The Development and Refinement of Web-based Interventions to Reduce Distress among
Survivors of Interpersonal Violence

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Dedication

This thesis is dedicated to all individuals seeking recovery and resources in the aftermaths of their traumas.

Abstract

Many college students have a history of interpersonal violence (IPV) and are thus at risk of greater mental health problems and dropout. The present two studies evaluated the efficacy of web-based stress management programs targeting present control in promoting well-being among students with and without a history of IPV. In the first study, a previously-developed Present Control Intervention (Hintz, Frazier, & Meredith, 2015) was evaluated. Psychology students from a large Midwestern university were randomly assigned in a 2:1 ratio to the web-based stress management intervention ($n =$ 329) or the waitlist comparison group ($n =$ 171). In the second study, the efficacy of two new versions of the intervention was evaluated relative to the original intervention. Students ($N =$ 314) were randomly assigned to one of three conditions: the original Present Control Intervention, an Enhanced Present Control Intervention based on Solie (2013), or a Present Control and Mindfulness Intervention.

In both studies, IPV history was assessed preintervention, and self-report measures of four outcomes (perceived stress; symptoms of depression, anxiety, and stress) were completed online pre and postintervention. Worry was also examined as an outcome in the second study. The first study assessed two proposed mediators of intervention efficacy (present control and rumination), which were measured online pre and postintervention. In the first study, the intervention group reported less distress than the comparison group at posttest but effects were larger in the IPV group (mean $d =$ .44) than in the No IPV group (mean $d =$ .10). Increases in present control mediated intervention effects in both the IPV and No IPV groups; decreases in rumination mediated intervention effects in the IPV group only. In the second study, analyses of

covariance assessed whether there were differences in efficacy across the three conditions or interactions between intervention condition and IPV status suggesting that the IPV and No IPV groups responded differently to the three interventions. There were significant Condition by IPV interactions for distress symptoms and worry. Paired *t*-tests suggested that the two new versions of the intervention were more effective than the original intervention and that the Enhanced Present Control Intervention decreased symptoms the most among students with an IPV history (mean within-group $d = -.48$). These studies provide evidence that web-based universal prevention stress management programs may be a cost-effective way to teach skills to students with an IPV history.

Table of Contents

List of Tables

List of Figures

Introduction

Most college students have experienced some type of stressful or traumatic event in their lifetime, including interpersonal violence (IPV; see Frazier, 2012, for a review). In a recent multisite study (Edwards et al., 2014), 13% of students reported sexual victimization, 18% reported physical domestic violence, and 39% reported unwanted pursuit. In another multisite study, IPV exposure (including witnessing family violence, sexual assault, and unwanted sexual attention) was the only type of lifetime trauma associated with higher current levels of depression, anxiety, and stress among college students (Frazier et al., 2009). Mental health problems such as depression can interfere with academic functioning and put students at risk of dropping out (South, Haynie, & Bose, 2007). Because survivors of IPV are at greater risk in terms of poorer mental health and academic performance, psychosocial interventions for this group of students are needed. However, only a small percentage of trauma survivors seek traditional mental health services (see Amstadter, Broman-Fulks, Zinzow, Ruggiero, & Cercone, 2009, for a review). Sexual violence, in particular, is stigmatizing and many survivors choose nondisclosure (Miller, Canales, Amacker, Backstrom, & Gidycz, 2011). Therefore, the purpose of this study was to assess whether a web-based stress management intervention, offered using a universal prevention approach that does not require disclosure of victimization, was effective in promoting well-being in students with a history of IPV.

Web-based Interventions

Web-based interventions are a new, yet rapidly, growing approach to providing

psychological care (Andersson, 2009). The privacy of web-based interventions make them an apt choice for reaching individuals who have experienced stigmatized events such as IPV. Young people, in particular, report that online interventions are less stigmatizing than both phone and face-to-face counseling (see Kauer, Mangan & Sanci, 2014, for a review). Web-based interventions can also have broad reach because they are more convenient than face-to-face therapies (Griffiths & Christensen, 2007). Because more than 50% of college-aged students with mood disorders and 80% of those with anxiety disorders do not seek mental health treatment (i.e., see a physician, psychologist, psychiatrist, or other professional; Blanco et al., 2008), there is a large unmet need that web-based interventions can fill.

Web-based interventions have been demonstrated to be effective in treating various mental health issues (see Newman, Szkodny, Llera, & Przeworski, 2010, for a review), including in college student samples (Davies, Morriss, & Glazebrook, 2014; Farrer et al., 2013). A few web-based interventions have been specifically designed to treat symptoms of traumatic stress (see review by Amstadter et al., 2009). For example, two solely self-help interventions have been tested in randomized controlled trials (RCTs) in college student samples. The first showed that an 8-week web-based cognitive behavioral intervention resulted in greater decreases in trauma-related symptoms and general distress and improved coping and self-efficacy relative to a waitlist comparison group with medium to large effect sizes (Hirai & Clum, 2005). Hirai and Clum included participants who experienced interpersonal violence or another trauma (e.g., motor vehicle accident, life-threatening disease) and excluded childhood sexual abuse or combat due to these subgroups being at particularly high risk, according to the authors. The second study

showed that three sessions of online expressive writing resulted in greater reductions in

trauma-related symptoms and general distress relative to factual writing at the five-week

follow-up, with small to medium effect sizes in participants who identified as Hispanic

Americans with Mexican descent and who self-reported experiencing any traumatic event

(Hirai, Skidmore, Clum, & Dolma, 2012). Only one study to date has examined an online

intervention specifically for students with a history of IPV. Specifically, Littleton, Buck,

Rosman, and Grills-Taquechel (2012) conducted a small pilot evaluation of a self-help,

therapist-assisted online cognitive behavioral intervention for female college student

survivors of rape. Results were promising in that four of the five participants no longer

met criteria for posttraumatic stress disorder following the intervention. These studies

have shown that web-based interventions can reduce distress in college students with a

trauma history. However, they were limited by small samples (e.g., Hirai & Clum, 2005,

$N = 27$; Littleton et al., 2012, $N = 5$) and they specifically focused on treating trauma-

related symptoms.

The present studies took a different approach by offering a general stress

management intervention to a large group of students, including those with a history of

exposure to IPV, rather than offering a trauma-focused intervention specifically to

students who disclosed an IPV history. The goal was to teach skills for reducing distress

among students in general and among students with an IPV history in particular, given

that IPV is the past event most associated with current distress in students (Frazier et al.,

2009). By offering the intervention early in the semester, the goal was to prevent

increases in distress that often occur over the course of a semester as academic pressures

mount. The interventions focused on increasing present control, a well-established

protective factor in reducing distress, rather than directly treating trauma symptoms. The

theory and research behind the web-based stress management intervention are described

next.

Temporal Model of Control

The Present Control Intervention is based on the temporal model of control over

stress (Frazier, Berman, & Steward, 2001), which distinguishes among past, present, and

future control. Past control focuses on control over the occurrence of a stressful event;

present control focuses on aspects of a stressor that are currently under one's control,

such as how one thinks or feels about an event; and future control focuses on trying to

prevent a stressful event from happening again. This model was developed based on

research on self-blame and control perceptions in sexual assault survivors (e.g., Frazier,

1990, 2000, 2003; Frazier, Tashiro, Berman, Steger, & Long, 2004) and has since been

tested in samples who have experienced a wide variety of other stressors and traumas

(e.g., Frazier et al., 2011; Frazier et al., 2012). Research on these different aspects of

control has consistently shown that focusing on present control serves as a protective

factor associated with less distress, with medium to large effect sizes, controlling for a

host of other known correlates of adjustment (Frazier et al., 2011; Frazier et al., 2012). In

fact, present control was one of the only factors assessed that was associated with *less*

distress. For example, all forms of coping (including both approach and avoidant

strategies) were associated with *more* distress (Frazier et al., 2011).

Because present control appears to be a potent protective factor, the Present Control

Intervention teaches students to distinguish between what they can and cannot control

with regard to the stressors in their lives and to focus on what they can control in the present. The intervention consists of web-based modules containing videos of a faculty member expert talking about research on stress and perceived control, videos containing information from other students regarding the stressors in their lives, and online exercises. Students also complete brief stress logs in which they write about what is stressful in their lives, what they do and do not have control over, and what actions they can take regarding the controllable aspects. The intervention was designed to take about one hour to complete in multiple sittings over a several week period; although the intervention is self-guided, modules are released at specified intervals (e.g., weekly).

Two RCTs have been conducted to test the efficacy of this intervention. In the first RCT (Hintz et al., 2015), participants were 233 undergraduate psychology students at a four-year university who were selected because they scored low on a measure of present control. Participants were randomly assigned to receive the present control intervention, the present control intervention with feedback on their exercises and stress logs, or stress information only, which served as an active comparison group. The two intervention groups reported significant decreases in perceived stress and symptoms of stress, depression, and anxiety with average within-group effect sizes of $d = -.30$ and $d = -.46$ at postintervention and 3-week follow-up, respectively. The average between-group effect sizes comparing the two intervention groups to the stress information only group were $d = .30$ at postintervention and $d = .35$ at follow-up.

The second study assessed the Present Control Intervention (without feedback) in a sample of 194 community college students (Frazier et al., 2015). Postintervention effect sizes on the same outcome measures were similar to the first study (within-group $d =$

-.34; between-group $d = .35$). At the three-week follow-up, the amount of change within the intervention group was similar to the first RCT (within-group $d = -.49$); however, the between-group d at follow-up was lower (.12), due to unexpected decreases in distress in the comparison group. In both studies, mediation analyses suggested that increases in present control were the mechanism of change.

