correspondence** concerning this article should be addressed to Isabelle Daigneault, Université de Montréal, Département de psychologie, P.O. Box 6128, Downtown station, Montréal, Québec, Canada, H3C 3J7. [isabelle.daigneault@umontreal.ca](mailto:isabelle.daigneault@umontreal.ca)

been developed to curtail the presence of sexual violence and its social and psychological consequences, either by targeting dating violence or sexual assault, or by promoting the development of healthy romantic relationships. These programs have reached many youth in high-schools and colleges and need to be assessed and tailored to their needs.

### Program effectiveness

In addition to improving knowledge among participants, sexual assault awareness and prevention programs targeted at youth also aim to modify their attitudes toward sexual assault, promote gender-equitable attitudes, modify behavioural intentions, increase participants' empathy toward victims of sexual assault, increase youth awareness of community resources in case of dating violence, increase prosocial helping behaviours and diminish at-risk behaviours. Although scant attention has been given to empirical studies evaluating such programs (Murray & Graybeal, 2007; O'Leary & Slep, 2012), two meta-analyses have assessed their effectiveness among youth attending middle and high school (Ting, 2009) or college and university (Anderson & Whiston, 2005). These studies concluded that participants' knowledge and attitudes relating to sexual assault improved following the assessed prevention programs. Current evidence suggests that the most significant changes occur regarding knowledge in college and university populations ( $d = 0.57$ ; Anderson & Whiston, 2005) and in middle and high schools ( $r = 0.35$ ; Ting). Attitudes appeared to be less amenable to change in college and university samples, resulting in lower effect sizes ( $d = 0.13$  to  $0.21$ ; Anderson & Whiston). In middle and high school populations, however, it has been shown that prevention programs' effects on attitudes are similar in magnitude to their effects on knowledge ( $r = .32$ ; Ting), suggesting that early intervention may be warranted to significantly change attitudes.

While other outcome measures have received less attention, effects on youth empathy and behavioural intentions were found to be non-significant (Anderson & Whiston, 2005). Despite their relevance as indicators of program effectiveness, few studies have explored whether these programs are associated with increased abilities to recognize abusive situations and respond to disclosures by peers. These abilities appear important, as a recent study demonstrated that awareness or denial of the problem of sexual violence predicted college students' self-reported bystander behaviours specific to sexual violence or intimate partner violence prevention (Banyard & Moynihan, 2011).

Although proximal outcomes have been associated with later perpetration or victimization risk (e.g., perceived norms, traditional gender roles) (Foshee, Linder, MacDougall, & Bangdiwala, 2001; Foshee & Reyes, 2011a; Sears, Byers, & Price, 2007), few studies have assessed the effects of awareness and prevention programs on sexual victimization and perpetration (Lonsway et al., 2009; Ting, 2009). Participation in the Safe Dates program, however, was found to reduce sexual

dating violence perpetration, to marginally reduce sexual victimization after three years (Foshee et al., 2005), and to reduce sexual dating violence after four years (Foshee et al., 2004). This effect on behaviours was found to be mediated by the program's effect on dating violence and gender-role norms as well as through increased awareness of community services for teens involved in dating violence (Foshee et al., 2005). This underlines the importance of norms and awareness of resources in reducing youth dating violence in general.

The evidence thus suggests that youth benefit from participation in universal sexual violence awareness and prevention programs, at least in terms of their knowledge and attitudes. At the same time, past studies often lacked control groups or relied solely on self-reported attitudinal measurements (Murray & Graybeal, 2007), and few studies have assessed programs targeted at both male and female youth (for exceptions see: Foshee et al., 2012; Lavoie, Vézina, Piché, & Boivin, 1995; Rothman & Silverman, 2007; Wolfe et al., 2009).

### Gender as an effectiveness moderator

Research results have shown that participants have not equally learned from universally offered sexual assault prevention programs (Stephens & George, 2009). Knowledge of program effectiveness' moderators could point to subpopulations in need of more intensive programs or to ways in which existing programs could be modified to maximize gains for all participating youth. One of the characteristics that may moderate the effectiveness of sexual violence prevention programs is the gender of the audience. Despite some tentative evidence that mixed-gender formats may be less effective for women in college populations (Anderson & Whiston, 2005), sexual assault and dating violence prevention programs continue to be most often offered to mixed audiences (Lonsway et al., 2009). There is evidence that mixed-gender sexual assault prevention programs improve men's victim empathy, decrease their adherence to rape myths (Bradley, Yeater, & O'Donohue, 2009) and change their behavioural intentions (Anderson & Whiston, 2005), and that mixed-gender programs also change women's rape attitudes (Anderson & Whiston, 2005). Single gender groups have shown greater effectiveness regarding men's attitude change and women's behavioural intentions (Anderson & Whiston; Brecklin & Forde, 2001). A recent review on sexual assault prevention program's characteristics and their outcomes thus stated that a same-gender audience is generally more effective than a mixed-gender audience (Vladutiu, Martin, & Macy, 2011).

