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Brief Motivational Intervention for Intimate Partner Violence and Heavy Drinking in the Emergency Department:

A Randomized Clinical Trial

Karin V. Rhodes, MD, MS, **Melissa Rodgers, BA**, **Marilyn Sommers, PhD**, **Alexandra Hanlon, PhD**, **Jesse Chittams, MS**, **Andrea Doyle, PhD**, **Elizabeth Datner, MD**, and **Paul Crits-Christoph, PhD**

Perelman School of Medicine, University of Pennsylvania, Philadelphia (Rhodes, Rodgers, Datner, Crits-Christoph); School of Social Policy and Practice, University of Pennsylvania, Philadelphia (Rhodes, Doyle); School of Nursing, University of Pennsylvania, Philadelphia (Sommers, Hanlon, Chittams); Philadelphia VA Medical Center, Philadelphia, Pennsylvania (Datner)

Abstract

Importance—Intimate partner violence (IPV) and heavy drinking are co-occurring public health problems, but integrated brief interventions for these conditions have not been tested.

Objective—To determine whether a brief motivational intervention provided at the time of an emergency department (ED) visit reduces IPV and heavy drinking.

Design, Setting, and Participants—A randomized clinical trial conducted at 2 US academic urban EDs between January 2011 and December 2014 to assess the effectiveness of a motivational intervention for IPV-involved female ED patients (ages: 18-64 years; N = 600) who exceeded sex-specific safe drinking limits. All received social service referrals; 2:2:1 to brief intervention (n = 242), assessed control (n = 237), or no-contact control (n = 121).

Interventions—A 20- to 30-minute manual-guided motivational intervention (recorded and monitored for fidelity) delivered by master's-level therapists with a follow-up telephone booster. The assessed control group received the same number of assessments as the brief intervention group; the no-contact control group was assessed only once at 3 months.

Corresponding Author: Karin V. Rhodes, MD, MS, Center for Emergency Care Policy and Research, Department of Emergency Medicine, Perelman School of Medicine, University of Pennsylvania, 34th and Spruce Streets, First Floor Ravidin, HUP, Philadelphia, PA 19104 (karin.rhodes@uphs.upenn.edu).

Author Contributions: Drs Rhodes and Hanlon had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Rhodes, Rodgers, Sommers, Datner, Crits-Christoph.

Acquisition, analysis, or interpretation of data: Rhodes, Rodgers, Sommers, Hanlon, Chittams, Doyle, Datner.

Drafting of the manuscript: Rhodes, Rodgers, Sommers, Hanlon, Chittams, Doyle, Crits-Christoph.

Critical revision of the manuscript for important intellectual content: Rhodes, Sommers, Doyle, Datner.

Statistical analysis: Hanlon, Chittams, Crits-Christoph.

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Main Outcomes and Measures—Incidents of heavy drinking and experiencing IPV measured over prespecified, 12 weekly assessments using an interactive voice response system.

Results—Of 600 participants, 80% were black women with a mean age of 32 years. Retention was 89% for 2 or more interactive voice response system calls. Seventy-eight percent of women completed the 3-month interview, 79% at 6 months, and 71% at 12 months. During the 12-week period following the brief motivational intervention, there were no significant differences between the intervention group and the assessed control group on weekly assessments for experiencing IPV (odds ratio [OR], 1.02; 95% CI, 0.98-1.06) or heavy drinking (OR, 0.99; 95% CI, 0.96-1.03). From baseline to 12 weeks, the number of women with any IPV in the past week decreased from 57% (134 of 237) in the intervention group to 43% (83 of 194) and from 63% (145 of 231) in the assessed control group to 41% (77 of 187) (absolute difference of 8%). From baseline to 12 weeks, the number of women with past week heavy drinking decreased from 51% (120 of 236) in the intervention group to 43% (83 of 194) and from 46% (107 of 231) in the assessed control group to 41% (77 of 187) (absolute difference of 3%). At 12 months, 43% (71 of 165) of the intervention group and 47% (78 of 165) of the assessed control group reported no IPV during the previous 3 months and 19% (29 of 152) of the intervention group and 24% (37 of 153) of the control group had reduced their alcohol consumption to sex-specific National Institute on Alcohol Abuse and Alcoholism safe drinking levels.

Conclusions and Relevance—For women experiencing IPV and heavy drinking, the use of a brief motivational intervention in the ED compared with assessed and no-contact controls did not significantly reduce the days of heavy drinking or incidents of IPV. These findings do not support a brief motivational intervention in this setting.