Aims: Study 1

The purpose of the first study was to assess the efficacy of the web-based Present Control Intervention among students with (and without) a history of IPV using a universal prevention approach that does not require individuals to self-identify as having experienced IPV. This approach seemed promising given evidence of the efficacy of the Present Control Intervention in samples of college students (Frazier et al., 2015; Hintz et al., 2015) and research showing that present control was a robust protective factor among individuals who have experienced IPV (e.g., Frazier, 2003). The examination of IPV as a moderator adds to prior studies of the intervention because trauma exposure was not previously assessed. The present study also differs from the first RCT (Hintz et al., 2015) because it used a universal prevention, instead of a selected intervention, approach among university students. The web-based intervention could be a cost-effective way for colleges and universities to provide psychoeducational interventions with broad reach, as it is self-guided and requires no therapist assistance.

Students were randomly assigned to the Present Control Intervention or to a waitlist comparison group. Outcomes, including perceived stress and symptoms of stress, anxiety, and depression, were assessed pre and postintervention. As in prior studies, an increase in

present control, the skill specifically taught by the intervention, was assessed as a mediator of intervention efficacy. In this study, a decrease in rumination was assessed as an additional mediator. Rumination has been defined as a repetitive, recurrent thinking style that is positively associated with symptoms of depression and anxiety (Brinker & Dozois, 2009). The rationale behind examining rumination as a mediator idea was that an intervention that helps individuals focus on controllable aspects of stress in the present would also decrease their tendency to ruminate, given that rumination is theorized to be more likely when stressors are less controllable (Brosschot, Gerin, & Thayer, 2006).

The goals of the first study were to: (1) evaluate the efficacy of a self-help, web-based stress management intervention targeting present control in lowering stress and mental health symptoms in students with and without a history of IPV and (2) examine present control and rumination as possible mediators of intervention efficacy. The overall hypothesis was that the intervention would generally be effective in reducing distress. However, based on research showing that students with an IPV history have greater current distress (Frazier et al., 2009), and thus might be more in need of an intervention to reduce distress, evidence suggested that the intervention might be more effective for that group than for the group with no IPV history. Increases in present control and decreases in rumination were also hypothesized to mediate intervention effects in both groups.

Method

Participants

Participants ($N = 516$) were undergraduate students recruited through an

introductory psychology course at a large Midwestern university. Students received extra

credit for participation and were told that they were invited to be in a research study, the

purpose of which was to gain a better understanding of ways to reduce stress.

Approximately 75% of the eligible participant pool (i.e., students in introductory

psychology; $N = 685$) consented to participate. Students were not screened for computer

or Internet literacy; however, students were required to have access to a university

Internet username and login to access the intervention. After completion of the

preintervention survey, participants were randomly assigned in a 2:1 ratio to either the

intervention ($n = 340$) or the waitlist ($n = 176$) condition. More students were included in

the intervention condition so that more students would be exposed to the intervention

earlier in the semester. Five individuals in the waitlist condition were excluded due to

intervention diffusion (i.e., they prematurely completed stress logs before the end of the

waitlist period). In the intervention group, 6 voluntarily withdrew and 5 were withdrawn

as "careless responders" (i.e., they gave an incorrect response on at least two of three

instructed response questions on both the preintervention and postintervention surveys).

The final N was 500, with 429 (86%) participants completing the postintervention survey

(see Figure 1). Completion rates did not differ by condition. The majority of the sample

was female (62%). Most participants fell within the 18-21 age group (80%), followed by

under 18 (11%) and 22-25 (6%), with 3% of the sample identifying as 26 years of age or

older. Most (76%) participants identified as White, followed by Asian or Asian American

(15%). Other racial/ethnic groups each represented 2% or less of the sample (e.g.,

African American or Black, Native American). The intervention and waitlist groups did

not significantly differ at the $p<.05$ level on any of the demographic variables.

Materials

All measures were completed at preintervention and postintervention except for the Traumatic Life Events Questionnaire (TLEQ) and demographic questions, which were only completed preintervention. The time frame for all items (except the TLEQ) was the past week.

History of interpersonal violence. Selected items from the TLEQ (Kubany et al., 2000) were used to assess IPV history, including six yes/no questions regarding lifetime exposure to witnessing family violence, uninvited sexual attention, and four forms of sexual assault (e.g., "After your 13th birthday and before your 18th birthday, did anyone touch sexual parts of your body or make you touch sexual parts of his or her body against your will or without your consent?"). Kubany et al. reported evidence for the reliability and validity of TLEQ scores. In previous research with various samples including undergraduate students, content validity was demonstrated using expert raters whereas convergent validity was demonstrated via interview and questionnaire agreement (Kubany et al., 2000).

Present control. Present control was assessed via the 8-item present control subscale of the Perceived Control Over Stressful Events Scale (PCOSES; Frazier et al., 2011). Items were rated on a 1 (*strongly disagree*) to 4 (*strongly agree*) scale (e.g., "How I deal with this situation now is under my control") and were answered with regard to a current stressor in the participant's life. Frazier et al. reported evidence for the reliability and validity of present control subscale scores. In previous research with undergraduate samples, convergent and discriminant validity were demonstrated via correlations in expected directions with other self-report measures (Frazier et al., 2011). Cronbach's

alpha for the current sample was .84 at preintervention and .83 at postintervention. The

future control subscale of the PCOSES was also administered but was not relevant to

these analyses.

Rumination. Rumination was assessed via the 20-item Ruminative Thought Style

Questionnaire (RTS; Brinker & Dozois, 2009). Items were rated on a 1 (*strongly*

disagree) to 7 (*strongly agree*) scale (e.g., "When I am anticipating an interaction, I will

imagine every possible scenario and conversation"). Brinker and Dozois reported

evidence for the reliability and validity of RTS scores. In previous research with

undergraduate samples, convergent and discriminant validity were demonstrated via

correlations in expected directions with other self-report measures (Brinker & Dozois,

2009). Cronbach's alpha for the current study was .77 at both pre and postintervention.

Perceived stress. Perceived stress was assessed with the 10-item version of the

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), which evaluates

the degree to which one appraises life as stressful. Items were rated on a 0 (*never*) to 4

(*very often*) scale. Cohen et al. reported evidence for the reliability and validity of PSS

scores. In previous research with various samples including undergraduate students,

concurrent and predictive validity were demonstrated by comparing calculated

correlations to validity criteria (Cohen et al., 1983). Cronbach's alpha for the current

study was .75 at preintervention and .76 at postintervention.

Stress, anxiety, and depression symptoms. General distress symptoms were

assessed with the 21-item form of the Depression Anxiety Stress Scale (DASS; Lovibond

& Lovibond, 1995). Items were rated on a 0 (*does not apply*) to 3 (*very much applies*)

scale (e.g., "I felt I wasn't worth much as a person"). Lovibond and Lovibond reported

evidence for the reliability and validity of scores on the three subscales. In previous research with undergraduate students, convergent validity was demonstrated via correlations in expected directions with other measures (Lovibond & Lovibond, 1995). In the present study, Cronbach's alpha ranged from .75 to .77 at preintervention and postintervention for each of the three subscales.

Web-based Stress Management Intervention. The web-based intervention had three modules each consisting of a psychoeducational video of a professor in the department of psychology, an animated video created using Prezi with examples from other students regarding the lesson content, and a written exercise. Module 1 described research on stress and its effects on college students' mental and physical health and academic performance. Modules 2 and 3 focused on describing different aspects of control and how they are related to adjustment, with a particular focus on present control. The written exercises asked students to apply the lesson content to their own lives. For example, the Module 1 exercise asked students to write about what was currently stressful in their lives and how stress was affecting their emotions, physical health, relationships, and school performance. After completing the three modules, the next step in the intervention was for participants to complete six stress logs that involved writing about the current stressors in their lives, what aspects of those stressors were controllable and uncontrollable, the actions they could take regarding the controllable aspects, and what had changed about the stressors as a result of the actions they had taken (after the first stress log). Intervention completion was assessed based on submission and completion of the written exercises and stress logs.

Procedure

The research was approved by the university's institutional review board. Consent was obtained on the website prior to the preintervention survey. All information was self-reported through online surveys. Participants completed the three modules and six online stress logs over the course of five weeks. Links were sent to participants when it was time to complete each activity. The three modules were completed during the first two weeks and two stress logs were completed each week for the next three weeks. Preintervention and postintervention questionnaires were completed six weeks apart. Secondary data analyses were conducted the year following intervention completion.

Results

Preliminary Analyses

Data were analyzed using Statistical Analysis Software (SAS) version 9.3. All variables were examined for outliers at Time 1 and Time 2. Grubb's test demonstrated no outliers outside of the three standard deviation range; therefore, no participants were removed for extreme responses. Normality was assessed using guidelines for sample sizes greater than 300 (i.e., ±2 for skewness and ±7 for kurtosis; Kim, 2013). With these criteria, the data were considered normally distributed. Multiple imputation was conducted to estimate missing data because 14% of participants did not complete the postintervention survey. Multiple imputation is preferred over listwise deletion for dealing with missing data (Schlomer, Baumen, & Card, 2010). Noncompleters did not differ from completers on baseline demographics or baseline scores on any variables with

the exception that noncompleters were more likely to identify as Non-White, $\chi^2(1) =$ 4.16, $p = .04$, $\Phi = .09$, and reported more anxiety, $t(493) = -2.34$, $p = .02$, $d = .31$, at baseline than completers. Ten imputations were combined into one pooled data set and used to calculate descriptive statistics and perform the regression analyses.

