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# EVALUATION OF WEB-BASED MY VOICE, MY CHOICE FOR DECREASING SEXUAL VIOLENCE VICTIMIZATION IN COLLEGE WOMEN

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EVALUATION OF WEB-BASED MY VOICE, MY CHOICE FOR  
DECREASING SEXUAL VIOLENCE VICTIMIZATION  
IN COLLEGE WOMEN

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EVALUATION OF WEB-BASED MY VOICE, MY CHOICE FOR  
DECREASING SEXUAL VIOLENCE VICTIMIZATION  
IN COLLEGE WOMEN

A Thesis Presented to the Graduate Faculty of

Dedman College

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in

Partial Fulfillment of the Requirements

for the degree of

Masters of Arts

with a

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by

Emily Johnson

B.A., Psychology, University of Arkansas

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Evaluation of Web-Based My Voice, My Choice for  
Decreasing Sexual Violence Victimization  
in College Women

Advisor: Lorelei Simpson Rowe

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Estimates suggest up to 80% of women are victims of some form of sexual violence. Assertiveness training programs are preventative interventions that empower women with skills to refuse and/or escape unwanted sexual situations. These interventions are efficacious at reducing sexual violence victimization over time but are limited in their dissemination potential. Web-based programs are an alternative that may increase dissemination, although evaluation is needed regarding their efficacy. The current study evaluates the feasibility and efficacy of an assertive resistance training program, My Voice/My Choice (MVMC), for female college students. We hypothesized participation in web-based MVMC would be associated with lower rates of sexual violence victimization over the follow-up period. We also hypothesized that participants who complete web-based MVMC would report fewer barriers to using assertive resistance skills, increased confidence in using assertive resistance skills, reductions in intent to use passive and polite resistance, and increased intent to use assertive resistance. A sample of female college students ( $n = 141$ ) completed a baseline assessment before they were randomly assigned to participation in MVMC or an active control condition. Participants were contacted one month after baseline and at the end of the semester to complete online follow-up questionnaires. Overall, participants reported general satisfaction with and enjoyment of MVMC. Results also supported the efficacy of MVMC for reducing unwanted sexual contact over one-

month. Furthermore, Number Needed to Treat (NNT) analyses indicated only six participants completing web-based MVMC would reduce occurrence of any form of sexual victimization by one, and seven participants completing web-based MVMC would reduce the occurrence of unwanted sexual contact by one. Findings from this study demonstrate initial promise for web-based MVMC at reducing unwanted sexual contact for female college students and offer suggestions for improving the program for dissemination with future groups of college women.

## TABLE OF CONTENTS

LIST OF FIGURES .....	viii
LIST OF TABLES .....	ix
INTRODUCTION .....	1
METHOD .....	7
2.1 Participants .....	7
2.2 Sample Size Justification.....	8
2.3 Procedures .....	8
2.4 Measures.....	9
3.1 Participant Satisfaction and Engagement.....	9
3.2 Sexual Victimization History.....	9
3.3 Intention to Use Assertiveness Skills.....	9
3.4 Barriers to Assertive Resistance .....	9
2.5 Data Analysis Plan.....	12
RESULTS .....	14
3.1 Participant Satisfaction and Engagement.....	14
3.2 Sexual Victimization.....	15
3.3 Intent .....	16
3.4 Barriers.....	17
3.5 Post-Hoc Analyses .....	18
DISCUSSION.....	19
REFERENCES .....	26



## LIST OF FIGURES

Figure 1 CONSORT diagram of participant flow and attrition .....	44
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## LIST OF TABLES

Table 1 Means, standard deviations, and correlations for outcome variables among MVMC participants at baseline .....	36
Table 2 Participant satisfaction and engagement in MVMC in Percentages ( $N = 74$ ) .....	37
Table 3 Percentages of sexual victimization rates between intervention conditions.....	38
Table 4 Percentages and means of intentions between intervention conditions .....	39
Table 5 Regression analysis for intention to use resistance skills .....	40
Table 6 Percentages and means of barriers and confidence between intervention conditions ....	41
Table 7 Regression analysis for confidence in assertive resistance skills .....	42
Table 8 Regression analysis for barriers .....	43

This is dedicated to Ryan, my strongest support.

## INTRODUCTION

In the United States, both men and women suffer from unwanted sexual advances, including unwanted touch, sexual coercion, and rape/attempted rape. Prevalence rates are higher for women, however, with estimates indicating up to 80% of women are victims of some form of sexual violence (Black et al., 2011; Nurius & Norris, 1996; Muehlenhard & Linton, 1987), compared to about 10-30% of men (McLean, 2013; Peterson, Voller, Polusny, & Murdoch, 2011). Moreover, about one quarter of women are the victims of attempted or completed rape (Koss, Gidycz, & Wisniewski, 1987; Koss & Oros, 1982; Nurius & Norris, 1996). The majority of acts of sexual violence are perpetrated by someone known to the victim (Abbey, Ross, McDuffie, & McAuslan, 1996; Siddique, 2016). Sexual victimization is associated with a host of negative outcomes, ranging from immediate injury and psychological distress to long term medical, psychological, educational, and occupational impairment (for reviews, see Dworkin, Menon, Bystrynski, & Allen, 2017, & Resick, 1993).

Attempts to reduce rates of sexual assault have increased rapidly since the Clery Act of 1990. This act requires all colleges and universities that receive federal funding to implement sexual assault prevention policies. While the effectiveness of many of these policies has not been evaluated, those that have been evaluated focus primarily on attitude change as the outcome variable (i.e., changes in rape myth acceptance and other forms of rape-supportive attitudes), with relatively few studies assessing occurrence of sexual victimization or use of prevention strategies (Morrison, Hardison, Mathew, & O'Neil, 2004; Vladutiu, Martin, & Macy, 2011).

Attitude change as a measure of program effectiveness has been criticized because change in attitude does not necessarily result in change in behavior, particularly in changes that will reduce one's vulnerability to victimization (Anderson & Whitson, 2005; Breitenbecher & Scarce, 2001; Gidycz & Dardis, 2014). That is, although sexual assault prevention programs typically have short-term effectiveness in reducing rape-supportive attitudes, there is an overall lack of clarity surrounding what impact, if any, they have on reducing the occurrence of sexual victimization (Anderson & Whitson, 2005; Morrison et al., 2004).

One might rightly argue that reducing sexual assault perpetration should be the primary goal of prevention, and this argument is acknowledged by many researchers working to reduce sexual victimization (e.g., Gidycz & Dardis, 2014; Hollander, 2009; Kelley, Orchowski, & Gidycz, 2016). Unfortunately, programs designed to reduce perpetration have had minimal success and/or have not been rigorously evaluated (Gidycz & Dardis, 2014; Tharp et al., 2011). In response, some researchers (e.g., Breitenbecher & Scarce, 2001; Gidycz & Dardis, 2014) have called for assertiveness training programs to empower women with skills needed to refuse unwanted sexual contact and escape potentially dangerous situations. Such programs emphasize women's right and ability to defend themselves and teach specific verbal, and sometimes physical, resistance skills. One form of verbal defense is assertive resistance, which includes behaviors that clearly and firmly communicate personal boundaries (Rickert, Sanghvi, & Wiemann, 2002). Examples of assertive resistance include clearly stating that one is uncomfortable with a sexual advance, yelling for help, or leaving the situation (Gidycz & Dardis, 2014; Rickert et al., 2002).

Training in assertive resistance is particularly important because there are significant barriers to using these skills in response to unwanted sexual advances, especially advances made

by an acquaintance or romantic partner (Norris, Nurius, & Dimeff, 1996). In contrast, researchers have found that the most common resistance techniques used when faced with such unwanted advances were “turning cold” and/or “reasoning or pleading” (Koss, Dinero, Seibel, & Cox., 1998, p. 21). Unfortunately, such nonassertive resistance techniques are typically ineffective for escaping sexually violent situations (Turchik, Probst, Chau, Nigoff, & Gidycz, 2007).

In an effort to reduce future vulnerability, researchers have explored why women might be more likely to use these passive strategies. Kelley and colleagues (2016) suggest that women, in American culture, are socialized to be passive and to view their needs as secondary to accommodating the needs of others. In turn, this might make women less prepared to act assertively in response to unwanted sexual advances (Gidycz & Dardis, 2014). This becomes especially complicated when women encounter these advances when in romantic situations. Additionally, situational cues that may indicate risk of sexual victimization (e.g., isolation, alcohol use) may be obfuscated by norms associated with dating (Gidycz, McNamara, & Edwards, 2006). Even if a woman does recognize she is at risk, fears about damaging the relationship or misperceiving the situation may make her more likely to utilize passive, rather than assertive, resistance techniques (Gidycz et al., 2006; Nurius, Norris, Young, Graham, & Gaylord, 2000).