There is a strong and reciprocal association between 2 highly prevalent public health problems: intimate partner violence (IPV) and heavy drinking.[1,2] Each risk individually represents major costs to individuals, families, and society[3,4] and each may be amenable to intervention.[5,6] The emergency department (ED) visit is conceptualized as a sensitive period or window of time during the life course when exposure to motivational health promotion might have an influence on behaviors.[7]

Brief motivational interventions are time-limited, clinically based interactions based on the principles of motivational enhancement therapy.[8] In the ED setting, brief interventions have been found to be effective in reducing alcohol consumption and alcohol-related injury among patients with hazardous drinking; however, such interventions have been found to be less effective in women.[9,10] These mixed results by sex have been attributed to higher rates of co-occurring psychosocial risk among female drinkers, including IPV.[10,11]

The relationship between heavy drinking, aggression, and experiencing or perpetrating IPV among both women and men is well recognized but complex and frequently bidirectional.[1,2,12] Women who use violence to resolve conflict may be at increased risk of abuse and injury[13]; theoretically, an intervention that reduces a woman's aggression toward her partner may reduce the likelihood that her partner will perpetrate abuse. Recent evidence also suggests that women drink to cope with abuse.[14,15] Due to the intensity and complexity of the relationship between heavy drinking and IPV, it is likely that both of these risk factors

may need to be addressed to decrease the risk of the abuse of women who are heavy drinkers.

We sought to determine whether an intervention for co-occurring IPV and heavy drinking would be effective in the ED setting. Based on the available evidence, we hypothesized that a sex-specific brief motivational interview, an intervention that is ideally suited to the fast-paced ED setting, would have the potential to reduce both or either risk among IPV-involved female drinkers.

Methods

The study protocol has been previously reported[16] and it also appears in Supplement 1. Between January 2011 and November 2013, we enrolled 600 female patients in a randomized clinical trial conducted at 2 affiliated urban academic EDs in Philadelphia, Pennsylvania, that serve approximately 100 000 patients per year (Figure 1). Twelve-month follow-up was completed in December 2014. Eligible participants were alert, English-speaking females between the ages of 18 and 64 years, who were not critically ill and could be approached in private and provide consent and safe contact information. Participants were block randomized in groups of 20 using a 2:2:1 distribution to the brief intervention group, the assessed control group, or the no-contact control group. The intervention group and the assessed control group completed verbal baseline interviews at enrollment, weekly assessments for 12 weeks, and follow-up measures by telephone at 3, 6, and 12 months. After eligibility screening, the no-contact control group was only assessed once at 3 months to determine the extent to which improvements over time might be due to assessment reactivity. All participants received usual care and a standard list of social service resources.

All participants provided written informed consent prior to enrollment in the study, which was approved by the University of Pennsylvania institutional review board. All protocols and blinded data were reviewed at intervals by a data and safety monitoring board.

Intervention

The intervention group received a 20- to 30-minute manual-guided motivational intervention, delivered by master's-level therapists during the ED visit and a telephone booster at 10 days. The treatment training manual was modeled on brief ED interventions targeting drinking and risky driving[17-19] and used motivational interviewing[20] and empowerment theoretical frameworks[21] (eMethods in Supplement 2). Extensively pilot tested and revised after input from female patients and experts in IPV,[22] drinking among women,[23] and motivational interviewing,[24] the intervention formalizes measurable components of reflective feedback, avoidance of confrontation, respect, empathy, and empowerment, which are all consistent with the principles of IPV advocacy.[21]

The goal of the intervention was to elicit the patient's self-identified reasons for change and personal goals.[20,24] During the intervention sessions, which were recorded and analyzed for fidelity, the therapists encouraged participants to identify any linkages between their drinking and IPV, and helped them to resolve ambivalence regarding behavioral change, while also supporting the patient's autonomy and personal choice.[20,24] An unrecorded

telephone follow-up booster with the same therapist occurred approximately 10 days later to consolidate and reinforce the motivational interviewing session.[17]

All therapists had training and experience working with abused women before the initiation of this study. They received extensive additional training and supervision by motivational interviewing experts through biweekly review of recorded sessions. Study participants had the option not to have their brief interventions recorded.