At baseline, 39% of the sample reported a history of IPV. The prevalence of IPV did not differ by intervention condition, $\chi^2(1) = 2.68$, $p = .10$. However, consistent with previous research (e.g., Frazier et al., 2009), significantly more women (46%) than men (29%) reported a history of IPV in the overall sample, $\chi^2(1) = 14.60$, $p<.001$. Fourteen percent of the total sample reported experiencing more than one form of IPV. Witnessing family violence (25% of total sample) and uninvited sexual attention (20% of total sample) were the most frequently reported forms of IPV. Those with any IPV history, regardless of the number of exposures, reported greater baseline levels of perceived stress, stress symptoms, anxiety, and rumination than those without an IPV history (ps<.01; Table 1) but not more depression or less present control.

Efficacy of Intervention in Lowering Distress for Students With and Without a History of IPV[1]

Six hierarchical multiple regressions were conducted in which postintervention measures of the four primary outcomes (perceived stress; stress, anxiety, depression symptoms) and two proposed mediators (present control, rumination) were the outcome

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[1] Because there were gender differences in exposure to IPV, analyses were run with gender as a covariate in the model. Because the results did not change, analyses without gender are reported.

measures, and the predictors were baseline scores on the relevant measure, IPV history[2],

intervention condition, and the interaction between intervention condition and IPV

history (see Table 2).

With regard to the four primary outcomes, there was a significant effect of

intervention condition on three of the four outcomes (perceived stress, stress symptoms,

and anxiety); the intervention effect for depression approached the conventional

significance level ($p = .06$). On all measures, the intervention group reported less distress

than the waitlist group at postintervention.

The interaction between IPV status and condition was significant for three of the

four outcomes: depression, anxiety, and perceived stress. The basic pattern was that the

intervention was more effective for those with a history of IPV than for those without. As

displayed in Figure 2, those on the waitlist with an IPV history increased in depression

from preintervention to postintervention (within-group $d = .36$) whereas those in the

intervention group did not (within-group $d = -.02$); those without an IPV history had low

levels of depression across time regardless of condition (within-group ds = .07 and .08

for the intervention and waitlist groups, respectively). For anxiety (Figure 3), those with a

history of IPV in the waitlist condition increased in anxiety from pre to postintervention

(within-group $d = .15$); however, those in the intervention condition decreased in anxiety

over time (within-group $d = -.28$) and had similar levels of anxiety to those without an

IPV history by the end of the intervention. Perceived stress followed a similar pattern as

anxiety. The average between-group effect size reflecting the difference between the

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[2] Analyses were also run with number of IPV exposures as a continuous measure. Because the average
change in beta was -.02 between analyses with IPV coded as a binary yes/no vs. a continuous measure,
analyses were presented with IPV as a binary variable to more easily compare effect sizes across groups.

intervention and waitlist groups on the four outcome measures was $d = .44$ for the IPV

group and $d = .10$ for the No IPV group.

Present Control and Rumination as Mediators of Intervention Efficacy

Table 2 also reports analyses assessing changes in the mediators as a function of

intervention condition and IPV status. There was a significant difference between the

intervention and waitlist group in present control, with the intervention group having

higher scores at postintervention. The interaction between IPV status and intervention

condition was not significant, indicating that both groups increased in present control (No

IPV within-group $d = .32$; IPV within-group $d = .36$). For rumination, there was a

significant condition effect (with lower scores in the intervention group) and a significant

interaction between IPV status and intervention condition. This interaction revealed that

those in the intervention condition with a history of IPV had greater decreases in

rumination (within-group $d = -.30$) than those without a history of IPV (within-group $d =$

$-.14$); those with a history of IPV in the waitlist condition increased in rumination over

time (within-group $d = .11$). The differences between the intervention and waitlist groups

were medium for the IPV group ($d = .53$ for present control and $d = -.41$ for rumination)

and small for the No IPV group (ds $= .23$ and $-.01$ for present control and rumination,

respectively).

Multigroup structural equation modeling analyses were conducted using Mplus 7 to

test the indirect effects of intervention condition on postintervention outcomes through

present control and rumination in the groups with and without an IPV history. These

analyses were done using full information maximum likelihood estimation rather than

imputed data sets. The four outcome measures at postintervention (Time 2) served as the indicator variables for a latent distress variable. A latent variable for baseline distress (with preintervention scores on the four measures as indicator variables) was included as a covariate predicting postintervention distress. Baseline present control was also included as a covariate predicting postintervention present control, and baseline rumination was a covariate predicting postintervention rumination. In both the No IPV (Figure 4) and IPV (Figure 5) groups, there was an indirect effect of intervention condition on outcomes through present control (No IPV: β = -.04, p = .04, 95% CI [-.09, -.002]; IPV: β = -.12, $p<.001$, 95% CI [-.18, -.05]), but the indirect effect of rumination was significant only in the IPV group (No IPV: β =.001, p = .94, 95% CI [-.04, .04]; IPV: β = -.06, p = .02, 95% CI [-.12, -.01]). In both groups, intervention condition did not predict postintervention outcomes, indicating that increases in present control and decreases in rumination mediated the intervention effects.

Aims: Study 2

Based on the findings of the first study that increasing present control and lowering rumination may both be mechanisms for decreasing distress among IPV survivors, the second study attempted to assess whether an intervention that specifically targeted both mechanisms may be more beneficial to IPV survivors than an intervention that only targeted present control. Therefore, in the second study, we sought to improve the Present Control Intervention by targeting rumination through mindfulness training. Mindfulness means "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p. 4). Past studies have shown that

mindfulness training decreases rumination (e.g., Deyo, Wilson, Ong, & Koopman, 2009) although there are currently no studies that have specifically assessed whether mindfulness decreases rumination in individuals with a history of IPV.

In a second effort to improve the intervention, an Enhanced Present Control condition was also created based on Solie's (2013) "Inside my control/Outside my control" exercise, which is a more systematic approach to increasing present control. This Enhanced Present Control Intervention was similar to the original Present Control Intervention condition in that participants in both conditions wrote about a stressor and what was inside and outside of their control regarding the stressor. However, participants in the Enhanced Present Control condition selected which action steps within their control they would actually do, prioritized each of the selected items, and then scheduled a date and time to do each of them. The final steps involved focusing on the currently scheduled priority and letting go of what was outside of their control. The goal was to examine whether enhancing the intervention by making it more structured would increase its efficacy in decreasing distress.

In summary, three interventions were assessed in the second study: (1) the original Present Control intervention used in prior studies (Frazier et al., 2015; Hintz et al., 2015) and in Study 1; (2) Present control and Mindfulness, consisting of the initial modules from the original Present Control intervention with mindfulness exercises instead of present control exercises; and (3) Enhanced Present Control, consisting of the original Present Control Intervention with more systematic and detailed present control exercises.

This study was undertaken with the goal of "learning then confirming" (Lee, Whitehead, Jacques, & Julious, 2014, p.1). That is, the goal was to gather preliminary data comparing the efficacy of the original Present Control Intervention to the two new versions of the intervention to see which approach was most effective prior to conducting a larger trial. The outcome measures were the same measures of distress and perceived stress as in the first study. Worry was examined as an additional outcome due to its relation with mindfulness (Fisak & von Lehe, 2012). Based on prior research, the hypothesis was that there would be significant decreases in distress in all three intervention conditions for students with and without a history of IPV, with within-group ds in the -0.30 to -0.40 range. The two new versions were also hypothesized to be somewhat more effective than the original version, reflecting attempts at refinement. Finally, the Present Control and Mindfulness condition was hypothesized to be most effective for those with an IPV history based on the previous finding that both increased present control and decreased rumination mediated intervention efficacy and that mindfulness training decreases rumination (Deyo et al., 2009). As a preliminary refinement study, it was not powered to detect what were likely to be small differences between groups but rather to identify trends to inform future trials.

Method

Participants

Participants ($N = 314$) were undergraduate students at a large, Midwestern university in an introductory psychology course. The final sample consisted of students who were either recruited earlier in the semester in the first study but initially assigned to

the waitlist group and agreed to participate in a second study ($n = 139$) or newly recruited for the current study midway through the semester ($n = 175$). All participants were compensated with course extra credit.

Participants were randomly assigned to one of three conditions: Present Control Intervention (PCI; $n = 104$), Present Control and Mindfulness (PC+MF; $n = 106$), or Enhanced Present Control Intervention (E-PCI; $n = 104$). Individuals were removed from the analyses if they did not answer all questions on the IPV history measure (three individuals from both the PCI and E-PCI conditions and one individual from the PC+MF condition). Individuals were also removed if they were labeled as a "careless responder" because they gave incorrect responses on at least two of three instructed response questions (e.g., "answer 3 to this question") on both the preintervention and postintervention surveys or had long strings of the same answer on the surveys. Based on this criterion, two individuals from the PCI condition and three individuals from the PC+MF condition were removed.