Barriers to the use of assertive resistance techniques are important to note, especially since assertive resistance is often effective for escaping sexually violent situations (for a review, see Ullman, 2007). For those unable to escape, the use of these techniques is linked to sustaining fewer physical injuries during a sexual assault (Wong & Balemba, 2016). Thus, programs that enhance women’s assertive resistance skills and the likelihood that they will use such skills when

faced with unwanted sexual advances have considerable potential to reduce the escalation and occurrence of sexual violence.

To date, a handful of studies have evaluated assertive resistance training programs. Orchowski, Gidycz, and Raffle (2008) and Gidycz and colleagues (2015) evaluated the effectiveness of a modified version of the Ohio University Sexual Assault Risk Reduction Program (Gidycz et al., 2006), a seven-hour program that teaches both physical and assertive resistance skills. Elemental (Menning & Holtzman, 2015) is a six-hour training program that focuses on psychoeducation as well as physical and verbal assertive resistance skills. Similar topics are included in the Enhanced Assess, Acknowledge, Act Sexual Assault Resistance program (Senn, Eliasziw, Barata, Thurston, & Newby-Clark, 2015), a twelve-hour program. All of these programs have demonstrated reductions in sexual victimization at follow-up periods ranging from two-months to one year. My Voice My Choice (MVMC) was developed as a 90-minute single-session program that provides training exclusively in verbal assertive resistance skills and uses an immersive virtual environment (IVE) to allow participants to practice skills in response to unwanted sexual advances. Participation in MVMC reduced sexual victimization rates by half over a three-month follow-up period, compared to a wait-list control group (Rowe, Jouriles, & McDonald, 2015).

Thus, there is reason to believe that programs focusing on assertive resistance skills can be effective in reducing sexual violence victimization among adolescent girls and young women and skills can be taught in a relatively brief period of time (90 minutes to 12 hours). However, the ability to disseminate these programs widely is limited by the logistic requirements of face-to-face interventions, including trained facilitators, virtual reality equipment (in some programs), and the space and time to conduct meetings. In contrast, a web-based format has the potential for

much quicker and broader dissemination. Web-based programs offer several advantages in that they are inexpensive to create and disseminate, require fewer program administrators and less equipment, and can be completed quickly by larger populations.

Meta-analyses examining the efficacy of web-based interventions for other problems suggest that those targeting behavioral change are at least as efficacious, if not more so, than face-to-face interventions (e.g., Cugelman, Thelwall, & Dawes, 2011; Webb, Joseph, Yardley, & Michie, 2010). Web-based interventions have been used most widely used to reduce problematic substance use (e.g., Ganz et al., 2018; Lewis et al., 2014; Neighbors et al., 2010), with effect sizes equivalent to those seen for in-person brief alcohol interventions (Christensen, Calcar, Andersson, Thorndike, & Tait, 2012; Riper et al., 2011). Moreover, web-based interventions have shown some promise in reducing risky sexual behaviors (Bountress, Metzger, Maples-Keller, & Gilmore, 2017), sexual violence perpetration over six months (Salazar, Vivolo-Kantor, Hardin, & Berkowitz, 2004), and sexual revictimization over a three-month period (Gilmore, Lewis, and George, 2015).

While web-based interventions clearly show promise in intervening in multiple areas, including sexual victimization, assertive resistance training programs are thought to achieve their effects in part by giving participants opportunities to practice skills and receive feedback to improve assertive responding (Gidycz and Dardis, 2014; Rowe et al., 2015). This process is arguably difficult to accomplish with a web-based program. However, other features of effective assertive-resistance programs could be maintained in a web format, such as discussion of the importance of assertive resistance, examples of how to use these skills effectively, and encouraging women to stand up for themselves.



The primary aim of this study was to conduct a pilot evaluation of the feasibility of a web-based version of MVMC for female college students, since this group is at a particularly high risk for sexual violence victimization (Krebs, Lindquist, Warner, Fisher, & Martin, 2007). We also focused specifically on unwanted sexual advances occurring between women and male acquaintances or dating partners because this is the most common context in which sexual violence occurs (Abbey et al., 1996; Siddique, 2016). We examined participants' reactions to MVMC, including any feedback they offered to improve the program.

As a secondary aim, we sought to gather preliminary data about the hypothesized outcomes of web-based MVMC participation. However, given the reduced power needed for a feasibility investigation, we recognized our inability to conduct a fully-powered test of program effectiveness. To this end, we examined general trends of the program's impact on sexual victimization in order to develop ideas about initial effect sizes for future studies. We hypothesized that participants who complete the web-based version of MVMC would report lower rates of sexual violence victimization over the follow-up period compared to participants in an attention control condition. We also hypothesized that participants who complete the web-based version of MVMC would report fewer barriers to using assertive resistance skills, increased confidence in using assertive resistance skills, reductions in intent to use passive and polite resistance, and increased intent to use assertive resistance.

## METHOD

### 2.1 Participants

Female college students between the ages of 18 and 23 ( $n = 141$ ) were recruited from the psychology research subject pool at a four-year private southwestern university for an investigation of female college students' perceptions about web-based programs that teach skills relevant to the lives of college students. Exclusion criteria included being married and/or cohabitating with a romantic partner, as the program focuses on assertive resistance skills used to prevent sexual violence victimization in common dating or social situations (Abbey et al., 1996; Siddique, 2016), but is not intended to address intimate partner violence in established relationships. All participants were compensated for their time with class credit for participating in research.

Participants ranged in age from 18 to 23 ( $M = 19.72$ ,  $SD = 1.27$ ). They identified as 64.5% (91/141) Non-Hispanic White, 16.3% (23/141) Hispanic, 9.2% (13/141) Asian, 4.3% (6/141) Black/African American, 4.3% (6/141) Multiracial, and 1.4% (2/141) as other. The majority of participants, 97% (137/141), identified as heterosexual. Approximately 31% (43/141) of participants reported being in a committed relationship at baseline; another 8% reported being in a casual relationship at baseline (11/141). The majority of these relationships were with male partners (99%). At baseline, approximately 62% (88/141) participants reported at least one experience of prior sexual victimization of any kind. Unwanted sexual contact was reported by

52% (73/141) of participants; sexual coercion was reported by 46% (65/141) of participants; and sexual assault (i.e., attempted or completed rape) was reported by 30% (42/141) of participants.

## **2.2 Sample Size Justification**

Because this study was designed as a pilot test of a web-based version of MVMC, the targeted sample size was based primarily on the sample size that could be reasonably obtained, rather than on the results of a power analysis (Leon, Davis, & Kraemer, 2011). With the primary aim of this study being to examine the feasibility and acceptability of web-based MVMC, we recruited participants over two semesters.

Since our secondary aim was to evaluate general trends in the impact of MVMC participation on sexual victimization, we also calculated this study's current power to detect effects. Based on this goal, a power analysis for logistic regression using G\*Power (Faul, Erdfelder, Buchner, & Lang, 2009) indicated that, with our sample size of 141, power exceeded .60 to detect a medium-size effect. Thus, as anticipated, our study was underpowered to test the effects of the intervention on sexual victimization but was still helpful to offer preliminary ideas about effect sizes for future studies of web-based MVMC.

## **2.3 Procedures**

Participants attended an initial assessment within the first four weeks of the semester. The assessment was conducted in a computer lab of the psychology department and involved approximately 35 minutes of online questionnaires. Immediately after this, participants were randomly assigned to one of two programs developed for this study: web-based MVMC ( $n = 76$ ) or Stress Less ( $n = 65$ ), a stress management attention control program. A CONSORT diagram (Figure 1) reports participant attrition across the follow-up periods. After completing their assigned condition, all participants responded to a brief customer satisfaction survey.