It has been suggested that when programs focus on male to female violence only, rather than reciprocal violence, males become more defensive and their attitudes may deteriorate and become more tolerant of rape (Jaffe, Sudermann, Reitzel, & Killip, 1992; Kuffel & Katz, 2002). However, the results of two recent studies contradict this idea. Indeed, male participants showed greater improvements in victim empathy, rape myths acceptance, and physical dating violence than females

did when reciprocal violence (Wolfe et al., 2009) and male-to-female violence only (Bradley, Yeater, & O'Donohue, 2009) were addressed in mixed-gender settings. In the context of such contradictory results, we can only conclude that the effectiveness of mixed-gender group formats needs to be further documented by comparing male and female changes in outcomes following their participation in sexual assault awareness and prevention workshops.

## Goals and Hypotheses

The first goal of the present study was to assess the effectiveness of a sexual assault awareness and prevention workshop designed for teenage boys and girls aged 15 to 17 in the province of Quebec over a 3-month follow-up evaluation. The outcomes assessed include: measures of knowledge regarding sexual assault; awareness of available resources; attitudes toward sexual assault; abilities to recognize sexual assault and respond appropriately to a disclosure of sexual assault; as well as sexual assault victimization and perpetration. The second goal was to assess whether gender moderates the workshop's effectiveness. The present study hypothesized that youth participating in the workshop would demonstrate improved knowledge, awareness and attitudes, enhanced abilities to recognize and respond to sexual assault disclosures and diminished incidence of sexual victimization and perpetration compared with non-participants over the course of the study. As previous research results are inconsistent and contradictory regarding gender as a potential moderator of sexual assault prevention program's effectiveness, the second goal of the study is exploratory.

## METHODS

### Awareness and Prevention Workshop

Viol-Secours, a sexual assault help and advocacy centre based in Quebec City, has offered free prevention, public awareness and training services for over 35 years. As per similarly implemented programs, their sexual assault awareness and prevention workshop aims to reduce the incidence of various forms of sexual assault among youth by improving their knowledge and changing their attitudes regarding sexual assault (e.g., Fay & Medway, 2006; Jaycox et al., 2006; Lowe, Jones, & Banks, 2007; Rayburn et al., 2007). This is done by encouraging group discussions on issues surrounding sexual assault, mainly issues of male-to-female violence, through the use of vignettes. The 75-minute workshop was led by one of two female facilitators in one classroom at a time; each facilitator offered half of the workshops assessed in the current study. Teachers remained present during the workshop offered in their class. The workshop covers six topic areas related to sexual assault and its prevention: (a) presentation of Viol-Secours services for female victims, (b) definitions of sexual assault (harassment, exhibitionism, date rape and stranger rape, etc.), (c) common myths and misconceptions, (d) the

consequences of sexual assault for victims, (e) what to do if you are assaulted or know a victim or perpetrator, and (f) prevention strategies (e.g., clear communication). Workshop facilitators were blind to the research design and to assessment times in each school.

The implementation of the workshop was assessed using a 52-item checklist of topics to be covered. A research assistant observed all experimental group workshops and reported on items that were completed or not and on the time dedicated to each topic. This assistant was blind to research hypotheses and did not participate in other aspects of the research or the workshop itself. The implementation was deemed excellent with regards to the checklist items covered on average (94%), with slightly higher levels of coverage for the first two topics (a = 93% and b = 98%) than for the last two (e = 76% and f = 78%). More time was allotted to the first two topics than planned (48 minutes were given to topics a and b rather than the intended 20 minutes) and consequently less time was available than planned for the last four topics (25 minutes instead of the intended 50 minutes). Thus, almost all planned topics were addressed during the workshop, but instructors lacked time to cover them all in as much depth as intended.

### Participants

Youth from high-school levels 4 or 5, or a combination of both (15 to 17 years of age), from two public high schools in one Quebec City school board were selected to take part in the study (N = 794, n = 422 in the control group and 372 in the experimental group). Participating schools were selected two years before the actual study because: they were included in the area where Viol-Secours offers its workshop; were interested in receiving the workshop; had never received it before; and had large enough numbers to allow a sufficient sample size to detect changes if they were present. Individual participants were recruited on the day of the first assessment. There were no a priori exclusion criteria. While 90% of participants reported to be native French speakers, just over half were girls (56%). Only 3% of participants reported being of First Nations heritage, and 12% were born outside Canada. The majority of participants lived with both parents (62%) or alternated between parents (13%). The majority of participating youth reported having had at least one dating relationship before the study (76%) and 33% were in a dating relationship at T1. Prior to the study, 12% reported ever having experienced sexual victimization (18% for girls and 4% for boys) and 5% reported having ever perpetrated sexual violence (2% for girls and 7% for boys).

Although we did not have access to data on socioeconomic characteristics of individual participants and their families, the Quebec Ministry of Education publishes two yearly indexes for every school in the province: the socio-economic index and the low-income threshold index. A lower index is indicative of a smaller proportion of families who are experiencing socioeconomic adversity. The two participating schools were comparable in terms of their socio-economic characteristics,

with a small proportion of families close to or under the low-income threshold (index levels 2 and 3 on a scale of 1 to 10), and the lowest proportion of families where both parents were unemployed or whose primary caregiver did not possess a high school diploma (index level 1 on a scale of 1 to 10).