The final sample consisted of 302 participants, with 237 (78%) completing the postintervention survey (see Figure 6). The majority of the sample identified as female (63%), never married (97%), and in the 18-21 year age range (79%). Most of the sample identified as European American/White (72%), followed by Asian/Asian American (18%), Hispanic/ Latino(a) (4%), African American/Black (2%), or other minority status (4%; i.e., Middle Eastern/Arab American, Native American, Other). The majority of the participants were in their first year of college (59%) followed by 20% in their second year and 10% in their third year. Chi-square tests indicated that individuals in the three

conditions did not significantly differ at the *p*<.05 level on any of these demographic variables.

Materials

The Traumatic Life Experiences Questionnaire (TLEQ; Kubany et al., 2000) and the demographics questionnaire were completed preintervention. All other measures assessed symptoms in the past week and were completed at pre and postintervention. Psychometric information for most variables was included in Study 1.

History of interpersonal violence. As in Study 1, six items from the TLEQ (Kubany et al., 2000) were used to assess IPV: lifetime exposure to witnessing family violence, receiving unwanted sexual attention, or experiencing unwanted sexual contact (i.e., sexual contact before age 13 by someone at least five years older, sexual contact before age 13 by a peer, sexual contact against one's will as a teenager or adult). Responses were dichotomous (*yes* or *no*). Participants were classified as having a history of IPV if they reported any one of these six events.

Perceived stress. The 10-item form of the Perceived Stress Scale (PSS; Cohen et al., 1983) was again used to assess perceived stress. Cronbach's alpha was .90 at preintervention and .87 at postintervention for the present study.

Stress, anxiety, and depression symptoms. The 21-item form of the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) assessed general distress symptoms. Cronbach's alpha ranged from .82 to .86 for each of the three subscales at pre and postintervention for the present study.

Worry. The 10-item worrisome thinking and academic concern subscales of the Student Worry Questionnaire (SWQ; Osman et al., 2001) were used to assess worry. Items were rated on a 0 (*almost never*) to 4 (*almost always*) scale (e.g., "I worry about keeping up with or handling my academic workload"). Osman et al. provided evidence for the validity and reliability of subscale scores. Cronbach's alpha was .92 at preintervention and .93 at postintervention for the present study.

Web-based stress management intervention. The web-based interventions each had three modules consisting of a psychoeducational video of an expert talking about research on stress and perceived control (e.g., distinguishing between what one can and cannot control), an animated video with examples from other students regarding stressors in their lives, and a written exercise. Participants also completed either three stress logs or three mindfulness exercises. In the PCI condition, the stress logs involved writing about the current stressors in their lives, what aspects of those stressors were inside or outside of their control, the actions they could take related to the aspects of the stressors within their control, and what had changed about the stressor as a result of the actions they had taken (in later logs). The E-PCI condition was similar to the PCI condition except that participants also prioritized what actions they would take and scheduled a time to accomplish each action. Specifically, participants created a list of items that were "inside of their control," selected items on that list that they would do, prioritized each of the actions, and then selected a timeframe in which they would complete the actions. The participants were then asked to remind themselves to focus on the priority that they chose to address at the moment and to let go of the items outside of their control. In the PC+MF condition, rather than completing stress logs, participants completed mindfulness

exercises that involved listening to three mindfulness meditations and then rating how

fully they were able to experience thoughts and feelings over the past week.

Procedure

The study was approved by the university's institutional review board. Consent

was obtained on the website prior to the preintervention survey. All data were gathered

online via self-report measures. The intervention was completed over four weeks. The

three modules were completed over the first two weeks, and the three stress or

mindfulness logs were completed over the last two weeks. The intervention was intended

to take approximately one hour to complete over four weeks. Participants were prompted

via email when it was time to complete an activity, at which time they received links to

the next step in the intervention. The intervention was completed online on the

participants' personal computers. We checked completion of the stress and mindfulness

logs because they were submitted within the online module. The surveys and the

intervention were all completed in the second half of the semester. Secondary data

analyses were conducted the year following intervention completion.

Results

Preliminary Analyses

Data analyses were conducted using SAS version 9.3. At pre and postintervention,

all variables were examined for outliers and normality. There were no extreme outliers

(i.e., scores outside of the three standard deviation range). Normality guidelines for

sample sizes greater than 300 were met, in that all variables had skewness values between

-2 and 2 and kurtosis values between -7 and 7 (Kim, 2013). Because 22% of participants did not complete the postintervention survey, multiple imputation was conducted to estimate missing data because it is the preferred method for dealing with missing data (Schlomer et al., 2010). Analyses were conducted using the pooled results of ten imputations. Those who completed the postintervention survey did not significantly differ (p<.05) from noncompleters on any demographic or baseline variables, and there were no differences between the two recruited cohorts. The three conditions did not significantly differ at the p<.05 level on any baseline measures.

At baseline, 35% ($n = 107$) of the sample reported a history of at least one of the six forms of IPV assessed, with witnessing family violence (20%) and unwanted sexual attention (20%) the most common. At baseline, participants with an IPV history reported significantly more distress, perceived stress, and worry than those without an IPV history (ps<.05).

Efficacy of Three Intervention Conditions for IPV and No IPV Groups

Between-group differences. Analyses of covariance (ANCOVAs) assessed whether there were differences in efficacy across the three conditions and whether there were any interactions between intervention condition and IPV status that would suggest that the IPV and No IPV groups responded differently to the interventions (see Table 3). The outcome measures (i.e., distress, perceived stress, worry) at postintervention served as the dependent variables with preintervention scores as covariates. Condition (PCI, PC+MF, E-PCI), IPV status (yes/no) and the interaction between Condition and IPV status were the independent variables.

With regard to differences between the three intervention conditions, the effect of condition was significant for worry with the two new intervention conditions (E-PCI and PC+MF) being more effective than the original intervention condition (PCI vs. E-PCI between-group $d = 0.25$; PCI vs. PC+MF between-group $d = 0.20$). However, the main effect of condition for worry was modified by a significant Condition by IPV interaction. The interaction between intervention condition and IPV history was also significant for distress and marginally significant for perceived stress ($p = .11$). Because SAS does not generate pooled estimates of the post-hoc contrasts, we further explored these interactions with paired t-tests.

Within-group differences. The between-group comparisons provide information on relative but not absolute efficacy (i.e., there might be no significant differences *between* conditions but still significant change *within* each condition). To further explore the efficacy of the three interventions and differential efficacy as a function of IPV history (based on the significant interactions in the ANCOVA analyses), paired t-tests were conducted to assess change in outcomes (i.e., distress, perceived stress, worry) from pre to postintervention in each condition for each IPV group. Results were pooled across ten imputations (see Table 4).

Among the students with no history of IPV, there was significant change from pre to postintervention in the E-PCI and PCI+MF conditions for all three outcomes with within-group effect sizes in the small to medium range (ds = -0.32 to -0.43). There was no significant change in the group that received the original PCI (within-group ds = -0.13 to -0.19).

Among the students who had experienced IPV, there was significant change from pre- to post-intervention in the E-PCI (within-group ds = -0.41 to -0.56) and PC+MF (within-group ds = -0.30 to -0.41) groups for most measures. Because the IPV group was smaller than the No IPV group, some of these paired t-tests were marginally significant in the IPV group although the effect sizes were similar to—or larger than—those for the No IPV group. There was no significant change in the IPV group that completed the PCI (within-group ds = -0.19 to -0.33).

Effect sizes were slightly larger in the IPV group than the No IPV group for the PCI and E-PCI conditions. Specifically, averaging across the three outcomes, within-group ds for the IPV and No IPV groups were -0.26 and -0.17 for the PCI and -0.48 and -0.37 for the E-PCI. For the PC+MF condition, the within-group effect sizes were similar across the two groups, albeit slightly higher for the No IPV (within-group d = -0.39) than the IPV (within-group d = -0.34) group.

Discussion

The purpose of these studies was to assess the efficacy of self-help, web-based universal prevention interventions to reduce distress among students with and without a history of IPV. Study 1 also examined whether increases in perceived present control or decreases in rumination mediated intervention effects. Although Study 2 was not powered to examine mediation, it attempted to distinguish between three different interventions to see what would be most efficacious for students with and without a history of IPV. Below are the key findings, limitations, and research, clinical, and policy implications.

With regard to Study 1, which used the original Present Control Intervention, results suggested that the stress-management intervention was effective in the sample as a whole but was more effective for survivors of IPV than for those without a history of IPV on all but one outcome measure (DASS stress). Specifically, students with a history of IPV in the intervention condition showed reductions in distress over time whereas those in the waitlist condition showed increases in distress over time. The increases in distress among the waitlist condition from the beginning to the middle of the semester may be due to an increase in stress levels associated with increases in workload over the intervention time period (from minimal workload at the start of the semester to preparing for midterm exams at the posttest period). The average difference between the intervention and waitlist groups was moderate ($d = .44$) in students with a history of IPV and was small ($d = .10$) in students without a history of IPV ($d = .23$ in total sample). The average intervention effect size for the IPV group was somewhat larger than the postintervention effect sizes in previous studies of this intervention (average between-group ds $= .32$ and $.35$ in Hintz et al., 2015 and Frazier et al., 2015, respectively). This may be because those with an IPV history reported greater distress than those without an IPV history at baseline and were more in need of a stress management intervention. The effect size may also have been larger because the comparison group here was a waitlist control whereas the comparison groups in the other studies received some psychoeducational information about stress. The average between-group effect size for the IPV group ($d = .44$) was very similar to that found at follow-up in the Hirai et al. (2012) study ($d = .43$), which also used the DASS. Thus, our intervention, which used a universal prevention approach that teaches general stress management skills, was as

effective as trauma-focused expressive writing in reducing general distress. The effect

sizes in the Hirai and Clum (2005) study were larger, but the intervention was longer than

that in the present study and had only 13 completers.