The web-based version of MVMC was designed to train women in verbal assertive resistance skills that can be used when faced with unwanted sexual advances. The 25-minute program includes a description of assertive resistance and a discussion of when and why someone might choose to use these skills. Multiple examples of assertive resistance skills are presented, including three videos of unwanted sexual advances of varying severity (e.g., being asked on a date, being pressured to go home with a date, and being pressured to have sex while intoxicated). Each example is followed by a discussion about the ways in which the women in the videos could use assertive resistance skills. Throughout these examples, participants are asked to consider the scenarios and brainstorm possible responses. The point that women have the right to stand up for themselves and that the only person to blame for sexual violence is the perpetrator is emphasized throughout.

Participants assigned to the stress management group participated in a web-based program designed to parallel the presentation of MVMC, but with a focus on skills for managing stress. Similar to the structure of MVMC, participants learned about how and why to manage stress, which was reinforced by voice-over discussions and open-ended questions.

Follow-up evaluations occurred at two time points: (1) approximately one month following the initial assessment and (2) at the end of the semester (approximately two to three months after the initial assessment). Participants received emails containing a link to a 30-minute online questionnaire that was administered on a secure web site. Days between the baseline assessment and one-month follow-up was approximately 30 ( $SD = 2.57$ ), and days between the one-month follow-up and end-of-semester follow-up was approximately 37 ( $SD = 14.06$ ).

## 2.4 Measures

**Participant Satisfaction and Engagement.** Participant satisfaction and engagement with their assigned program was assessed using five items. Four items (“*How much did you enjoy the program?*,” “*Would you recommend it to other women?*,” “*Do you think the program will be helpful to you in the future?*,” “*Will you use the skills you learned?*”) were assessed on a 5-point Likert scale ranging from one (“*not at all*”) to five (“*very much*”). Coefficient alpha for the items was .88. The fifth item (“*How involved were you in the program?*”) was assessed on a 5-point scale ranging from one (“*not at all*”) to five (“*extremely*”). Participants were also asked to provide recommendations for improving the program in an open-response format.

**Sexual Victimization History.** Sexual victimization history was assessed using a 15-item measure developed for previous studies (Rowe, Jouriles, McDonald, Platt, & Gomez, 2012). The measure draws items from the Sexual Experiences Survey (SES; Koss & Gidycz, 1985) and the Conflict in Adolescent Dating Relationships Inventory (CADRI; Wolfe, Scott, Reitzel-Jaffe, Wekerle, Grasley, & Straatman, 2001). Both the SES and CADRI are frequently-used and well-validated measures for assessing broad sexual violence (Koss & Gidycz, 1985; Koss et al., 1987; Wolfe et al., 2001). Items from these measures were combined to obtain a broad assessment of sexual violence, with the addition of items relevant to a college setting. Participants were asked to report on lifetime and past month occurrence at baseline, and over the past month at the one-month and end-of-semester follow-up assessments. Coefficient alpha for lifetime victimization was .85 for the total scale, .62 for the unwanted sexual conduct items, .77 for the sexual coercion items, and .70 for the sexual assault items.

**Intention to Use Assertiveness Skills.** Participants completed a 15-item measure of responses to sexual pressure or coercion adapted from work by Norris and colleagues (2006).

The measure includes seven assertive resistance behaviors (e.g., “*I would clearly or directly tell the person to stop doing what they were doing*”), three polite resistance behaviors (e.g., “*I would nicely or apologetically ask the person to stop what they were doing*”), and five passive resistance behaviors (e.g., “*I would show my lack of interest by stiffening my body or turning my face away*”). Participants were asked to indicate which responses they believe they would use if faced with unwanted sexual advances in the future by selecting responses from a list of options. Coefficient alpha for the assertive resistance behaviors subscale was .76, for the polite resistance behaviors subscale was .41, and for the passive resistance behaviors subscale was .21. Since this measure uses dichotomous choices (i.e., participants indicate “yes” or “no” to their use of each behavior; coded  $0 = no$ ,  $1 = yes$ ), measures of internal consistency are less robust (Cho, 2016). It is also possible the alphas for the polite and passive resistance behaviors subscale were impacted by a restricted range. Although the range for intentions to use polite resistance ranged from 0 to 3, the mean was .62 ( $SD = .72$ ). The range for intentions to use passive resistance ranged from 0 to 4, with a mean score of 1.14 ( $SD = .98$ ).

**Barriers to Assertive Resistance.** Participants completed an adapted version of the Psychological Barriers to Resistance Scale (Norris et al., 1996) to measure potential barriers to assertive resistance and confidence in one’s ability to protect oneself from dating violence. Participants were asked to select all statements from a list which they believe they would feel or think if faced with unwanted sexual advances in the future. This measure also uses dichotomous choices, such that participants indicate “yes” or “no” to each of the items (coded  $0 = no$ ,  $1 = yes$ ). This scale is comprised of four subscales: relationship barriers (five items;  $\alpha = .63$ ), such as “*I wouldn’t want to hurt his/her feelings*”; fear barriers (six items;  $\alpha = .48$ ), such as “*I would be afraid that if I didn’t give in, he/she might hurt me*”; intoxication barriers (one item), such as “*I*

would be too drunk or high to see what was happening until it was too late or to think clearly about what to do”; and confidence (five items;  $\alpha = .63$ ), such as “I would feel confident that I could stand up for myself and tell him/her to stop and/or leave the situation.” It is possible the alpha for the fear barrier subscale as impacted by a restricted range: the range was 0 to 4, with a mean of 1.32 ( $SD = 1.25$ ).

Notably, the items used to assess confidence were initially introduced as distractor items. Because they were not originally part of the scale, they have not been validated in previous research. In this study, the confidence subscale correlated significantly with two other measures of assertiveness. It correlated positively with the intent to be assertive subscale discussed above,  $r(139) = .54, p < .001$ , and the Self-Efficacy Questionnaire (SEQ; Marx, Calhoun, Wilson, & Meyerson, 2001; Ozer & Bandura, 1990),  $r(139) = .45, p < .001$ . However, it did not significantly correlate with the refusal of unwanted sexual activity subscale of the Sexual Assertiveness Scale (SAS, Morokoff et al., 1997),  $r(139) = .14, p = .109$ .

## **2.5 Data Analysis Plan**

The primary purpose for this study was to evaluate the feasibility of MVMC and the protocol developed for this study. To this end, we evaluated the means and standard deviations of the customer satisfaction variables and suggestions for how to improve the program for future groups among MVMC participants only.

Second, we examined initial effect sizes in order to inform future study design. We first examined the impact of MVMC over the course of the semester, grouping participants who reported sexual victimization at either follow-up as victimized by sexual violence and participants who reported no sexual victimization at both follow-ups together as not victimized. This was done to minimize attrition across our follow-up periods: participants who completed at

least one follow-up during which they reported sexual victimization were able to be retained in the sample, since we were able to classify them as victims of sexual violence. In contrast, we were unable to retain participants who completed at least one follow-up during which they did not report victimization, as we were unable to verify that they were not the victims of sexual violence at another time point.

We then used logistic regression to evaluate the impact of MVMC participation on reports of sexual victimization at the one-month follow-up and at the end-of-semester follow-up. In these analyses, we filtered our data so that all participants had data for our primary outcome variable, general sexual victimization, over the course of the semester. In each analysis we also controlled for prior victimization. Our equation was:  $\text{logit}(p(x)) = a + b_1(\text{InterventionGroup}) + b_2(\text{Prior Victimization})$ , where  $p$  represents the likelihood of participants reporting victimization at the 1-month and the final follow-up,  $b_1$  represents the coefficient of the participation grouping variable (i.e., assignment to web-based MVMC or Stress Less), and  $b_2$  represents the coefficient of prior victimization at the previous assessment time point.

We also conducted a series of multiple linear regression analyses to test whether participation in web-based MVMC resulted in reporting fewer barriers to using assertive resistance skills, increased confidence in using assertive resistance skills, reductions in intent to use passive and polite resistance, and increased intent to use assertive resistance. In each of these analyses, we controlled for baseline reports of the corresponding barrier and intent variables as well as baseline sexual victimization.

Throughout these analyses, program participation was coded such that web-based MVMC participation was coded 0 and Stress Less participation was coded 1.



## RESULTS

Means, standard deviations, and correlations for all outcome variables are summarized in Table 1. The intervention and control group participants did not differ significantly on any demographic or outcome variables at baseline, except for sexual coercion reported at baseline,  $t(139) = 2.06, p = .041$ .