### Study design and data collection procedures

This project received ethical approval from the Université de Montréal's sectorial ethical committee. We implemented a pragmatic trial, where the effectiveness of the workshop is assessed in real-world conditions, rather than assessing the workshop's efficacy in laboratory settings. Because schools limited the number of visits and disruption to classroom curricula and asked that all participants receive the workshop in the same school year, we randomly attributed schools to the experimental conditions. Although this necessary decision prevented individual randomization of participants to the experimental conditions, a design that would have limited intra-cluster correlation, it had the advantage of reducing contamination between the intervention and control groups. A baseline survey (T1) was carried out 1 week before the workshop, a second (T2) one week after the workshop and a third (T3) at a 3-month follow-up. The control group also took part in the awareness and prevention workshop later during the school year. The temporal interval between T1, T2 and T3 assessments was the same for the control group and the experimental group.

Research assistants assessed two to three classes at a time in the same auditorium or cafeteria in each school and were blind to experimental conditions. After explaining the study, the research assistants gave each participant a questionnaire containing an information sheet and consent form. Those who wished to take part in the study anonymously indicated their preference using the consent form and completed the questionnaire. Participants created a unique seven-character subject-generated identification code to match their questionnaires at each follow-up, which guaranteed the anonymity of their responses (Yurek, Vasey, & Sullivan Havens, 2008).

### Measures

**Knowledge.** The Sexual Assault Knowledge questionnaire, which consisted of 10 "true" or "false" items relating to the workshop's content, was developed specifically for this study to assess participants' knowledge of facts regarding sexual assault (e.g., "Voyeurism is a form of sexual assault"). As this measure covers varied knowledge and not a single concept where items would be highly related to one another, it is not expected that youth would answer each question similarly. Each item is thus moderately related to the others. An overall score was calculated by adding the number of correct responses (0 to 10), with higher scores indicating greater correct knowledge regarding varied aspects of sexual assault.

Participants' knowledge or awareness of available resources in case of sexual assault was assessed using one item inquiring whether they knew who to contact to get help if they, or some-

one they know, experiences sexual assault (yes/no) (for a similar measure, see Foshee et al., 2005). They were then asked to name who they would contact. Those who answered "yes" and could name at least one resource were scored as "aware" of a resource, while others were scored as unaware of a resource.

**Attitudes.** The Sexual Violence Attitude scale contains 25 items to assess youth's attitudes toward sexual assault. The survey items were derived from various attitudinal measurement surveys (Chamberland, 2003), in particular, all 13 items from the Rape Attitude scale (e.g., "Most of the time, girls falsely report sexual assault to get attention") (Hall, Howard, & Boezio, 1986), four items from the attitudinal subscale of the Dating Violence Attitude and Knowledge scale (e.g., "When you agree to have sex with someone and change your mind at the last minute, it's not really a sexual assault if the other forces you to go all the way") (Lavoie, Dufort, Hébert, & Vézina, 1997), two items from the Attitudes Towards Rape-Revised scale (e.g., "if someone does not report a sexual assault, s/he wants it to continue") (Harrison, Downes, & Williams, 1991), three items from the Child Sexual Abuse Myth Scale (e.g., "A girls' degree of resistance should be the only criteria to determine whether she was sexually assaulted or not") (Collings, 1997), and two items were added for the present study to cover youth's attitude toward their own involvement as victims or bystanders (e.g. "will never happen to me," "is not my problem, should not get involved"). Items are scored on a 6-point Likert scale from 1 ("completely agree") to 6 ("completely disagree"). A higher total score indicates an attitude that is less favourable to sexual assault. Overall scores vary between 25 and 150 (baseline alpha = .82).

**Abilities.** The Sexual Assault Disclosure scale was used to assess two types of abilities: recognition of sexual assault from a hypothetical disclosure and response to a disclosure (Chamberland, 2003). Measures were taken using a vignette representing a sexual assault in an adolescent dating relationship. After reading the vignette, participants indicate the degree to which they consider the situation to constitute a sexual assault on a 6-point Likert scale, ranging from 1 ("completely disagree") to 6 ("completely agree"). A higher score indicates a greater ability to identify a sexual assault and less ambivalence to recognize it as such. The vignette is followed by 10 items that participants score according to how they would most likely react if a friend disclosed this situation to them on the same Likert scale as the vignette. Three subscales are then calculated representing appropriate (four items; e.g. "I would listen to her and tell her she can call me if she needs to talk about it again" or "I would guide her to someone who is competent to help"), minimization/denial (three items; e.g. "I would dedramatize the situation by telling her this often occurs in couples," "To encourage her, I would tell her that what happened was not so grave as it was not violent.") and aggressive/blaming reactions to disclosure (three items; e.g. "I would give her an ultimatum to leave him; this way, it will be easier for her to regain self-control quickly and to be safe.," "I would try to make her become aware of what she did

Table 1. Means and Standard Deviations for Each Outcome at Each Measurement Time by Experimental Group