The original intervention increased present control, the protective factor specifically

targeted by the intervention, in students with and without a history of IPV. Mediation

analyses also suggested that the mediating effect of increased present control was

significant in both groups. This supports previous research indicating that increases in

present control help to explain why the intervention is effective in reducing distress

(Frazier et al., 2015; Hintz et al., 2015). Although the intervention significantly reduced

rumination, the interaction suggested that this reduction was only significant in the

students with a history of IPV. The mediating effect of decreased rumination was also

only significant in those with an IPV history. This may be because students with an IPV

history had higher baseline levels of rumination, consistent with previous research (e.g.,

Conway, Mendelson, Giannopoulos, Csank, & Holm, 2004). Rumination thus seems to

be a key process to target in designing interventions for individuals who have

experienced IPV.

In regard to the refined interventions assessed in Study 2, there were significant or

marginally significant reductions in distress among students with and without a history of

IPV who completed the new intervention conditions. The within-group effect sizes

(reflecting decreases in distress) for the two new versions ranged from $d = -0.30$ to -0.56

(mean $d = -0.39$). However, contrary to prediction, the decreases in the original Present

Control Intervention were not significant (mean $d = -0.22$). The effect sizes for the PCI

condition were similar to—but slightly smaller than—the within-group effect sizes at

posttest in previous studies (ds = -0.24 to -0.35; mean d = -0.31; Frazier et al., 2015; Hintz et al., 2015). The lack of significance for some of the effect sizes was likely due to lower power in this study. Overall, the results suggest that web-based interventions based on the temporal model of control (Frazier et al., 2001) were effective in reducing distress among students and that adding new components (e.g., enhanced stress logs, mindfulness training) improved intervention effectiveness.

There was also some evidence that students with and without a history of IPV responded somewhat differently to the interventions. Specifically, for the students with a history of IPV, decreases in symptoms were larger (mean within-group d = -0.48) with the more structured approach to increasing present control (E-PCI) than in the original PCI condition (mean within-group d = -0.26) or the condition that incorporated mindfulness training (mean within-group d = -0.34). This latter finding was contrary to the hypothesis that mindfulness training would increase efficacy especially for IPV survivors. One explanation is that the mindfulness exercises were recorded by a male, which may have been off-putting for IPV survivors. For those without an IPV history, both the more structured present control intervention and the present control intervention with mindfulness training appeared equally effective. Future research should examine other factors that might influence which interventions are most effective for which people, including intervention preferences.

Limitations

Limitations of the studies should be noted when interpreting the results. First, data on efficacy were only gathered immediately following the intervention. Other studies of

the Present Control Intervention have shown that the effect sizes increase, rather than decrease, at follow-up (e.g., Hintz et al., 2015). Nonetheless, future studies should assess whether the effects of our intervention, including the differential effects of our intervention among students with an IPV history, are maintained, decrease, or increase over time.

Second, the comparison group in the first study did not receive any intervention during the waitlist period. Thus, differences between the groups could be due to expectancy or placebo effects. Comparisons to active time-equivalent comparison groups would also be useful. On the other hand, in the second study, there was no attention control or waitlist group because the goal was to compare the efficacy of the three intervention conditions. However, in the first study, individuals with an IPV history in the waitlist group *increased* in symptoms over time and the differences between the intervention and waitlist groups reflected both decreases in symptoms in the intervention group and increases in symptoms in the waitlist group. Thus, by not having a waitlist group, the effects of the interventions may have been underestimated in Study 2.

Third, all data were gathered via self-report. Thus, results may have been affected by demand characteristics (e.g., it would have been clear to participants in the intervention condition that it focused on present control which may have inflated their scores on the present control measure). Future research should gather more objective measures less prone to demand characteristics (e.g., academic functioning).

Fourth, the outcomes only measured reductions in distress. It would be useful to also assess whether the Present Control Intervention results in increases in well-being, which is possible given that present control is related to higher sores on well-being

measures (e.g., optimism, hope, life satisfaction) as well as lower scores on measures of distress (Frazier et al., 2011; Frazier et al., 2012).

Fifth, all six forms of IPV were combined into one IPV exposure variable, which may have masked differences between various forms of IPV. Witnessing family violence tended to have the strongest relations with distress (data not reported here). In larger samples, the efficacy of the interventions among students with this specific form of IPV could be examined. Combining the IPV variables was particularly imperative in the second study because the sample sizes within each of the six subgroups were relatively small, ranging from 34 to 65 participants. These small sample sizes limited the power to detect significant differences, although the sample sizes were consistent with the goal of piloting the two new intervention conditions prior to conducting a larger trial (Teare et al., 2014).

Finally, there was a lack of diversity in the samples (e.g., samples were mostly White, female college students), which limits the generalizability of the results, as some studies have found differences across ethnic groups in treatment outcomes (see Miranda et al., 2005, for a review). In addition, noncompleters in Study 1 were more likely to identify as Non-White than were completers, although the effect size was small.

Research Implications

The results of the first study suggested that students with a history of IPV benefitted more than other students from our intervention and that increases in personal control and decreases in rumination mediated the intervention effects. Rumination in particular was more common in students with a history of IPV and mediated intervention effects only in

that group. Results of both the original Present Control Intervention study and the refinement study suggest that additional research is needed to identify other mechanisms that might explain why students with a history of IPV report more current distress than other students, which could in turn lead to the development of additional modules to address those issues. For example, individuals with a history of IPV may also have more difficulties in their social relationships and might benefit from interventions that target social skills (Charuvastra & Cloitre, 2008). Additional research generally is needed on interventions specifically tailored to users' needs, especially among those with a history of IPV. Future interventions may also be informed by ecological momentary assessments or daily diaries, which is a novel method that uses real-time data collection. My colleagues and I recently conducted a daily diary study in which participants used a smart phone application to record their stressors, daily coping, and mood for two weeks. The results from these in-real-time assessments may help elucidate the mechanisms of how individuals perceive and manage their daily perceptions of stress, which may better inform how future interventions for IPV survivors may be refined.

Clinical and Policy Implications

Web-based interventions, offered using a universal prevention approach, may be an effective way to enhance protective factors and reduce distress among students with an IPV history, a group that is particularly at risk (Frazier et al., 2009). Because participants did not need to identify themselves as survivors of IPV to access the intervention, the stigma associated with help-seeking might have been reduced. In addition, students may not connect any current distress they are reporting to any particular past event and

perhaps would not have accessed an intervention that was specifically targeted to IPV survivors. The approach taken in this study is consistent with stepped care models of mental health delivery in which guided self-help, including web-based interventions, is the first step before seeking traditional individual therapy (Bower & Gilbody, 2005). Web-based interventions also circumvent barriers to seeking care associated with waitlists for services and lack of resources at universities for meeting the increasing demands for student mental health care (Gallagher, 2012).

There are practical implications for schools seeking to meet the mental health needs of students, especially those at risk of mental health problems and drop out as a function of having experienced IPV. Although the effect sizes in the present study were small to medium, they were similar to between-group effect sizes reported for longer online interventions targeting distress among college students (Davies, Morriss, & Glazebrook, 2014). The interventions tested in this study were very brief and could be completed in less than one hour over a four-week period. Perhaps as a result, retention rates were high. The interventions themselves were created using freely available tools. They are an example of using technology-based tools to translate basic research (in this case, the temporal model of control) into interventions that can teach specific skills for coping with stress. Because they are web-based, they can be distributed widely at very low or no cost. This increases access to mental health resources on campus, particularly on campuses where resources are lacking.

Although web-based interventions are an important part of the continuum of care, additional services also are needed for individuals who could benefit from mental health services but who do not respond well to web-based interventions. For example,

individuals who reported more anxiety at baseline were more likely to drop out in the

first study and individuals who reported more depression at baseline were more likely to

drop out in a previous study (Frazier et al., 2015). Thus, individuals with higher levels of

symptoms may need more support in completing a web-based intervention or may need a

different kind of intervention. Interventions that specifically target trauma symptoms

should also be part of the continuum of care.

Conclusion

Many students have a history of IPV and those students are at risk of having more

mental health problems in college, which can lead to poorer academic outcomes. A web-

based, self-help, universal prevention approach focused on increasing present control

skills may be a cost effective, non-stigmatizing method for universities to incorporate

into their mental health service delivery system to reach such students.