An independent motivational interviewing consultant reviewed and rated 10% of randomly sampled recordings throughout the study with ongoing feedback to the therapists. At study completion, 203 recordings (85%) were available for quality ratings by the developer of the motivational interviewing adherence scale.[25] Three raters were used and a high intraclass correlation coefficient (ICC) was obtained for adherence scores (ICC = 0.86); there was 98.4% adherence to motivational interviewing techniques.[25]

Measures

All demographic, baseline, and outcome measures were collected from participants via self-report (Table 1). To describe our patient population, race/ethnicity was collected using fixed categories with the option for participants to specify other or multiple races. Primary outcomes were assessed weekly for 12 weeks using an the interactive voice response system (IVRS) among the brief intervention group and the assessed control group. The primary drinking outcome was days of heavy alcohol consumption (>4 drinks/day)[29] during the past week from the Alcohol Use Disorders Identification Test alcohol consumption[30] (AUDIT-C) questions. The primary IPV outcome was any past week verbal, physical, or sexual abuse (8 items from the Revised Conflict Tactics Scales [CTS2S]).[31]

Secondary outcomes were assessed at 3, 6, and 12 months for the brief intervention group and the assessed control group but only once at 3 months for the no-contact control group. Secondary drinking outcomes included changes in the full AUDIT[28] score and both quantity and frequency of drinking using the Timeline Follow-Back technique.[32] Secondary IPV outcomes included frequency and severity of experiencing or perpetrating IPV (16 items) from the full CTS2S[31] and changes in the Composite Abuse Scale.[33] Other health-related outcomes included measures of self-rated health, depression, sleep, social support, quality of life, satisfaction with relationship, and engagement with treatment.[16] All non-IVRS post-baseline assessments were conducted by trained interviewers blinded to treatment assignment.

Statistical Analysis

We used a modified intent-to-treat analysis that included all participants with complete enrollment and at least 1 postbaseline assessment, regardless of whether the participant received the intervention. The presence or absence of past week heavy drinking and experiencing IPV collected by the IVRS were the primary binary end points for comparing the intervention group and the assessed control group. The analyses of the primary longitudinal end points from the 12 weeks of IVRS assessments used a hierarchical generalized linear model to accommodate the co-variance structure and the correlation among repeated measurements over time observed for each patient. Similarly, secondary

outcome measures collected at baseline and at 3, 6, 9, and 12 months were compared (brief intervention group vs assessed control group) using the hierarchical generalized linear model. For outcomes demonstrating a large proportion of zeros, zero-inflated Poisson and zero-inflated negative binomial models were generated.

The mixed-effects models used a maximum likelihood estimation approach that assumed any missing outcome data to be missing at random (ie, missing data including those due to dropout can be dependent on any previously observed outcomes or treatment assignment). With this approach, all data that have been collected without regard to whether data are missing for a patient at another visit, including dropouts, and without explicit imputation of missing data, can be used. Analyses were generated to test whether missing data were related to key treatment or baseline demographic characteristics. Analyses of 3-month CTS2S and AUDIT data were performed to determine the assessment reactivity effect on the primary outcomes, with specific contrasts between the assessed control group and the no-contact control group.

A priori power analysis was based on a 2-sided .03 significance level to accommodate 2 primary outcomes: heavy drinking days and IPV incidents, with significance on either outcome providing evidence of a positive study. Based on prior studies,[19] 199 patients per group were required to achieve at least 80% power to detect 2 days of heavy drinking per month. Without prior effect sizes for IPV interventions, we designed the study to have 94% power to detect a 20% difference between groups in the incidence rate of IPV (assuming 30% attrition) during the first 12 weeks of treatment.

Results

From January 2011 to November 2013, there were a total of 112 167 ED visits by 59 326 unique female patients between the ages of 18 and 64 years (Figure 1). Approximately 53.4% of 59 924 total visits by 38 255 unique patients occurred during data collection time frames (Monday-Saturday, 9 AM-7 PM). Of these, 28813 unique patients were approached and 6768 were assessed for study eligibility.

Based on positive screenings for past 3-month IPV(CTS2S score >1)[31] and heavy drinking (National Institute on Alcohol Abuse and Alcoholism sex-specific criteria ≥4 drinks/day or AUDIT score >4),[29] 1245 women were eligible for the study. The main reason for ineligibility was failing to meet criteria for both risk factors. Of those eligible, 24% declined to participate and 27% were discharged before enrollment could occur; 48% (N = 600)signed written informed consent and were randomized (2:2:1) as planned into the 3 groups. Eight randomized participants were excluded due to incomplete enrollment without follow-up contact, leaving 592 (98.7%) for analysis with 239 in the brief intervention group, 232 in the assessed control group, and 121 in the no-contact control group.