Outcomes	T1		T2		T3	
	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>
Knowledge regarding SA						
Workshop	267	8.23 (1.29)	255	8.99 (1.18)	214	8.98 (1.14)
Control	330	7.91 (1.23)	330	7.70 (1.49)	287	7.77 (1.55)
Awareness of Resources	<i>N</i>	% yes	<i>N</i>	% yes	<i>N</i>	% yes
Workshop	262	65%	252	91%	213	91%
Control	321	75%	317	81%	284	85%
Attitudes	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>
Workshop	267	116.75 (16.38)	256	119.81 (16.65)	210	122.41 (16.56)
Control	328	115.44 (17.17)	327	114.41 (18.83)	286	116.35 (17.64)
Ability to Recognize SA						
Workshop	256	4.07 (1.32)	242	4.65 (1.19)	205	4.84 (1.06)
Control	322	4.00 (1.16)	308	4.12 (1.20)	275	4.24 (1.24)
Ability to respond to SA disclosures – Appropriate						
Workshop	266	20.21 (2.94)	254	20.94 (2.94)	211	21.00 (2.81)
Control	329	20.16 (3.03)	329	20.43 (2.95)	287	20.33 (2.25)
Ability to respond to SA disclosures – Denial						
Workshop	266	12.05 (3.22)	256	13.24 (3.46)	209	13.63 (2.93)
Control	329	12.13 (3.23)	328	12.10 (3.22)	287	12.37 (3.16)
Ability to respond to SA disclosures – Aggressive						
Workshop	266	8.36 (2.37)	256	8.54 (2.46)	211	8.53 (2.40)
Control	327	8.06 (2.34)	329	8.41 (2.32)	286	8.41 (2.23)
Sexual victimization	<i>N</i>	Lifetime %	<i>N</i>	Two-week %	<i>N</i>	Two-week %
Workshop	256	15%	177	1%	152	3%
Control	318	11%	249	4%	206	5%
Sexual perpetration						
Workshop	250	5%	183	1%	165	2%
Control	311	3%	257	2%	221	1%

to make him react like that. This will allow her to avoid it happening again.”). Elevated scores on each subscale indicate the degree to which youth endorsed reactions that were appropriate, and demonstrated lesser degrees of denial and blame, respectively (baseline alpha from .60 to .69).

**Sexual victimization and perpetration.** Sexual victimization and perpetration over the two weeks preceding T2 and T3 assessments was measured using one question each. The item reads as follows: “The next item represents a situation that might have happened to you with different people (family member, date, romantic partner, friend, neighbor, coach, acquaintance, stranger, etc.). Please, read the next item and indicate whether someone has behaved this way toward you (yes or no). Have you had a sexual relationship, were subjected to sexual behaviours or were forced to behave sexually with one of these people while you did not want to?”

The sexual perpetration question used a similar format. It reads as follows: “Have you had a sexual relationship, sexual behaviours, attempted to have a sexual relationship or made someone behave sexually while the other person did not want to?” Participants answering yes to either question were coded as sexually assaulted or sexually assaultive for the two weeks preceding T2 and T3.

## RESULTS

### Preliminary analyses

As can be seen in Table 1, preliminary analyses revealed that the two-week incidence of reported sexual victimization and perpetration at T2 and T3 were low, entailing empty cells or small cell sizes and a lack of variability when comparing the two groups over time. Because of this, these outcomes could not be used in the main analyses.

**Attrition.** From the 794 eligible participants, 767 completed questionnaires at T1, 694 at T2 and 693 at T3, which represents participation rates of 97%, 87% and 87% respectively. However, after a questionnaire matching procedure (Yurek et al., 2008), there remained several unmatched questionnaires and seemingly more participants than were recruited. This happens unfortunately often in longitudinal studies using anonymous self-generated identification codes (Galanti et al., 2007; Schnell, Bachteler, & Reiher, 2010). Participants whose questionnaires were unmatched could represent participants that had either dropped-out from the study at some point (refused to participate/ were absent) or that had remained in the study but whose questionnaire identification codes did not match across measurement times.

Because it was the only way to avoid falsely considering that questionnaires represented independent participants when in fact they were the same, we decided to retain only participants with matching codes for T1 and T2 ( $n = 598$ ; 267 and 331 for experimental and control groups, respectively). This entailed a 25% attrition rate from the initial sample of 794 for the main analyses. This attrition rate is similar to those obtained when validating subject-generated identification codes for matching anonymous questionnaires in longitudinal studies (Galanti et al., 2007; McGloin, Holcomb, & Main, 1996), and similar to rates of the best studies assessing sexual assault prevention programs (e.g., 12 to 50% attrition in Foshee et al., 2005).

Attrition analyses were done to compare the 598 included participants with the 149 not retained because of unmatched questionnaires on gender, high-school level, experimental group, and nine dependent variables measured at T1. Using a Bonferroni correction, significance levels were adjusted to compensate for multiple testing effects (.05 level of significance divided by 12 tests = .003). Analyses revealed that participants not reporting their gender were more often unmatched (98%) than boys (22%) or girls (9%; chi-square = 203.141,  $p = .000$ ,  $d = 0.43$ ). Participants from the experimental group were more often unmatched (25%) than those from the control group (16%; chi-square = 9.93,  $p = .002$ ,  $d = 0.23$ ). Unmatched participants also had lower attitudes scores than those with matched T1-T2 questionnaires ( $M = 110.32$ ,  $SD = 19.27$  vs.  $M = 116.02$ ,  $SD = 16.82$ ;  $t$ -test =  $-3.30$ ,  $p = .001$ ,  $d = 0.30$ ). This may entail a risk of bias that needs to be considered when interpreting the results. Handling of the remaining missing data is described in the main analyses section.