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Table 1. Study 1: Means and Standard Deviations at Preintervention and Postintervention

	Intervention		Waitlist	
	IPV	No IPV	IPV	No IPV
Present Control, T1	3.08 (0.51)	3.12 (0.48)	3.07 (0.48)	3.05 (0.50)
Present Control, T2	3.26 (0.46)	3.27 (0.46)	2.99 (0.39)	3.10 (0.52)
Rumination, T1	4.40 (1.10)	4.15 (0.97)	4.33 (1.09)	4.00 (1.00)
Rumination, T2	4.06 (1.09)	4.02 (1.04)	4.45 (1.11)	3.87 (1.02)
Perceived Stress, T1	1.76 (0.64)	1.61 (0.67)	1.78 (0.65)	1.61 (0.61)
Perceived Stress, T2	1.67 (0.66)	1.66 (0.64)	2.03 (0.60)	1.78 (0.71)
Stress symptoms, T1	1.07 (0.59)	0.90 (0.57)	1.08 (0.56)	0.97 (0.58)
Stress symptoms, T2	1.03 (0.59)	0.92 (0.54)	1.28 (0.61)	1.07 (0.60)
Anxiety, T1	0.68 (0.55)	0.51 (0.46)	0.61 (0.63)	0.46 (0.45)
Anxiety, T2	0.52 (0.51)	0.51 (0.48)	0.71 (0.65)	0.49 (0.53)
Depression, T1	0.61 (0.58)	0.56 (0.56)	0.65 (0.56)	0.55 (0.52)
Depression, T2	0.60 (0.58)	0.60 (0.56)	0.85 (0.62)	0.60 (0.59)

Note. Values are averages across 10 imputations. $N = 500$. IPV = interpersonal violence. T1 = Time 1 preintervention. T2 = Time 2 postintervention. Sample sizes before imputation: Intervention-IPV, $n = 136$ (T1), $n = 111$ (T2); Intervention-No IPV, $n = 185$ (T1), $n = 162$ (T2); Waitlist-IPV, $n = 58$ (T1), $n = 49$ (T2); Waitlist-No IPV, $n = 109$ (T1), $n = 97$ (T2)

Table 2. Study 1: Summary of Hierarchical Regression Analyses Assessing Intervention Efficacy for Students With and Without an IPV History

Variable	B	SE B	Beta
T1 covariate: Perceived stress	0.57	0.04	0.55***
IPV status[a]	0.02	0.03	0.03
Intervention Condition[b]	-0.11	0.03	-0.15***
IPV x Condition	-0.06	0.03	-0.08*
T1 covariate: Stress symptoms	0.55	0.04	0.55***
IPV status[a]	0.04	0.03	0.07
Intervention condition[b]	-0.08	0.03	-0.14***
IPV x Condition	-0.03	0.02	-0.05
T1 covariate: Anxiety	0.50	0.04	0.49***
IPV status[a]	0.01	0.02	0.03
Intervention condition[b]	-0.05	0.02	-0.10*
IPV x Condition	-0.05	0.02	-0.10*
T1 covariate: Depression	0.50	0.04	0.48***
IPV status[a]	0.04	0.03	0.07
Intervention condition[b]	-0.05	0.03	-0.08+
IPV x Condition	-0.06	0.03	-0.10*
T1 covariate: Present control	0.45	0.04	0.47***
IPV status[a]	-0.03	0.02	-0.05
Intervention condition[b]	0.10	0.02	0.19***
IPV x Condition	0.03	0.02	0.06
T1 covariate: Rumination	0.68	0.04	0.66***
IPV status[a]	0.06	0.04	0.05
Intervention condition[b]	-0.10	0.04	-0.08*
IPV x Condition	-0.12	0.04	-0.11*

Note. N = 500. Values are averages across 10 imputations. IPV = interpersonal violence. T1 = Time 1 preintervention. T2 = Time 2 postintervention. The dependent variable in each model was the Time 2 postintervention measure for the respective T1 preintervention covariate in the model. [a]IPV = 1, No IPV = 0. [b]Intervention = 1, Waitlist = 0. ^+p = .06 *p < .05 ***p < .001

Table 3. Study 2: Analysis of Covariance Models Predicting Post-intervention Outcomes

Source	df	F	P
Distress: Depression Anxiety Stress Scale (DASS)			
DASS Time 1	1	148.53	<.001
IPV (1 = yes, 0 = no)	1	24.49	<.001
Condition (PCI, E-PCI, PC+MF)	2	0.45	.68
Condition*IPV	2	4.51	.03
Perceived Stress: Perceived Stress Scale (PSS)			
PSS Time 1	1	103.71	<.001
IPV (1 = yes, 0 = no)	1	12.44	<.001
Condition (PCI, E-PCI, PC+MF)	2	0.84	.49
Condition*IPV	2	3.04	.11
Worry: Student Worry Questionnaire			
Worry Time 1	1	257.94	<.001
IPV (1 = yes, 0 = no)	1	8.25	.03
Condition (PCI, E-PCI, PC+MF)	2	3.75	.03
Condition*IPV	2	5.99	.01

Note. Values are averages across 10 imputations. *N* = 302. IPV = interpersonal violence. PCI = Present Control Intervention. E-PCI = Enhanced Present Control Intervention. PC+MF = Present Control and Mindfulness.

Table 4. Study 2: Means, Standard Deviations, and Paired t-tests at Pre (T1) and Postintervention (T2)

	Present Control Intervention		Enhanced Present Control Intervention		Present Control and Mindfulness	
	IPV $n = 34$	No IPV $n = 65$	IPV $n = 36$	No IPV $n = 65$	IPV $n = 37$	No IPV $n = 65$
Distress: Depression Anxiety Stress Scale						
T1 (*M, SD*)	.93 (.56)	.68 (.52)	.87 (.47)	.79 (.48)	1.08 (.64)	.64 (.50)
T2 (*M, SD*)	.73 (.53)	.58 (.44)	.68 (.46)	.62 (.41)	.89 (.69)	.50 (.38)
t (df)	-1.40 (33)	-1.79 (64)	-2.72 (35)	-3.72 (64)	-1.85 (36)	-2.43 (64)
within-group *d*	-0.19	-0.19	-0.41[+]	-0.34***	-0.30[+]	-0.32*
Perceived Stress: Perceived Stress Scale						
T1 (*M, SD*)	1.95 (.67)	1.64 (.74)	1.91 (.66)	1.84 (.66)	2.06 (.72)	1.64 (.68)
T2 (*M, SD*)	1.73 (.61)	1.50 (.63)	1.61 (.58)	1.57 (.56)	1.76 (.79)	1.36 (.56)
t (df)	-1.90 (33)	-1.44 (64)	-2.99 (35)	-3.71 (64)	-2.45 (36)	-3.91 (64)
within-group *d*	-0.33	-0.19	-0.47[+]	-0.41***	-0.41*	-0.41***
Worry: Student Worry Questionnaire						
T1 (*M, SD*)	2.48 (.83)	2.03 (.85)	2.50 (.64)	2.55 (.74)	2.58 (.91)	2.24 (.81)
T2 (*M, SD*)	3.35 (.85)	1.91 (.84)	2.14 (.75)	2.28 (.73)	2.31 (.96)	1.89 (.85)
t (df)	-2.26 (33)	-1.41 (64)	-3.22 (35)	-3.78 (64)	-2.10 (36)	-4.34 (64)
within-group *d*	-0.27[+]	-0.13	-0.56**	-0.37***	-0.30[+]	-0.43***