Compared with women who did not enroll, eligible women who enrolled were older, more likely of black race, and had higher IPV and drinking severity scores (eTable 1 in Supplement 2). Overall attrition rates and missing data did not vary by group at any time point; 78% of participants completed the 3-month interview, 79% completed the 6-month

interview, and 71% completed the 12-month interview without differential attrition by severity of IPV or drinking. Participant safety was carefully tracked; no harms related to the intervention were identified.

Baseline demographics and risk factors were fairly well balanced across the groups (Table 1). Exceptions were slightly more white patients in the intervention group, the no-contact control group had higher rates of IPV at baseline, and more women in the assessed control group had previously used community-based IPV services compared with the intervention group (10% vs 4%, respectively).

Black women comprised 80% of the study, the mean age was 32 years, most were in relationships (88%) but unmarried (86%), 71% presented to the ED for medical concerns, 14.5% were pregnant, approximately half had children younger than 18 years, were employed, and living in households with incomes of less than $20 000. Comorbid risk factors were prominent: 60% smoked cigarettes, 17% disclosed using illicit drugs (46% including marijuana), 12% were positive for nonmedical use of prescription drugs, 43% disclosed a history of child sexual abuse, 40% screened positive for posttraumatic stress disorder, and 86% screened positive for depression. Baseline levels of alcohol dependence were 16% (AUDIT score >13)[28] and mean IPV levels were severe on the Women's Experience with Battering Scale (score range: 10-40; ≥20 indicates higher severity)[26] and Danger Assessment (score range: 0-39; ≥18 indicates extreme danger).[27]

Primary Outcomes

The primary outcomes of experiencing any IPV and any days of heavy drinking during the past week appear in Figure 2. This was tracked for 12 weeks after the ED visit only for women in the intervention group and the assessed control group; 89% of participants completed at least 2 of the weekly IVRS calls and 71% completed 50% or more. During the 12-week period following the brief motivational intervention, there were no significant differences between the intervention group and the assessed control group on weekly assessments for experiencing IPV (odds ratio [OR], 1.02; 95% CI, 0.98-1.06) or heavy drinking (OR, 0.99; 95% CI, 0.96-1.03) (eTable 2 in Supplement 2).

The incidence of past week heavy drinking at baseline (week 1) was 51%(95%CI, 44%-57%) in the intervention group (120 of 236 women) and 46% (95% CI, 40%-53%) in the assessed control group (107 of 231 women), which decreased by week 12 to 43% (95% CI, 36%-50%) in the intervention group (83 of 194 women) and 41% (95% CI, 34%-48%) in the assessed control group (77 of 187 women); however, the change was not statistically significant ($P = .74$ for treatment group × time interaction). The baseline incidence of past week IPV was 57% (95%CI, 50%-63%)in the intervention group (134 of 237 women)and 63%(95%CI, 57%-69%) in the assessed control group (145 of 231 women), which decreased by week12 to 43% (95% CI, 36%-50%) in the intervention group (83 of 194 women) and 41% (95% CI, 34%-48%) in the assessed control group (77 of 187 women) ($P = .33$ for treatment group × time interaction).

Secondary Outcomes

The test for assessment reactivity (assessed control group vs no-contact control group) and the comparison of IPV and drinking outcomes (intervention group vs each of the control groups at 3 months) appear in Table 2. Controlling for baseline differences, experiencing abuse during the last 3 months was significantly reduced for the no-contact control group compared with the assessed control group, indicating that the assessment did not serve as an intervention. However, there were no significant differences in IPV and drinking outcomes between the intervention group and either control group at 3 months.

All secondary outcome measures for the intervention group and the assessed control group at 3, 6, and 12 months appear in Table 3. Controlling for any baseline differences, the intervention group reported improved outcomes compared with the assessed control group at 3 months (greater readiness to change their drinking and better quality of life) and at 6 months (greater social support, relationship satisfaction, and better self-rated health). Improvements in social support were the only secondary outcomes favoring the intervention group that remained significant at 12 months.

Even though there were no differences between the groups in any of the IPV and drinking outcomes, both drinking and IPV continued to decrease over time. Longitudinal analyses of all IPV and drinking outcomes for the intervention group and the assessed control group found the effect of time to be significant for both heaving drinking ($P < .001$) and IPV ($P < .001$) (eTable 2 in Supplement 2).At 12 months, 43.0% (71 of 165) of the intervention group and 47.3% (78 of 165) of the assessed control group reported no IPV in the previous 3 months and 19.1% (29 of 152) of the intervention group and 24.2% (37 of 153) of the assessed control group had reduced their alcohol consumption to sex-specific National Institute on Alcohol Abuse and Alcoholism safe drinking levels.[29]

Similar to the first 12 weeks, there was no statistically significant treatment effect on any of the IPV or drinking outcomes variables over the full 12 months of the study (treatment group × time interaction: $P = .58$ for heavy drinking and $P = .78$ for IPV). Parameter estimates for longitudinal analysis of IPV and drinking outcomes over 12 months appear in eTable 3 in Supplement 2.