**Intent-to-treat.** We conducted intent-to-treat analyses including all targeted participants with valid T1 and T2 data in the experimental group ( $n = 598$ ), whether they received the workshop or not. This procedure is recommended when assessing the effectiveness of pragmatic trials (Lewis & Machin, 1993; Wright & Sim, 2003). It enables determining whether the workshop remains globally effective in a class or school even when several students will be absent and not benefit from the awareness and prevention programming and is thus a more conservative and robust test of the study's hypotheses (Henry & Multisite Violence Prevention Project, 2013; Multisite Violence Prevention Project, 2014). Only nine participants with valid T1 and T2 data in the experimental group reported being absent the day of the workshop (1.5%). These participants were similar to those in the experimental group across baseline measures. A sensitivity analysis showed that results remained the same without these nine participants (Gillings & Koch, 1991).

**Baseline.** Table 1 presents general baseline information for all dependent variables. Analyses comparing baseline scores of the two groups were done using a Bonferroni corrected significance level of .006. Analyses revealed that participants from the experimental group exhibited better baseline general knowledge ( $t = -3.06$ ,  $p = .002$ ), while a greater percentage

of control group participants reported awareness of resources in case of sexual assault (chi-square = 7.63,  $p = .006$ ). Baseline scores on all other dependent variables were similar between groups.

## Main analyses

To assess whether the workshop was effective in improving participants' knowledge, attitudes and abilities to recognize and respond appropriately to sexual assault when compared with the control group over time, and whether gender moderated that effect, we undertook random coefficient analyses (RCAs) using IBM SPSS 21 (MIXED with continuous and GENLIMIXED with dichotomous outcomes) (Heck, Thomas, & Tabata, 2010, 2012). Repeated-measures within participants generally entail correlated errors that violate standards between subjects' assumptions of independence. While classic mixed Anova can deal with within-subject correlations, they delete subjects with missing data, which introduces biases in the estimated parameters and limits statistical power (Zhang & Wang, 2013). RCA is a method that allows the number of observations and the spacing between observations to vary among participants by using a Maximum Likelihood (ML) method of parameter estimation. ML estimation is considered a better method of treating missing data than traditional listwise or pairwise deletion because of these methods' inefficiency and biases when data are not missing completely at random (Schafer & Graham, 2002). Rather than replacing missing data, as in multiple imputation procedures (Sinharay, Stern, & Russell, 2001), ML uses partially available information from one case to adjust parameter estimates with missing data while producing stable, more efficient parameters (Graham, Cumsille, & Shevock, 2012; Zhang & Wang, 2013). The RCA method also calculates residuals as the distance between a data point and the mean for each participant, instead of the distance with the general mean, which enables us to control for each subject's starting point and thus for any baseline differences between groups. Because the current study had only one school allocated to each condition, Group is a fixed parameter and Time is modelled as a repeated statement, rather than a random one (population averaged approach).

Time, Group and Gender principal effects were tested as well as all two-way interaction effects and the three-way interaction. All non-significant interactions at the .05 level are removed from the final models. If the three-way interaction is significant, however, two-way interactions are kept in the analysis. Statistically significant two-way Time  $\times$  Group interactions mean that the two groups have different rates of change in the predicted outcome over time, which enables testing of the study's hypotheses. Statistically significant three-way Time  $\times$  Group  $\times$  Gender interactions mean that gender moderates the workshop's effectiveness and informs the 2nd study goal. A Bonferroni correction is used to account for the seven RCAs that were conducted and a  $p$  level below .007 is considered statistically significant.

Table 2. Reduced RCA Models When Predicting Each Outcome (n = 267 for experimental group and 331 for control group)

	Knowledge of sexual assault					Awareness of resources				
	<i>B</i>	SE	<i>df</i>	<i>t</i>	Cohen's <i>d</i>	<i>B</i>	SE	<i>df</i>	<i>F</i>	Cohen's <i>d</i>
Intercept	8.09	0.09	919.98	85.62**		1.06	0.28	1636	8.57**	
Group	-0.47	.010	1138.42	-4.49**	-.33	-0.8	0.37	1636	2.15	-.18
Time	0.38	0.05	1132.22	8.01**	.27	0.83	0.39	1636	30.91**	2.54
Gender	0.41	0.09	594.76	4.66**	.29	-0.66	0.34	1636	3.98	-.33
Time × Group	-0.45	0.06	1124.29	-7.11**	-.32	-0.10	0.51	1636	8.59**	-.71
Time × Gender						2.00	0.57	1636	2.85	.23
Time × Group × Gender						-2.58	0.72	1636	6.82*	-.56

  

	Attitudes toward sexual assault					Recognition of sexual assault				
	<i>B</i>	SE	<i>df</i>	<i>t</i>	Cohen's <i>d</i>	<i>B</i>	SE	<i>df</i>	<i>t</i>	Cohen's <i>d</i>
Intercept	108.07	1.23	797.59	87.78**		3.99	0.09	952.27	46.53**	
Group	-1.27	1.26	797.51	-1.01	-.07	-0.13	0.09	1167.54	-1.42	-.11
Time	1.53	0.52	1099.15	2.93*	.17	0.38	0.04	1083.57	8.46**	.31
Gender	14.35	1.28	797.02	11.20**	.68	0.22	0.08	597.04	2.82*	.18
Time × Group	-2.11	0.52	1094.93	-4.05**	-.12	-0.24	0.06	1077.72	-4.10**	-.20
Time × Gender	1.20	0.53	1094.15	2.27	.13					

  