Note. Values are averages across 10 imputations. $N = 302$. IPV = interpersonal violence. ***$p<.001$ ** $p<.01$ *$p<.05$ [+]$p < .10$
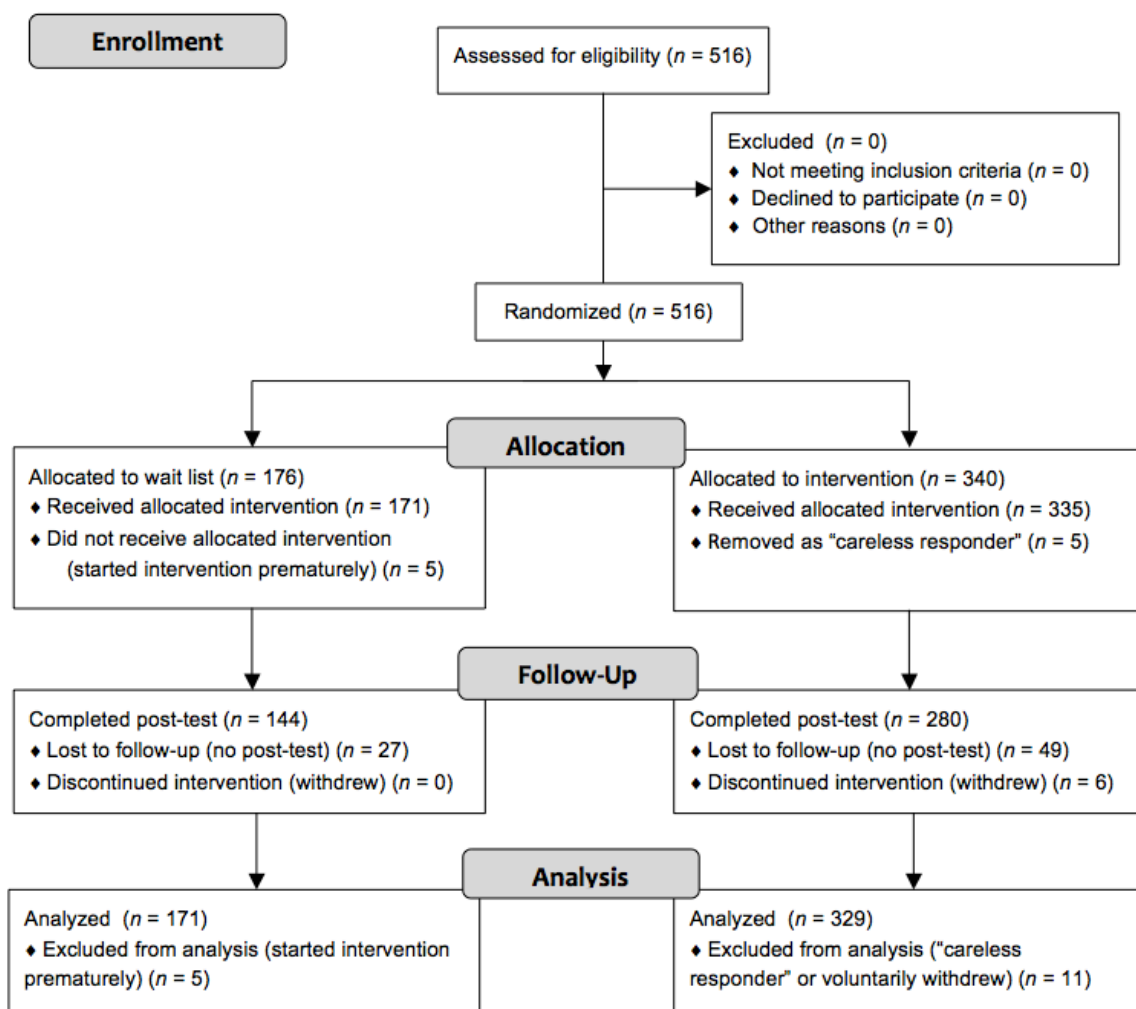
Figure 1. Study 1: Consolidated Standards of Reporting Trials (CONSORT) diagram.
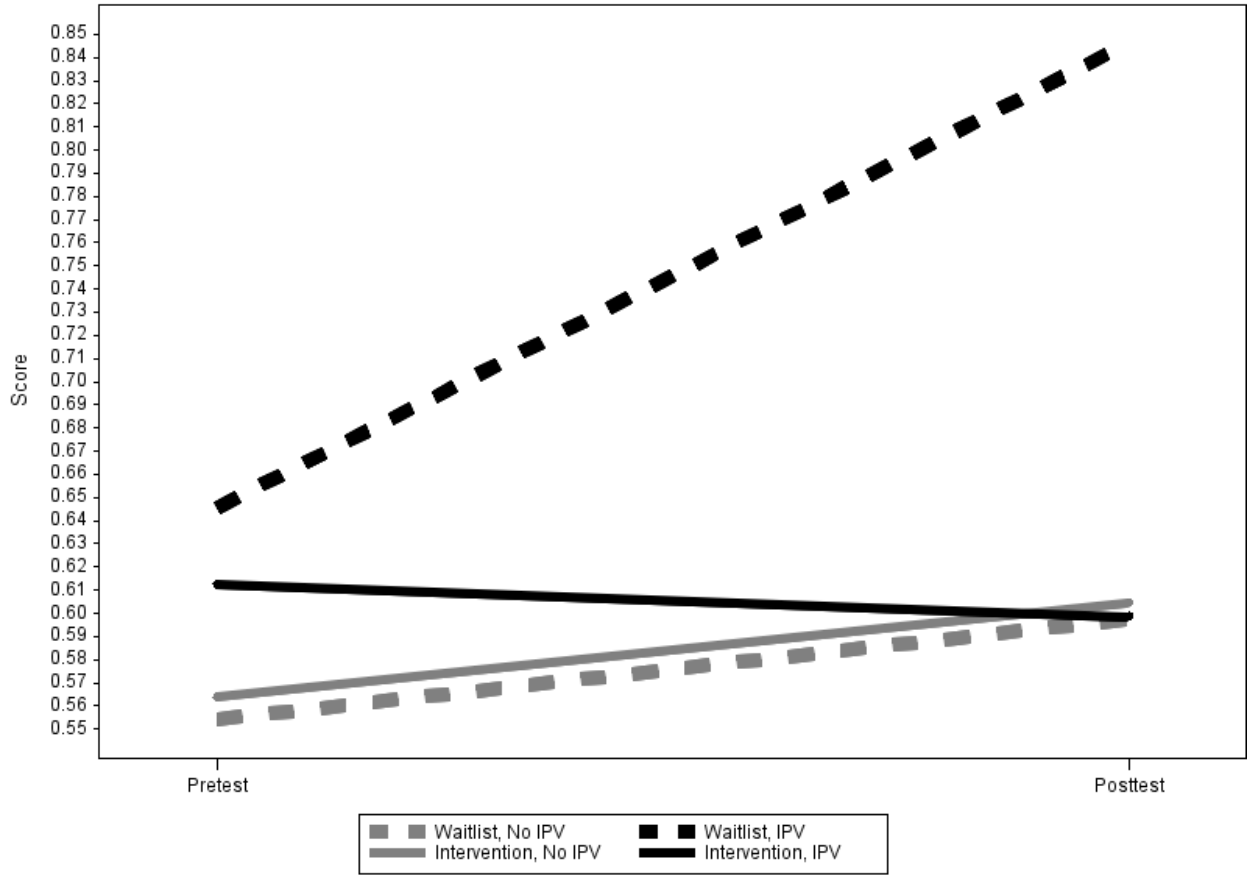
DASS Depression

Figure 2. Study 1: Depression scores at preintervention and postintervention
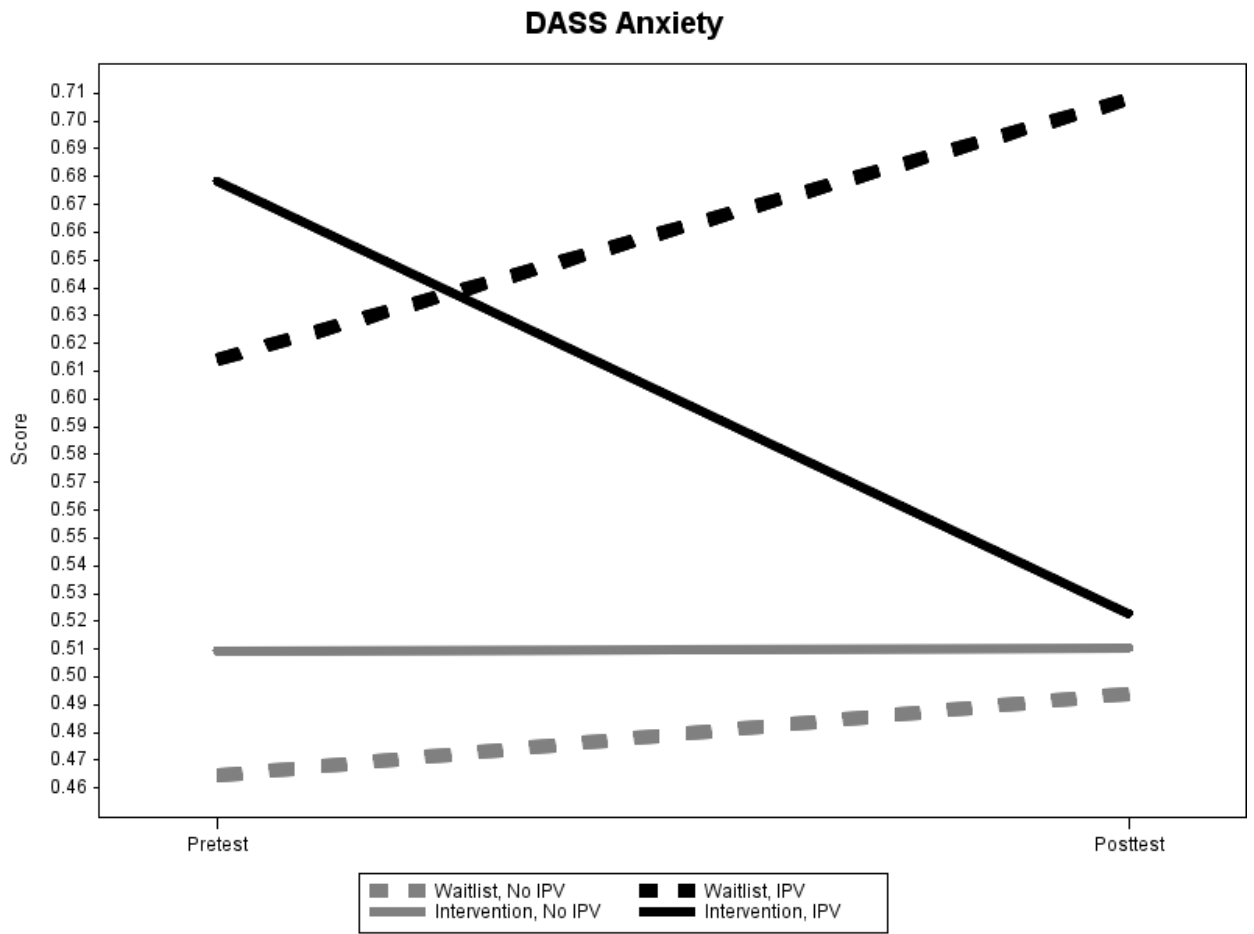
DASS Anxiety