### **3.1 Participant Satisfaction and Engagement**

Overall, participants reported moderate to high levels of enjoyment and satisfaction with web-based MVMC (see Table 2 for participants' responses for each item). The majority of participants (56.5%) reported they enjoyed the program quite a bit or very much, which are the highest end of the satisfaction scale. About a third of participants reported they were very likely to recommend the program to other women, while an additional 39.5% were quite likely to do so. The majority of participants (65.8%) thought the skills learned in the program will be helpful in the future, and many (79.7%) stated they would use the skills in the future. Although only 21.1% reported being extremely involved in the program, the majority (53.9%) reported being quite involved in the program.

When asked what could be done to improve the program, participants largely wrote that they found the program to be informative and engaging, citing the video examples of women encountering unwanted sexual advances and subsequent discussion of how they might use assertive resistance in response to be particularly helpful. The most frequent suggestions for improvement were (1) increase audience engagement by improving animation and/or making the

program more interactive and (2) to expand the discussion of situations in which assertive resistance skills can be used.

### **3.2 Sexual Victimization**

To examine whether treatment condition was associated with sexual victimization across the follow-up periods, we first examined total sexual victimization. We then examined three separate categories of sexual victimization: unwanted sexual contact, sexual coercion, and sexual assault. All analyses controlled for sexual victimization at baseline (0 = no victimization, 1 = at least 1 incident of lifetime victimization). Percentages for sexual victimization variables based on intervention condition are presented in Table 3.

Treatment condition was not significantly associated with total sexual victimization across the follow-up periods,  $b=.45$ ,  $OR=1.57$ ,  $Wald(1) = 1.18$ ,  $p = .278$ . Neither was it associated with unwanted sexual contact,  $b=.52$ ,  $OR=1.69$ ,  $Wald(1) = 1.44$ ,  $p = .233$ ; sexual coercion,  $b=-.06$ ,  $OR=.95$ ,  $Wald(1) = .01$ ,  $p = .925$ ; or sexual assault,  $b=.36$ ,  $OR=1.44$ ,  $Wald(1) = .29$ ,  $p = .587$ .

We also examined whether treatment condition was significantly associated with sexual victimization at each individual follow-up period. At the one-month follow-up period, analyses controlled for sexual victimization at baseline. At the end-of-semester follow-up period, analyses controlled for sexual victimization at baseline and the one-month follow-up. Treatment condition was significantly associated with unwanted sexual contact at the one-month follow-up,  $b=1.18$ ,  $OR=3.25$ ,  $Wald(1) = 4.59$ ,  $p = .032$ , such that participants in MVMC reported fewer instances of unwanted sexual contact at the one-month follow-up than participants in the control condition reported. Specifically, the odds ratio for this association indicates that membership in the control condition, rather than MVMC, is associated with a 225% increase in the odds of experiencing unwanted sexual contact over the one-month period between program participation and the initial

follow-up. At the one-month follow-up period, 7.9% of MVMC participants ( $n = 6$ ) reported experiences of unwanted sexual contact; in contrast, 23.1% of active control participants ( $n = 15$ ) reported experiences of unwanted sexual contact. However, treatment condition was not significantly associated with unwanted sexual contact at the end-of-semester follow-up period,  $b = -.95$ ,  $OR = .39$ ,  $Wald(1) = 2.36$ ,  $p = .125$ .

Treatment condition was not significantly associated with the remaining forms of sexual victimization at the one-month follow-up: sexual coercion,  $b = -.40$ ,  $OR = .67$ ,  $Wald(1) = .33$ ,  $p = .564$ , sexual assault,  $b = -.30$ ,  $OR = .74$ ,  $Wald(1) = .10$ ,  $p = .747$ , and total sexual victimization,  $b = .91$ ,  $OR = 2.48$ ,  $Wald(1) = 3.17$ ,  $p = .075$ . Neither was treatment condition associated with sexual coercion,  $b = -2.45$ ,  $OR = .09$ ,  $Wald(1) = 2.69$ ,  $p = .101$ ; sexual assault,  $b = -1.46$ ,  $OR = .23$ ,  $Wald(1) = 1.40$ ,  $p = .237$ , or total sexual victimization,  $b = -1.01$ ,  $OR = .37$ ,  $Wald(1) = 2.87$ ,  $p = .090$ , at the end-of-semester follow-up. However, it is worthwhile to note that the associations between program participation and total sexual victimization at both the one-month and end-of-semester follow-ups are marginally significant and in the hypothesized direction. Future research with an increased sample size is merited to evaluate these associations further.

### **3.3 Intent**

Percentages and means for intentions based on intervention condition are presented in Table 4. Full regression models can be found in Table 5. Analyses for intentions at the one-month follow-up controlled for intentions reported at baseline, while analyses for intentions at the end-of-semester follow-up controlled for intentions reported at baseline and the one-month follow-up. All analyses controlled for sexual victimization reported at baseline. Due to the correlations between baseline and one-month intentions, each model was examined for multicollinearity on the basis of VIF statistics. All VIF statistics were under 5, which is a

conservative benchmark indicating no concerns with multicollinearity (Bowerman & O'Connell, 1990; Myers, 1990).

Treatment condition was not significantly associated with intention to use assertive resistance at the one-month follow-up,  $b = .28$ ,  $t(137) = .96$ ,  $p = .340$ , partial  $\eta^2 = .007$ , or at the end-of-semester follow-up,  $b = .11$ ,  $t(135) = .40$ ,  $p = .692$ , partial  $\eta^2 = .001$ . Treatment condition was also not significantly associated with intention to use polite resistance at the one-month follow-up,  $b = -.23$ ,  $t(137) = -1.42$ ,  $p = .158$ , partial  $\eta^2 = .014$ , or at the end-of-semester follow-up,  $b = .24$ ,  $t(135) = 1.49$ ,  $p = .138$ , partial  $\eta^2 = .016$ . Finally, treatment condition was not significantly associated with intention to use passive resistance at the one-month follow-up,  $b = .04$ ,  $t(137) = .30$ ,  $p = .765$ , partial  $\eta^2 = .001$ , or at the end-of-semester follow-up,  $b = .08$ ,  $t(135) = .69$ ,  $p = .493$ , partial  $\eta^2 = .003$ .

### **3.4 Barriers**

Percentages and means for confidence and barriers based on intervention condition are presented in Table 6. Full regression models can be found in Tables 7 and 8. Analyses for barriers at the one-month follow-up controlled for barriers reported at baseline, while analyses for barriers at the end-of-semester follow-up controlled for barriers reported at baseline and the one-month follow-up. All analyses controlled for sexual victimization reported at baseline. The models for these analyses were also examined for multicollinearity on the basis of VIF statistics. Again, all VIF statistics were under 5.

Treatment condition was significantly associated with confidence in using assertive resistance skills at the one-month follow-up period, controlling for baseline confidence and sexual victimization,  $b = .55$ ,  $t(137) = 2.13$ ,  $p = .035$ , partial  $\eta^2 = .032$ . However, the direction of these findings was contrary to expectations: those in the Stress Less condition reported higher

levels of confidence in using assertive resistance skills than those in the MVMC condition at the one-month follow-up. However, this was not sustained at the end-of-semester follow-up,  $b = -.13$ ,  $t(135) = -.56$ ,  $p = .576$ , partial  $\eta^2 = .002$ .

Similarly, treatment condition was not significantly associated with the fear barrier at the one-month follow-up,  $b = .04$ ,  $t(137) = .21$ ,  $p = .834$ , partial  $\eta^2 = .000$ , or at the end-of-semester follow-up,  $b = -.06$ ,  $t(135) = -.39$ ,  $p = .697$ , partial  $\eta^2 = .001$ . Treatment condition was also not significantly associated with the relationship barrier at the one-month follow-up,  $b = -.21$ ,  $t(137) = -1.07$ ,  $p = .289$ , partial  $\eta^2 = .008$ , or at the end-of-semester follow-up,  $b = -.02$ ,  $t(135) = -.11$ ,  $p = .914$ , partial  $\eta^2 = .000$ . Finally, treatment condition was not significantly associated with the intoxication barrier at the one-month follow-up,  $b = -.03$ ,  $t(137) = -.69$ ,  $p = .489$ , partial  $\eta^2 = .003$ , or at the end-of-semester follow-up,  $b = -.03$ ,  $t(135) = -.93$ ,  $p = .352$ , partial  $\eta^2 = .006$ .