	Respond appropriately to disclosure					Respond without denial to disclosure				
	<i>B</i>	SE	<i>df</i>	<i>t</i>	Cohen's <i>d</i>	<i>B</i>	SE	<i>df</i>	<i>t</i>	Cohen's <i>d</i>
Intercept	19.59	0.23	1027.58	86.71**		11.34	0.24	908.25	46.43**	
Group	-0.05	0.22	1022.48	-0.20	-.02	-0.18	-0.18	904.98	-0.72	-.06
Time	0.15	0.13	1124.63	1.20	.05	0.53	0.12	1112.89	4.27**	.16
Gender	1.17	0.23	1023.02	4.97**	.40	1.48	0.25	904.76	5.84**	.46
Time × Group	-0.28	0.13	1111.41	-2.42	-.09	-0.52	0.12	1104.42	-4.18**	-.16
Time × Gender	0.32	0.13	1110.46	2.42	.11	0.26	0.13	1103.27	2.11	.08

  

	Respond without blame to disclosure				
	<i>B</i>	SE	<i>df</i>	<i>t</i>	Cohen's <i>d</i>
Intercept	7.96	0.16	688.75	48.25**	
Group	-0.17	0.16	599.16	-1.03	-.07
Time	0.12	0.5	1108.33	2.54	.05
Gender	0.63	0.17	598.70	3.80**	.27

Note: \* $p < .007$ . \*\*  $p < .001$ .

The results of the reduced models for the seven RCA analyses using the full sample of 598 youth in every analysis are presented in Table 2. The results reveal significant Time × Group interactions for 5 of the 7 outcome measures. This indicates that there is a significant difference between the experimental and control groups in their rate of change on these five outcomes over time. Cohen's *d* effect size measure indicates that the workshop's effectiveness for these five outcomes is generally small (0.12 to 0.32) except for Awareness of resources for which there is a moderate effect (0.56) (Cohen, 1992). To determine where lay the differences in the rate of change, five post-hoc RCA analyses were done for each group. Results indicated that the experimental group's outcomes always improved over time at a significance level below .007 (Knowledge regarding sexual assault:  $B = 0.38$ ,  $SE = 0.04$ ,  $t = 8.42$ ,  $p = .000$ ; Awareness of resources:  $B = -1.80$ ,  $SE = 0.28$ ,  $t = -6.42$ ,  $p = .000$ ; Attitudes:  $B = 2.33$ ,  $SE = 0.41$ ,  $t = 5.66$ ,  $p = .000$ ; Recognizing sexual assault:

$B = 0.38$ ,  $SE = 0.05$ ,  $t = 8.46$ ,  $p = .000$ ; Respond to disclosure without denial:  $B = 0.70$ ,  $SE = 0.09$ ,  $t = 7.43$ ,  $p = .000$ ), while outcomes of the control group did not improve (Knowledge regarding sexual assault:  $B = -0.07$ ,  $SE = 0.04$ ,  $t = -1.59$ ,  $p = .112$ ; Attitudes:  $B = 0.12$ ,  $SE = 0.33$ ,  $t = 0.35$ ,  $p = .726$ ; Ability to respond to disclosure without denial:  $B = 0.16$ ,  $SE = 0.08$ ,  $t = 2.05$ ,  $p = .041$ ) or improved less than the experimental group (Awareness of resources:  $B = -0.74$ ,  $SE = 0.24$ ,  $t = -3.13$ ,  $p = .002$ ; Ability to recognize sexual assault:  $B = 0.14$ ,  $SE = 0.39$ ,  $t = 3.46$ ,  $p = .001$ ).

Results also reveal that only one of the three-way Time × Group × Gender interactions was statistically significant at the .007 level. This indicates that gender generally does not moderate the workshop's effectiveness over time, and that male and female youth exhibit an equal rate of change in 4 of the 5 improved outcomes over time. Thus, male and female youth equally benefited from the workshop in terms of their knowledge of sexual assault, attitudes, ability to recognize

sexual assault in a dating relationship and to respond to its disclosure without denial. Decomposition of the significant three way interaction to predict awareness of resources reveals two significant gender differences: females from the experimental group became aware of resources in greater numbers over time than females ( $B = 2.55$ ,  $SE = 0.49$ ,  $p = .001$ ) and males ( $B = 1.20$ ,  $SE = 0.41$ ,  $p = .003$ ) from the control group. Thus, the workshop's effectiveness in increasing awareness of resources is mostly evident for female youth.

## DISCUSSION

The present study assessed the short-term effectiveness of a sexual assault awareness and prevention workshop offered in school settings, in enhancing participants' knowledge, awareness, attitudes, and abilities. The results indicate that the sexual assault awareness and prevention workshop was effective in improving general knowledge regarding sexual assault, awareness of resources, attitudes regarding sexual assault and abilities to recognize sexual assault in a dating relationship and to respond to its disclosure without minimization or denial. With one exception the workshop was equally effective for male and female youth. Baseline data analysis revealed that participants demonstrated good general knowledge and attitudes regarding sexual assault and abilities to recognize and respond to a sexual assault situation reported by a peer. The results also revealed other areas that may merit greater attention in future programs. These will be discussed in the following paragraphs.