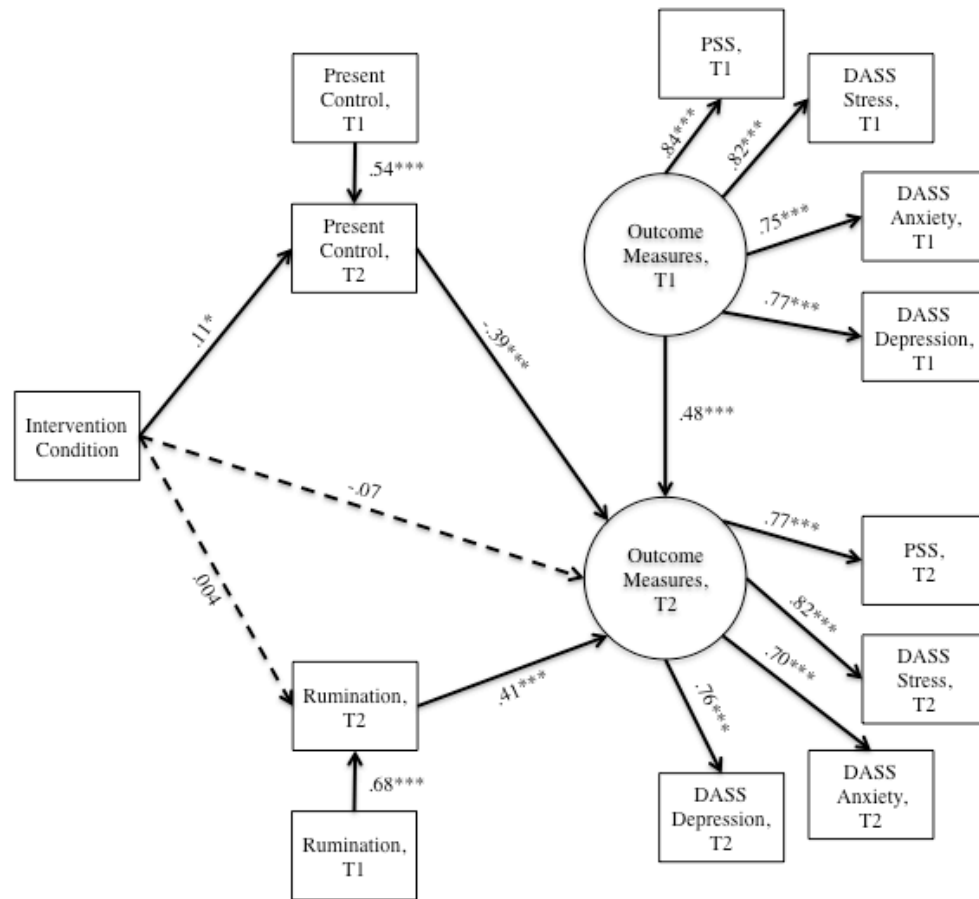*Figure 3.* Study 1: Anxiety scores at preintervention and postintervention

Figure 4. Study 1: Structural equation model assessing mediators of intervention efficacy for students without a history of interpersonal violence. Values are standardized coefficients. Intervention condition is coded 1 for intervention, 0 for waitlist. *p* < .05 ***p* < .001
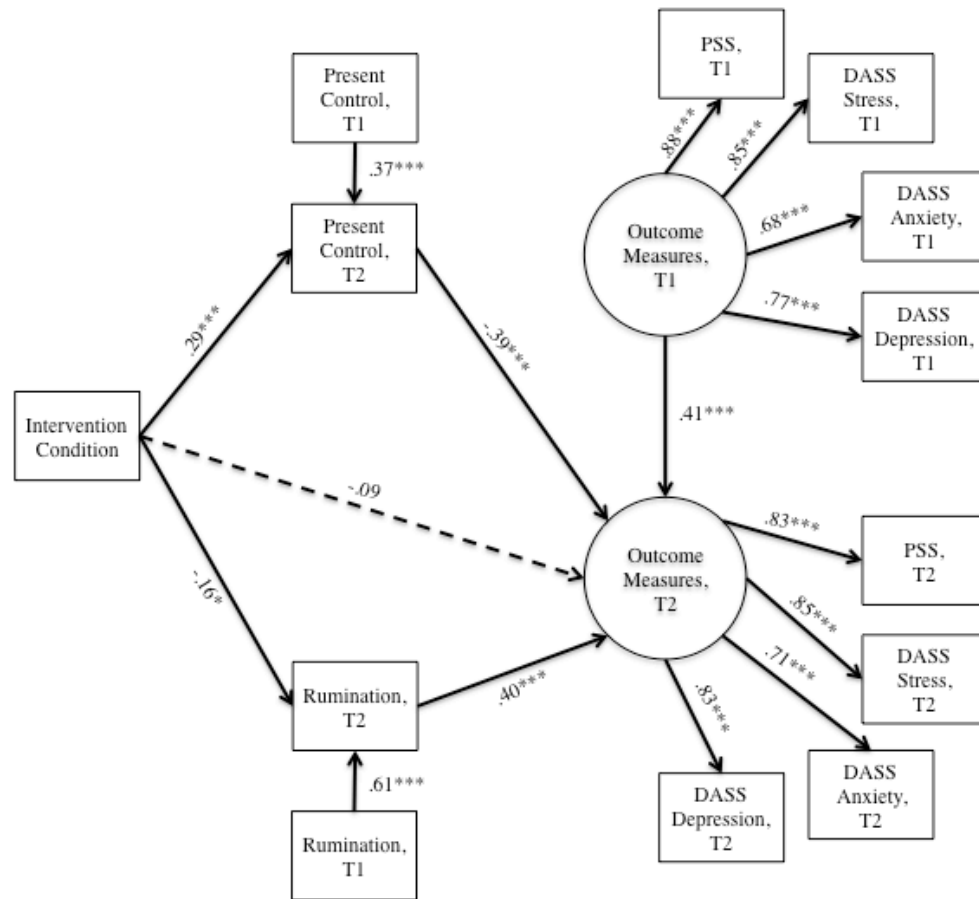
Figure 5. Study 1: Structural equation model assessing mediators of intervention efficacy for students with a history of interpersonal violence. Intervention condition is coded 1 for intervention, 0 for waitlist. Values are standardized coefficients. *p* < .05 ***p* < .001
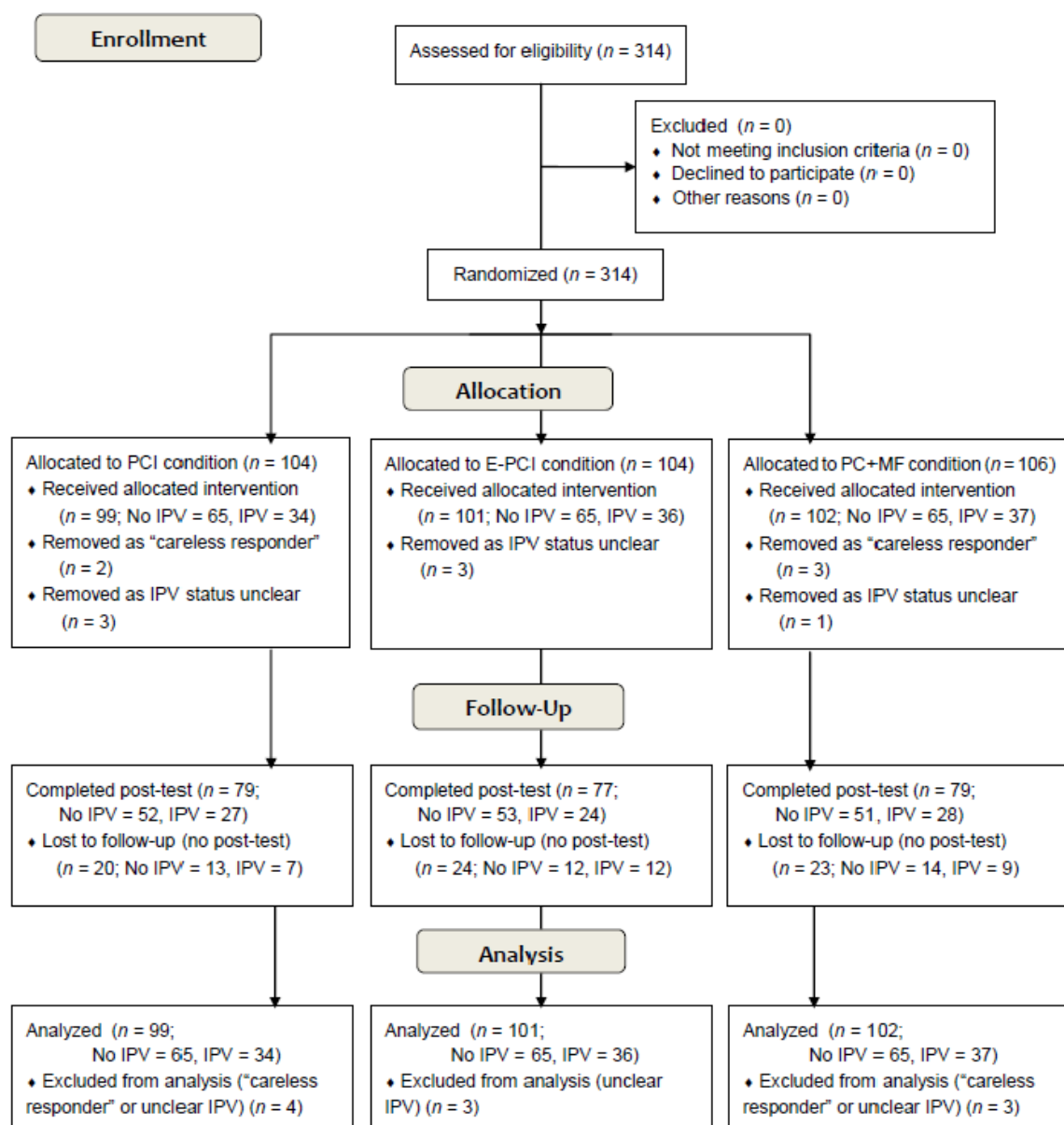
Figure 6. Study 2: Consolidated Standards of Reporting Trials (CONSORT) diagram.