### **3.5 Post-Hoc Analyses**

As an alternative means of exploring the impact of web-based MVMC on participant outcomes, we conducted Number Needed to Treat (NNT) analyses for each of the sexual victimization outcome variables. The results indicate the number of participants who would need to receive web-based MVMC rather than the control condition in order to reduce the incidence of sexual victimization by one. Our findings indicated that six participants completing web-based MVMC would reduce occurrence of any form of sexual victimization by one, and seven participants completing web-based MVMC would reduce the occurrence of unwanted sexual contact by one. In contrast, many more participants would need to receive web-based MVMC in order to reduce the incidence of sexual assault ( $n = 42$ ) or sexual coercion ( $n = 75$ ) by one.

## DISCUSSION

Participants in the MVMC condition largely reported enjoying and being satisfied with the program. Their feedback indicates that this intervention maintains engagement while teaching skills that are perceived as relevant by participants. This feedback is consistent with research indicating that participants find value in web-based interventions (e.g., Glück & Maercker, 2011) and also indicates that web-based assertive resistance skill training is feasible with female college students. Given the frequency with which this specific population experiences sexual victimization, the development of interventions that are acceptable, engaging, and easy to disseminate are essential. Participants' feedback for web-based MVMC provides encouraging evidence that this intervention fits this mold.

This first test of web-based MVMC also had the goal of gaining information in order to improve its utility for future groups of women. To this end, suggestions for improvement were also obtained. Many participants recommended making the program more interactive, such as by improving the graphics within the intervention itself as well as involving participants in asking them to select what they would do if they were in the same situation as the characters in the presented scenarios. This could then be used as an opportunity to either validate participants' selection of assertive resistance skills or discuss alternatives to less effective skills. Participants also recommended including more examples of situations in which assertive resistance skills can be used, including additional information about high-risk situations and strategies that could be used in them. These recommendations highlight several opportunities to fine-tune web-based

MVMC in order to improve its acceptability and, possibly, its relevance to female college students.

Our secondary aim was to explore preliminary effects of web-based MVMC on sexual victimization outcomes. Participation in MVMC was associated with lower prevalence of unwanted sexual contact in the one-month follow-up, as compared to participation in the active control condition, even after controlling for sexual victimization reported at baseline. When considering the possible clinical impact of these findings, our intervention demonstrates that a brief, web-based intervention can reduce the occurrence of unwanted sexual contact among female college students over one month. Moreover, NNT analyses indicated one incidence of unwanted sexual contact could be avoided by only seven female college students receiving web-based MVMC. These numbers are encouraging and point all the more to the significance of improving this easy-to-disseminate intervention.

The potential promise of this intervention is striking when considering how prevalent unwanted sexual contact was within our sample: over one-half of our total sample reported this form of victimization at baseline and just under one-third reported this form of victimization in the one month following program participation. Reducing the future occurrence of unwanted sexual contact is important, as past research indicates experiencing one form of sexual victimization increases the likelihood of experiencing subsequent victimization (for a review, see Classen et al., 2005). However, while our study provides some preliminary evidence that web-based MVMC may be helpful for reducing unwanted sexual contact, our study was underpowered and many of our hypothesis tests were non-significant.

In recognizing the limitations of testing the effect of web-based MVMC, it is also important to consider why the results of the current format of the web-based MVMC did not last

past one month. One possible explanation has to do with the length of the intervention itself. It may be that a 25-minute intervention is sufficient in length for a short period of time but is not long enough for the information to be retained over time. In line with this explanation, prior research indicates longer in-person interventions are more effective over time than shorter in-person interventions (Anderson & Whitson, 2005). Perhaps longer interventions, including web-based interventions, would be more effective at impacting behavior change over longer periods of time.

Additionally, it is possible that the length of the intervention contributes to why evidence for efficacy was found only for unwanted contact. It may be that this form of victimization, which was the most commonly reported type of victimization in our sample, was best addressed by the examples we chose to present in our short intervention. Perhaps by providing more examples of using assertive resistance in response to attempts of sexual coercion or assault, we may see more evidence for efficacy in the future. It may be that the smaller NNT effects found for sexual coercion and sexual assault are reflective of the lower prevalence rates of these forms of victimization, both in our sample and broadly. Since these forms of victimization are more infrequent, using assertive resistance in response to coercive or assaultive attempts may require more training than can be provided in a brief 25-minute presentation. Coercion, in particular, tends to occur more in relationships with prior sexual intimacy (Livingston, Buddie, Testa, & VanZile-Tamsen, 2004) than in relationships without prior sexual intimacy or relationships between acquaintances. Perhaps these types of sexual violence perpetration tactics require more practice or more training in order for women to effectively utilize assertive resistance techniques, or perhaps women experience more or different barriers to using assertive resistance techniques in these situations.



Surprisingly, participation in the web-based version of MVMC did not increase participants' self-reported use of assertive resistance skills or decrease their use of passive or polite resistance. It also did not impact their report of barriers regarding the use of assertive resistance skills. Improving the quality of discussion around these topics may be beneficial for future iterations of web-based MVMC. For example, research has examined the impact of using polite versus assertive resistance strategies in terms of victimization outcomes (e.g., Turchik et al., 2007). A clear discussion of the difference in these tactics could clarify for participants why using assertive resistance strategies may be advantageous.

It is also likely our findings were impacted by measurement issues related to our assessment of intentions to use various resistance skills or barriers (e.g., many participants indicated some intention to use assertive resistance skills while relatively few participants indicated an intention to use passive and polite resistance skills). Given participants' report that these skills would be helpful in the future, it was surprising that participants did not report an increase in assertive-resistance intention. It may be that participants felt they were already using these skills effectively. Alternatively, perhaps we did not address the most relevant contexts in which participants would benefit from increasing their assertive resistance intent. Taking a close look at the specific intentions and barriers reported by participants can help us more precisely target the strategies and barriers that still need to be addressed for female college students.

Our study has notable strengths, namely the use of an active control group to test the efficacy of our web-based intervention, which is a more conservative test of the intervention than what has been done in previous web-based interventions for sexual violence. Additionally, we were able to develop a web-based assertive resistance intervention that was short, easy to disseminate, and portable while still being enjoyed by participants. We also obtained helpful

recommendations from our sample regarding ways to improve the relevancy of our intervention for future groups of women. However, our study is not without limitations. Our study was underpowered to detect the efficacy of the intervention, especially in relation to the outcome variables of sexual coercion and sexual assault, which had low rates of occurrence over the follow-up periods. While this power concern did not obstruct the study's primary purpose (i.e., to determine the feasibility and acceptability of the intervention to female college students), initial indications of the intervention's efficacy may be diluted due to power concerns. Additionally, our measurement of intentions and barriers was suboptimal in that it appears to have been impacted by floor and ceiling effects.

Also of note, given our sample identified predominately as heterosexual, non-Hispanic White, the generalizability of our findings to groups of non-heterosexual or non-White samples is limited. Research recognizes students identifying as sexual minorities are at greater risk for sexual victimization than heterosexual students (e.g., Rothman & Silverman, 2007). However, previous assertive resistance training programs (Menning & Holtzmann, 2015; Orchowski et al., 2008; Senn et al., 2015) have been tested in primarily heterosexual samples. Moreover, research into barriers to using assertive resistance has typically examined barriers occurring within the context of heterosexual relationships (e.g., Norris et al., 2005; Norris et al., 1996), despite recent focus groups with women identifying as sexual minorities suggesting these women may face unique barriers to both using assertive resistance and engaging in preventative programming (Ollen, Ameral, Palm Reed, & Hines, 2017). Additional research is needed to examine how to best make prevention programs relevant for women identifying as sexual minorities.

Previous research also suggests cultural backgrounds are important to consider for assertive resistance programs in particular. Yoshioka (2000) suggests fundamental differences in

assertiveness may be seen across cultures, particularly as individual assertiveness seemingly requires prioritizing individual desires over the desires of others in a group. This logically leads to the possibility that assertive behavior in one culture may not be viewed as assertive behavior in another culture. In line with this possibility, Yoshioka (2000) found differences in the ratings of assertive behavior depending on the ethnicity of the individual judge: responses deemed assertive by Hispanic judges were deemed passive by African-American and White judges, while responses deemed assertive by African-American and White judges were deemed as aggressive by Hispanic judges. Researchers have also noted members of ethnic minorities have reported diminished perceptions of having sexual rights (i.e., refusing unwanted sex and insisting on safe sexual practices) (Rickert et al., 2002). Because of these considerations, researchers have suggested adapting assertiveness training programs broadly to be culturally relevant (e.g., Cheek, 1976; LaFromboise, 1982; Comas-Diaz & Duncan, 1985).