### Baseline results

The majority of participants were able to identify the correct responses on an average of eight out of 10 knowledge items. This result is similar to those obtained by a study assessing a mixed-gender program offered to college men and women that found women (not assessed in men) knew most of the factual information covered by the program (Bradley et al., 2009). In the present study, participants demonstrated weaker knowledge about the identity of the perpetrator and legal issues relating to alcohol or drug intoxication and consent. It is therefore important to clarify the issue of consent, particularly when drugs or alcohol are involved, to help at-risk youth identify and prevent sexual assault. Future awareness and prevention workshops should thus be informed by youth's current misconceptions regarding sexual violence and aim to clarify ambiguous situations.

The participants also had, on average, relatively unfavourable attitudes toward sexual assault at T1. Given time constraints, a more cost-effective strategy would be to focus on correcting the most common misconceptions regarding sexual assault, rather than covering a panoply of attitudes that are already unfavourable toward sexual assault. An item-analysis

may potentially be used to identify specific attitudes and beliefs in need of greater awareness-raising and prevention interventions that can be targeted in future programs.

Participants' ability to identify sexual assault in a dating relationship was also satisfactory in general, given that the majority recognized the abusive character depicted in the vignette. One observation that needs to be highlighted, however, is that youth remained ambivalent toward abusive sexual behaviours between dating partners in adolescence as indicated by the fact that on average they "somewhat" agreed with the fact the vignette depicted an abusive situation (average of 4 on possible total of 6). This ambivalence is supported by a large-scale study of American youth, which reported that female youth are more likely to repeatedly participate in unwanted sexual activities compared with young males (Kaestle, 2009). This, in turn, could hamper their ability to identify and set their own limits and to determine when these limits are crossed. Previous studies have also concluded that, for girls, viewing pornography is associated with increased susceptibility to engaging in unwanted sexual activities (Bonino, Ciairano, Rabaglietti, & Cattellino, 2006; Tolman & McClelland, 2011). These factors should be taken into consideration when designing future awareness-raising and prevention programs or those that foster healthy romantic relationships.

### Workshop effectiveness

The primary conclusion from the workshop evaluation is that workshop participants' knowledge of sexual assault, awareness of resources, attitudes regarding sexual assault and abilities to recognize an abusive situation and respond to its disclosure without denial showed a statistically significant improvement compared with the control group over the course of the study. These results are similar to those found in two meta-analyses assessing dating violence prevention in high-school populations (Ting, 2009) and sexual assault education programs for young adult college populations (Anderson & Whiston, 2005) that showed effectiveness with regards to improving knowledge and attitudes. They are also similar to results obtained by Foshee et al. (2005) when assessing Safe-Dates program effectiveness on participant's awareness of resources for youth experiencing dating violence.

The fact that a greater number of youth were aware of resources for sexually assaulted youth after the workshop is encouraging as such awareness has been linked to a decrease in dating violence victimization and perpetration over time (Foshee et al., 2005). However, it is surprising to find that not all workshop participants knew at least one resource after the workshop as the instructors devoted much time to the presentation of services offered by Viol-Secours. Maybe the remaining 9% of workshop participants who were unaware of resources were not listening when services were discussed, or forgot about it after the workshop, or maybe they did not feel they could resort to the proposed resources and thus said they did not know who to turn to. The results point to



another interpretation of this result as increases in awareness were mostly due to females, indicating that males receiving the workshop did not similarly benefit from receiving information regarding Viol-Secours services. This is understandable as these services are only offered to sexually assaulted females. Thus, even if male participants learned about Viol-Secours services, they may have been unaware of who to turn to for help if they were victimized or if they were perpetrating sexual violence. This indicates that information regarding sexual assault community resources need to be available for males as well as females to increase males' awareness as it could lead to decreased victimization and perpetration rates (Foshee et al., 2005).

Awareness of resources was the only outcome for which there was a gender difference in the workshop's effectiveness. These results do not resolve the question as to whether sexual assault awareness and prevention workshops should be offered in mixed or single gender formats. However, they contradict the hypothesis that if only male-to-female violence is addressed, males become defensive and their attitudes become more tolerant of rape if they are in a mixed-gender setting (Jaffe et al., 1992; Kuffel & Katz, 2002). The current study's results indicate no such deterioration of males' attitudes. In fact, their attitudes show an equal improvement to that of their female counterparts. This needs to be taken into consideration in future mixed-gender setting workshops. Future research should also continue monitoring gender differences in the effectiveness of such workshops to ascertain continued effectiveness.

While youth participation in the workshop had the desired effect, it is important to note that most observed changes were small. It is possible that some measures used in the present study lacked sufficient sensitivity to change or that they documented generally well-known facts or favourable attitudes of youth, as indicated by the relatively good baseline results we observed despite minimal ceiling effects (less than 15% lowest or highest scores) (McHorney & Tarlov, 1995). On the other hand, the general sexual assault knowledge measure used in this study was closely related to workshop content, suggesting potential areas of improvement in the workshop itself. Indeed, it is recommended that future workshops move beyond the accepted facts and concentrate on areas of greater ambiguity (e.g., informed consent and intoxication).

Moreover, as discussed earlier, this one-session 75-minute workshop is of short duration when compared with youth sexual assault awareness and prevention programs evaluated in previous studies (Anderson & Whiston, 2005). Given that workshop duration is cited as one of the key factors determining the effectiveness of sexual assault prevention programs for high-school populations (Ting, 2009), the workshop's short duration, in addition to the high number of topics covered and lack of scope to discuss common misconceptions, may have reduced its effect (Foshee & Reyes, 2011b). The workshop's time constraints also limited the types of pedagogical strategies used and, consequently, opportunities to consolidate participants' new knowledge, awareness, attitudes and abilities.