Overall, the data gathered from this initial feasibility study indicate areas of improvement for our intervention moving forward: namely, a more nuanced and intentional focus on coercion and assault as well as clearly discussing specific resistance strategies and barriers that appear specifically salient to female college students. In addition to providing initial support for the feasibility of this intervention, we were also able to gain additional recommendations for how to further improve the intervention for future groups of female college students. These improvements will allow us to align our intervention more with prior sexual assault-based interventions that use personalized feedback to direct individual participants' growth in assertive resistance skill development.

In conclusion, this study points to the efficacy of a promising web-based intervention targeting assertive resistance skills for female college students for reducing unwanted sexual

contact. Additional recommendations for improvements to the program were elicited from participants, who widely indicated enjoyment of and satisfaction with the intervention. Important next steps for this intervention are to make these recommended improvements before testing the program with a larger sample of at-risk women.

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Table 1.

*Means, Standard Deviations, and Correlations for Outcome Variables among MVMC Participants at Baseline*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Mean (SD)	n
1. Enjoyment	—															3.54 (.89)	79
2. Recommend to a Friend	.61**	—														3.95 (.97)	79
3. Helpful	.62**	.62**	—													3.77 (1.03)	79
4. Use Skills in Future	.40**	.43**	.69**	—												4.05 (.89)	79
5. Involved in Program	.47**	.45**	.51**	.28*	—											3.96 (.79)	79
6. Unwanted Sexual Contact	-.06	-.16	-.13	-.20	-.05	—										.48 (.50)	81
7. Sexual Coercion	-.06	-.12	-.13	.10	-.03	.51**	—									.38 (.49)	81
8. Sexual Assault	-.16	-.11	-.07	-.01	.03	.57**	.55**	—								.30 (.46)	81
9. General Sexual Victimization	-.18	-.15	-.19	-.13	-.14	.84**	.69**	.57**	—							.57 (.50)	81
10. Intent to Use Assertive Resistance	.14	.07	.10	.19	.22*	-.13	-.07	-.10	-.26*	—						4.12 (1.89)	81
11. Intent to Use Polite Resistance	.03	-.07	-.14	-.21	-.10	-.12	.02	.01	-.16	.01	—					1.07 (.98)	81
12. Intent to Use Passive Resistance	.09	.12	-.08	-.21	.06	.02	-.01	.16	-.04	.08	.41**	—				.65 (.74)	81
13. Fear Barrier	.13	.02	.15	.05	.06	.02	.14	.07	-.01	-.03	.19	.62**	—			1.41 (1.35)	81
14. Relationship Barrier	-.05	-.03	-.11	-.10	-.02	-.03	.21	.12	.08	-.04	.54**	.24**	.36**	—		1.12 (1.38)	81
15. Intoxication Barrier	.05	.07	-.12	-.14	-.21	.24*	.17	.35**	.20	-.17	.22	.18	.23**	.23*	—	.05 (.22)	81
16. Confidence	.09	-.04	.04	.02	.10	-.13	-.23*	-.26**	-.25*	.50**	-.02	.08	-.18	-.34**	-.17	2.89 (1.52)	81

Note. \* $p < .05$ , \*\* $p < .01$ .

Table 2.

*Participant Satisfaction and Engagement in MVMC in Percentages (N = 74)*

	Rating of Satisfaction with Program				
	Not at All	A Little	Somewhat	Quite a Bit	Very Much
1. How much did you enjoy the program?	1.3 (1)	7.9 (6)	31.6 (24)	44.7 (34)	11.8 (9)
2. Would you recommend it to other women?	2.6 (2)	2.6 (2)	21.1 (16)	39.5 (30)	31.6 (24)
3. Do you think the program will be helpful to you in the future?	2.6 (2)	6.6 (5)	22.4 (17)	40.8 (31)	25.0 (19)
4. Will you use the skills you learned?	0.0 (0)	5.3 (4)	14.5 (11)	47.3 (35)	32.4 (24)
5. How involved were you during the program?	1.3 (1)	2.6 (2)	18.4 (14)	53.9 (41)	21.1 (16)

*Note.* n's for each response are in parenthesis following the percentage. For the fifth item, the final point on the scale was "extremely" instead of "very much."

Due to technological difficulties, the responses for two participants was lost.



Table 3.

*Percentages of Sexual Victimization Rates Between Intervention Conditions.*

	Percentages for MVMC Participants		Percentages for Active Control Participants	
	No Victimization ( <i>N</i> )	Victimization ( <i>N</i> )	No Victimization ( <i>N</i> )	Victimization ( <i>N</i> )
1. Unwanted Sexual Contact at Baseline	52.63 (40)	47.37 (36)	43.08 (28)	56.92 (37)
2. Sexual Coercion at Baseline	61.84 (47)	38.16 (29)	44.62 (29)	55.38 (36)
3. Sexual Assault at Baseline	71.05 (54)	28.95 (22)	69.23 (45)	30.77 (20)
4. All Sexual Victimization at Baseline	43.4 (33)	56.6 (43)	30.77 (20)	69.23 (45)
5. Unwanted Sexual Contact at One-Month Follow-up	92.11 (70)	7.89 (6)	76.92 (50)	23.08 (15)
6. Sexual Coercion at One-Month Follow-up	92.11 (70)	7.89 (6)	90.77 (59)	9.23 (6)
7. Sexual Assault at One-Month Follow-up	94.74 (72)	5.26 (4)	92.31 (60)	7.69 (5)
8. All Sexual Victimization at One-Month Follow-up	89.47 (68)	10.53 (8)	73.85 (48)	26.15 (17)
9. Unwanted Sexual Contact at End-of-Semester Follow-up	85.53 (65)	14.47 (11)	89.06 (57)	10.94 (7)
10. Sexual Coercion at End-of-Semester Follow-up	93.42 (71)	6.58 (5)	96.88 (62)	3.12 (2)
11. Sexual Assault at End-of-Semester Follow-up	94.74 (72)	5.26 (4)	96.88 (62)	3.12 (2)
12. All Sexual Victimization at End-of-Semester Follow-up	84.21 (64)	15.79 (12)	89.06 (57)	10.94 (7)
13. Unwanted Sexual Contact across Follow-up Period	82.89 (63)	17.11 (13)	72.31 (47)	27.69 (18)
14. Sexual Coercion across Follow-up Period	90.79 (69)	9.21 (7)	89.06 (57)	10.94 (7)
15. Sexual Assault across Follow-up Period	93.42 (71)	6.58 (5)	90.62 (58)	9.38 (6)
16. All Sexual Victimization across Follow-up Period	80.26 (61)	19.74 (15)	69.23 (45)	30.77 (20)

*Note.* n's for each response are in parenthesis following the percentage.

Table 4.

*Percentages and Means of Intentions Between Intervention Conditions.*

	MVMC Participants								Active Control Participants								Mean (SD)
	Number of Behaviors Chosen (%)								Number of Behaviors Chosen (%)								
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	
1. Intent to Use Assertive Resistance (Baseline)	1.52 (1)	10.53 (8)	5.26 (4)	23.68 (18)	17.11 (13)	14.47 (11)	10.53 (8)	17.11 (13)	4.16 (1.93)	10.77 (7)	15.38 (10)	15.38 (10)	18.46 (12)	10.77 (7)	10.77 (7)	13.85 (9)	3.77 (2.08)
2. Intent to Use Polite Resistance (Baseline)	34.21 (26)	31.58 (24)	23.68 (18)	10.53 (8)	-	-	-	-	1.11 (1.00)	29.23 (21)	29.23 (21)	9.23 (6)	-	-	-	-	1.18 (0.97)
3. Intent to Use Passive Resistance (Baseline)	44.74 (34)	44.74 (34)	9.21 (7)	0.00 (0)	1.31 (1)	0.00 (0)	-	-	0.68 (0.75)	33.85 (22)	10.77 (7)	0.00 (0)	0.00 (0)	0.00 (0)	-	-	0.55 (0.69)
4. Intent to Use Assertive Resistance (1-Month)	2.63 (2)	13.16 (10)	13.16 (10)	15.79 (12)	14.47 (11)	10.53 (8)	19.74 (15)	10.53 (8)	3.89 (2.04)	12.31 (8)	21.54 (14)	7.69 (5)	13.85 (9)	9.23 (6)	23.08 (15)	10.77 (7)	3.94 (2.08)
5. Intent to Use Polite Resistance (1-Month)	34.21 (26)	25.00 (19)	25.00 (19)	15.79 (12)	-	-	-	-	1.22 (1.09)	30.77 (20)	24.62 (16)	7.69 (5)	-	-	-	-	1.03 (0.97)
6. Intent to Use Passive Resistance (1-Month)	50.00 (38)	32.89 (25)	15.79 (12)	1.32 (1)	0.00 (0)	0.00 (0)	-	-	0.68 (0.79)	32.31 (21)	13.85 (9)	1.54 (1)	0.00 (0)	0.00 (0)	-	-	0.65 (0.71)
7. Intent to Use Assertive Resistance (End-of-Semester)	3.95 (3)	17.11 (13)	17.11 (13)	11.84 (9)	18.42 (14)	9.21 (7)	11.84 (9)	10.53 (8)	3.41 (2.08)	18.75 (12)	18.75 (12)	7.81 (5)	17.19 (11)	7.81 (5)	7.81 (5)	17.19 (11)	3.55 (2.25)
8. Intention to Use Polite Resistance (End-of-Semester)	44.74 (34)	27.63 (21)	17.11 (13)	10.53 (8)	-	-	-	-	0.93 (1.02)	21.88 (14)	29.69 (19)	9.38 (6)	-	-	-	-	1.09 (1.03)
9. Intention to Use Passive Resistance (End-of-Semester)	59.21 (45)	28.95 (22)	11.84 (9)	0.00 (0)	0.00 (0)	0.00 (0)	-	-	0.53 (0.70)	37.50 (24)	7.81 (5)	1.56 (1)	0.00 (0)	0.00 (0)	-	-	0.58 (0.71)

Note. n's for each response are in parenthesis following the percentage.

Table 5.

## Regression Analysis for Intention to Use Resistance Skills

Variable	Intent to Use Assertive Resistance (One-Month Follow-Up)		Intent to Use Assertive Resistance (End-of-Semester Follow-Up)	
	$\beta$	B (SE)	$\beta$	B (SE)
Condition	0.07	0.28 (0.30)	0.007	0.11 (0.27)
Baseline Intent to Use Assertive Resistance	0.55***	0.56 (0.08)	0.292	0.42 (0.08)
Baseline Sexual Victimization	-0.04	-0.17 (0.31)	0.002	0.48 (0.28)
1-Month Intent to Use Assertive Resistance	-	-	-	0.40***
Note. Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up: $n = 141$ , $F(3, 137) = 20.09$ , $p < .001$ , $R^2 = .31$ . End-of-Semester Follow-Up: $n = 141$ , $F(4, 135) = 29.98$ , $p < .001$ , $R^2 = .47$ . * $p < .05$ , ** $p < .01$ , *** $p < .001$ .				
Variable	Intent to Use Polite Resistance (One-Month Follow-Up)		Intent to Use Polite Resistance (End-of-Semester Follow-Up)	
	$\beta$	B (SE)	$\beta$	B (SE)
Condition	-0.11	-0.23 (0.16)	0.014	0.24 (0.16)
Baseline Intent to Use Polite Resistance	0.43***	0.45 (0.08)	0.180	0.08 (0.09)
Baseline Sexual Victimization	-0.00	-0.00 (0.17)	0.000	-0.04 (0.16)
1-Month Intent to Use Polite Resistance	-	-	-	0.42***
Note. Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up: $n = 141$ , $F(3, 137) = 10.78$ , $p < .001$ , $R^2 = .19$ . End-of-Semester Follow-Up: $n = 140$ , $F(4, 135) = 9.29$ , $p < .001$ , $R^2 = .22$ . * $p < .05$ , ** $p < .01$ , *** $p < .001$ .				
Variable	Intent to Use Passive Resistance (One-Month Follow-Up)		Intent to Use Passive Resistance (End-of-Semester Follow-Up)	
	$\beta$	B (SE)	$\beta$	B (SE)
Condition	0.02	0.04 (0.13)	0.001	0.08 (0.11)
Baseline Intent to Use Passive Resistance	0.32***	0.34 (0.09)	0.102	0.12 (0.08)
Baseline Sexual Victimization	-0.15	-0.25 (0.13)	0.026	-0.01 (0.11)
1-Month Intent to Use Passive Resistance	-	-	-	0.37***
Note. Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up: $n = 141$ , $F(3, 137) = 6.60$ , $p < .001$ , $R^2 = .13$ . End-of-Semester Follow-Up: $n = 140$ , $F(4, 135) = 7.57$ , $p < .001$ , $R^2 = .18$ . * $p < .05$ , ** $p < .01$ , *** $p < .001$ .				

Table 6.

*Percentages and Means of Barriers and Confidence Between Intervention Conditions.*

	MVMC Participants						Active Control Participants						Mean (SD)		
	Number of Behaviors Chosen (N)						Number of Behaviors Chosen (N)								
	0	1	2	3	4	5	6	0	1	2	3	4		5	6
1. Fear Barrier (Baseline)	32.89 (25)	27.63 (21)	15.79 (12)	11.84 (9)	11.84 (9)	0.00 (0)	0.00 (0)	32.31 (21)	32.31 (21)	20.00 (13)	13.85 (9)	1.54 (1)	0.00 (0)	0.00 (0)	1.20 (1.09)
2. Relationship Barrier (Baseline)	47.37 (36)	17.11 (13)	14.47 (11)	14.47 (11)	3.95 (3)	2.63 (2)	-	46.15 (30)	18.46 (12)	16.92 (11)	18.46 (12)	0.00 (0)	0.00 (0)	-	1.08 (1.18)
3. Intoxication Barrier (Baseline)	94.74 (72)	5.26 (4)	-	-	-	-	-	95.38 (62)	4.62 (3)	-	-	-	-	-	0.05 (0.21)
4. Confidence (Baseline)	7.89 (6)	13.16 (10)	18.42 (14)	22.37 (17)	21.05 (16)	17.11 (13)	-	7.69 (5)	10.77 (7)	26.15 (17)	16.92 (11)	18.46 (12)	20.00 (13)	-	2.88 (1.55)
5. Fear Barrier (1-Month)	32.89 (25)	27.63 (21)	19.74 (15)	11.84 (9)	5.26 (4)	1.32 (1)	1.32 (1)	33.85 (22)	21.54 (14)	29.23 (19)	12.51 (8)	1.54 (1)	1.54 (1)	0.00 (0)	1.31 (1.20)
6. Relationship Barrier (1-Month)	53.95 (41)	18.42 (14)	9.21 (7)	6.58 (5)	9.21 (7)	2.63 (2)	-	58.46 (38)	20.00 (13)	12.31 (8)	6.15 (4)	0.00 (0)	3.08 (2)	-	0.78 (1.19)
7. Intoxication Barrier (1-Month)	93.42 (71)	6.58 (5)	-	-	-	-	-	95.38 (62)	4.62 (3)	-	-	-	-	-	0.05 (0.21)
8. Confidence (1-Month)	14.47 (11)	22.37 (17)	18.42 (14)	15.79 (12)	15.79 (12)	13.16 (10)	-	9.23 (6)	20.00 (13)	10.77 (7)	13.85 (9)	26.15 (17)	20.00 (13)	-	2.88 (1.68)
9. Fear Barrier (End-of-Semester)	38.16 (29)	21.05 (16)	26.32 (20)	13.16 (10)	1.32 (1)	0.00 (0)	0.00 (0)	40.63 (26)	26.56 (17)	23.44 (15)	7.81 (5)	1.56 (1)	0.00 (0)	0.00 (0)	1.03 (1.05)
10. Relationship Barrier (End-of-Semester)	57.89 (44)	15.79 (12)	13.16 (10)	7.89 (6)	3.95 (3)	1.32 (1)	-	65.63 (42)	14.06 (9)	9.38 (6)	3.13 (2)	6.25 (4)	1.56 (1)	-	0.75 (1.28)
11. Intoxication Barrier (End-of-Semester)	94.74 (72)	5.26 (4)	-	-	-	-	-	98.44 (63)	1.56 (1)	-	-	-	-	-	0.02 (0.13)
12. Confidence (End-of-Semester)	18.42 (14)	18.42 (14)	13.16 (10)	28.95 (22)	10.53 (8)	10.53 (8)	-	15.63 (10)	20.31 (13)	14.06 (9)	21.88 (14)	14.06 (9)	14.06 (9)	-	2.41 (1.66)

Note. n's for each response are in parenthesis following the percentage.