Finally, new methods of measuring participants' knowledge and attitudes toward sexual assault should be developed to better reflect the current reality faced by youth, such as controversial topics, and to improve program evaluation. Consequently, the implementation of the workshop should be revised to maximize its impact (e.g. longer duration, fewer topics in one session).

### Study strengths and limitations

The main strengths of the present study include its large sample, the inclusion of both males and females, which enabled us to consider gender as an outcome moderator, and its varied outcome measures. The use of RCA to test the hypotheses is also a strength as other strategies used with nested designs have been criticized, particularly for their increased rates of type I errors (Murray & Graybeal, 2007; Vallejo, Fernández, & Secades, 2004). Results should nonetheless be interpreted in light of the present study's limitations. First, although the study included a follow-up, it was of relatively short duration. This prevented determining the program's long-term effectiveness and whether its effects would persist into participants' adulthoods.

Second, participants who were excluded from analyses because of unmatched questionnaires at T2 seemed to represent a subgroup who were more often boys or did not declare their gender, who were from the experimental group and who reported attitudes that were less unfavourable toward sexual assault. It thus remains unknown whether the workshop would have been as effective had we been able to match these youth's questionnaires and included them in the study. This is consistent with previous longitudinal research with youth using anonymous self-generated identification codes that find participants with unmatched questionnaire exhibit more at-risk behaviours, such as smoking, drinking and drug use (Grube, Morgan, & Kearney, 1989). Longitudinal studies on sensitive topics that require protecting participant anonymity are challenging to conduct. Although some biases may persist with anonymous questionnaire matching due to unmatched questionnaires, the use of self-generated identification codes may reduce attrition due to youth's refusal to participate and, thus, entail fewer biases than non-anonymous research, especially for sensitive topics such as sexual assault (McGloin et al., 1996; Schnell et al., 2010; Yurek et al., 2008). Another possibility that could entail lower attrition rates and less questionnaire matching problems would be to conduct anonymous online surveys using emails as a matching key.

Third, individual-level characteristics that may have moderated workshop effectiveness for included participants, such as risk factors for sexual assault (e.g. childhood maltreatment), or personal knowledge of a victim or perpetrator, were not considered in the present study. Future studies should consider other moderators when assessing whether sexual assault awareness and prevention workshops are equally effective for all participants or whether subgroups differ in the extent to which they benefit from such awareness-raising and

preventive workshops (Foshee et al., 2005; Sorenson, Joshi, & Sivitz, 2014). A better knowledge of youth characteristics that may moderate workshop effectiveness could suggest new avenues for targeted secondary prevention initiatives for youth demonstrating poor knowledge, multiple prejudices, positive attitudes toward sexual assault, or insufficient ability to identify sexual assault at T1 (Guterman, 2004).

Fourth, our study lacked measures of engagement in risky sexual behaviours that act as proxies for sexual victimization or perpetration (Murray & Graybeal, 2007). Studies do not often assess these potential proxies, as is evidenced by the low percentage of studies in Anderson and Whiston's (2005) meta-analysis of programs for adults or young adults that had implemented such measures (9.5%) (for other examples, see Foshee et al., 2005; Gidycz, Orchowski, & Berkowitz, 2011; Ullman, 2007). Future studies assessing sexual assault awareness and prevention programs geared toward high-school students should thus strive to include behavioural measures or behavioural intent measures (Lonsway et al., 2009).

Fifth, many of our measures have been specifically developed for assessing this workshop's goals and use single items or as of yet non-validated measures. Although single-item questions that are vague and narrow in defining childhood sexual abuse tend to yield underestimations of incidence and prevalence rates (Stoltenborgh et al., 2011), our definition of sexual assault was broad, precise and behaviour-based, which we think has counterbalanced the single-item shortcomings. In fact, another study using the same victimization item to assess lifetime sexual assault prevalence rates revealed estimates of 12% to 13% for boys and girls combined (Daigneault, Dion, Hébert, McDuff, & Collin-Vézina, 2013), which are comparable to those of a recent worldwide prevalence study (12.7% in Stoltenborgh et al.). However, the low two-week victimization and perpetration incidence rates found at T2 and T3, while good news, prevented assessing whether the awareness and prevention workshop proved effective in diminishing victimization and perpetration in participating youth. In the context of future studies, victimization and perpetration rates thus need to be assessed over longer periods in high-school youth (e.g.s, see Foshee et al., 2004; Foshee et al., 2005).

## CONCLUSIONS

Results of the current study confirm past meta-analysis results (Ting, 2009) that high school male and female youth learn and change their attitudes toward sexual assault in relatively short periods. In addition, our study results showed that youth's abilities to identify sexual assault in a dating situation and to respond to sexual assault disclosures can be improved after a 75-minute workshop. The results also point to longer or repeated interventions to address the varied topics related to sexual assault awareness prevention, as well as to refined programming that addresses common misconceptions and areas of greater ambiguity, especially within

teenage dating relationships. Many questions remain to be further documented, such as when to intervene, how and with whom. We thus join the call to more research (O'Leary & Slep, 2012) on the effectiveness of early primary prevention of sexual and dating violence programming developed for youth.

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