Table 7.

## Regression Analysis for Confidence in Assertive Resistance Skills.

Variable	Confidence (One-Month Follow-Up)		Confidence (End-of-Semester Follow-Up)	
	$\beta$	B (SE)	$\beta$	B (SE)
Condition	0.16*	0.55 (0.26)	-0.04	-0.13 (0.23)
Baseline Confidence in Assertive Resistance Skills	0.42***	0.46 (0.08)	0.24**	0.26 (0.08)
Baseline Sexual Victimization	-0.06	-0.22 (0.27)	0.02	0.05 (0.23)
1-Month Confidence in Assertive Resistance Skills	-	-	0.48***	0.47 (0.07)

$R^2$  (Condition) = 0.032,  $R^2$  (Baseline Confidence in Assertive Resistance Skills) = 0.178,  $R^2$  (Baseline Sexual Victimization) = 0.005,  $R^2$  (1-Month Confidence in Assertive Resistance Skills) = -  
 Note: Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up:  $n = 141$ ,  $F(3, 137) = 12.45$ ,  $p < .001$ ,  $R^2 = .21$ . End-of-Semester Follow-Up:  $n = 140$ ,  $F(4, 135) = 21.11$ ,  $p < .001$ ,  $R^2 = .39$ .  
 \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 8.

Regression Analysis for Barriers.

Variable	Fear Barriers (One-Month Follow-Up)			Fear Barriers (End-of-Semester Follow-Up)		
	$\beta$	B (SE)	$\Delta R^2$	$\beta$	B (SE)	$\Delta R^2$
Condition	0.02	0.04 (0.20)	0.000	-0.03	-0.06 (0.16)	0.001
Baseline Fear Barriers	0.47***	0.48 (0.08)	0.217	0.34***	0.30 (0.07)	0.108
Baseline Sexual Victimization	-0.03	-0.07 (0.20)	0.001	-0.07	-0.15 (0.17)	0.006
1-Month Fear Barriers	-	-	-	0.26**	0.22 (0.07)	0.066

Note. Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up:  $n = 141$ ,  $F(23, 137) = 12.72$ ,  $p < .001$ ,  $R^2 = .22$ . End-of-Semester Follow-Up:  $n = 140$ ,  $F(4, 135) = 12.28$ ,  $p < .001$ ,  $R^2 = .27$ . \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Variable	Relationship Barriers (One-Month Follow-Up)			Relationship Barriers (End-of-Semester Follow-Up)		
	$\beta$	B (SE)	$\Delta R^2$	$\beta$	B (SE)	$\Delta R^2$
Condition	-0.08	-0.21 (0.20)	0.008	-0.01	-0.02 (0.18)	0.000
Baseline Relationship Barriers	0.51***	0.53 (0.08)	0.262	0.52***	0.50 (0.08)	0.238
Baseline Sexual Victimization	-0.03	-0.09 (0.21)	0.002	-0.12	-0.30 (0.18)	0.020
1-Month Relationship Barriers	-	-	-	0.12	0.11 (0.08)	0.015

Note. Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up:  $n = 141$ ,  $F(3, 137) = 16.95$ ,  $p < .001$ ,  $R^2 = .27$ . End-of-Semester Follow-Up:  $n = 140$ ,  $F(4, 135) = 18.82$ ,  $p < .001$ ,  $R^2 = .36$ . \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Variable	Intoxication Barriers (One-Month Follow-Up)			Intoxication Barriers (End-of-Semester Follow-Up)		
	$\beta$	B (SE)	$\Delta R^2$	$\beta$	B (SE)	$\Delta R^2$
Condition	-0.06	-0.03 (0.04)	0.004	-0.08	-0.03 (0.03)	0.006
Baseline Intoxication Barriers	0.34***	0.37 (0.09)	0.118	0.12	0.10 (0.08)	0.012
Baseline Sexual Victimization	0.14	0.07 (0.04)	0.021	-0.12	-0.05 (0.03)	0.013
1-Month Intoxication Barriers	-	-	-	0.10	0.08 (0.07)	0.008

Note. Condition: 0 = Stress Less, 1 = MVMC. One-Month Follow-Up:  $n = 141$ ,  $F(3, 137) = 8.32$ ,  $p < .001$ ,  $R^2 = .15$ . End-of-Semester Follow-Up:  $n = 140$ ,  $F(4, 135) = 1.59$ ,  $p = .181$ ,  $R^2 = .05$ . \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

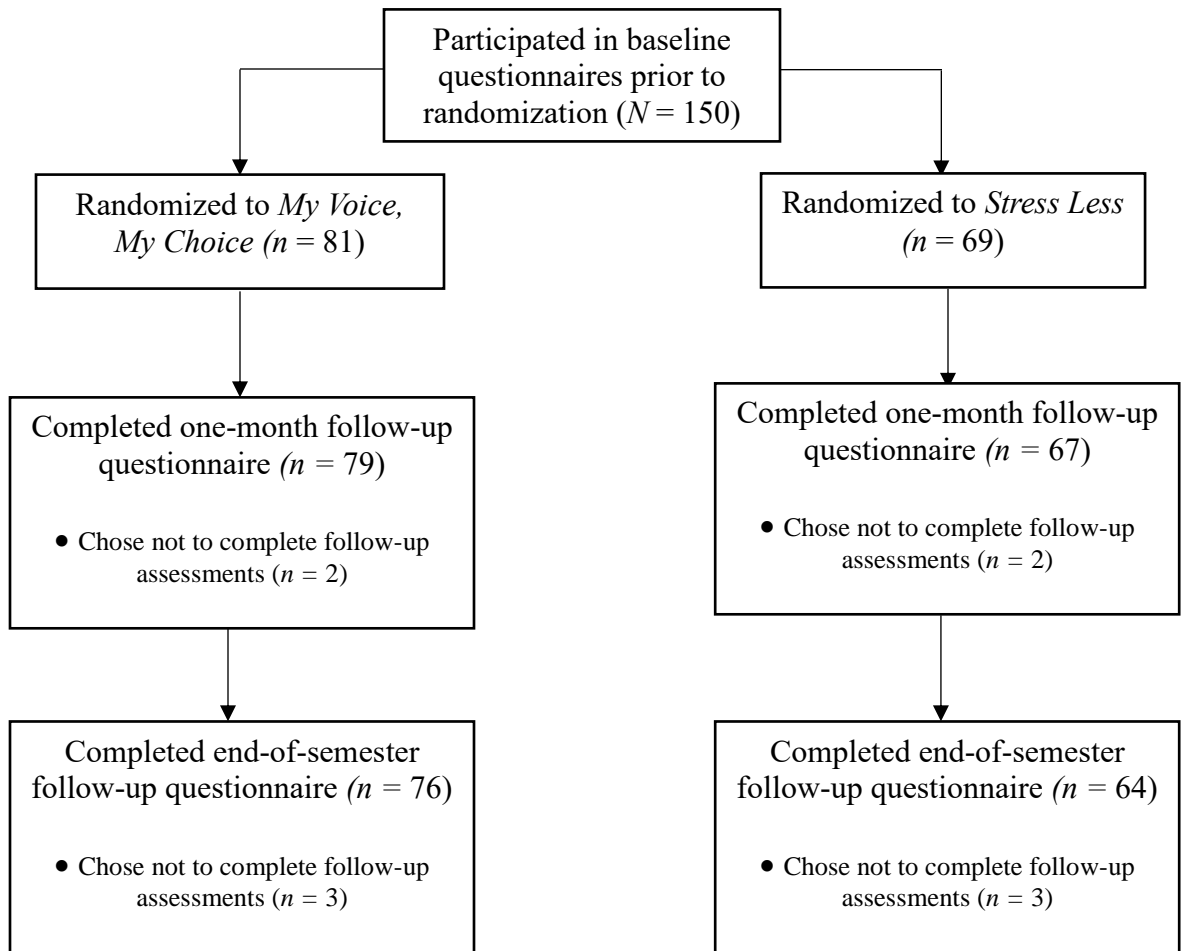


Figure 1. *CONSORT* diagram of participant flow and attrition.

\* *Note:* reported numbers are based on data for primary outcome variable. Although 140 total participants completed the end-of-semester follow-up, one person's data was retained for analyses because of sexual victimization reported at the one-month follow-up.