Discussion

In our study, a brief 20- to 30-minute motivational intervention delivered with high fidelity during an ED visit did not improve outcomes for women with heavy drinking involved in abusive relationships. We did find that over time, reports of experiencing and perpetrating IPV and days of heavy drinking decreased significantly within the intervention and the control groups alike. However, there was no evidence that these outcomes were influenced by the intervention. In addition, there was no evidence that frequent assessments served as an intervention compared with baseline screening and referral alone.

Preventive health services that involve brief counseling interventions have been found to reduce a variety of behavioral risks, including unhealthy alcohol use.[17,18,29] Our results are consistent with previous findings that brief ED interventions are less effective in reducing

hazardous drinking among women than among men.[9,10] Likewise, Choo et al[11] pooled the results from 3 positive brief ED alcohol intervention studies using motivational interviewing and identified that even though there was an overall positive effect with reduced hazardous drinking among men, there was no main effect of the intervention among women or among patients of either sex who were exposed to violence.

Lack of response to alcohol interventions in the ED and trauma settings among female compared with male drinkers has been attributed to the higher rates of psychosocial comorbidity, including IPV,[10] which led to our hypothesis that an integrated IPV-alcohol intervention would improve both outcomes in women. Even though our intervention was not effective in the ED setting, it is possible a motivational intervention might be effective in other settings; therefore, we provided the treatment training manual (eMethods in Supplement 2).

Most studies of IPV interventions are far more intensive for longer periods than ours, however, few have found a reduction in IPV and some have shown improvement in other IPV-related outcomes.[34] A cluster randomized counseling intervention conducted at family planning clinics found a 71% decrease in the odds of pregnancy coercion.[35] A quasi-experimental study of advocacy based in primary care clinics found an advocacy-based intervention was associated with significant reductions in IPV severity scores (decrease in scores on the Danger Assessment and the Women's Experience with Battering) and a reduction in depression and suicidal ideation compared with participants at control clinics.[36] However, no studies have rigorously monitored adherence to a model or protocol that would allow determination of what components of the intervention were associated with better outcomes.

Recently, the Institute of Medicine[37] and the US Preventive Services Task Force[38] both recommended counseling of all women of child-bearing age as an evidence-based preventative service and this has now been codified into the Affordable Care Act as one of the essential health benefits that should be provided to all women without cost sharing.[39] These recommendations are largely based on a randomized clinical trial of an integrated psychosocial and IPV advocacy intervention that took place throughout prenatal and postpartum care.[40] However, no high-quality studies of brief interventions in acute care settings have reported improved outcomes for IPV-involved women. More work is needed to determine what works for whom, at what dose or intensity, and in what clinical settings.

A number of limitations must be considered when interpreting the results of our study. It was conducted in 2 affiliated urban EDs serving a predominately urban black community. By design, women with only IPV or only risky drinking were ineligible, so we do not know if a motivational intervention would be effective in women with only 1 of the targeted risk factors. Only half of eligible women consented to the yearlong study and those who enrolled had very high rates of psychosocial and mental health comorbidity.

At 1 year, we had 29% loss to follow-up, although there was no differential loss by group or risk severity. Notably, the majority of participants were living in poverty and the prevalences were 43% for childhood sexual abuse, 40% for posttraumatic stress disorder, and 86%for

depression, which may not be generalizable to other female drinkers in abusive relationships. These findings suggest that IPV does not occur independently of other risk factors.

Integrated interventions that address multiple risk factors in the context of violence exposure may require a more in-depth approach than can be feasibly provided in an ED setting. Although we included a no-contact control group, some concern for a Hawthorne effect remains because participants in this group were screened for eligibility and received a list of social service referrals. However, we did not find any evidence of assessment reactivity compared with the assessed control group and the very low rates of reported use of community-based services indicate that the referral information was not an important component of the overall decreases in IPV and drinking across all groups.

Conclusions

For women experiencing IPV and heavy drinking, the use of a brief motivational intervention in the ED compared with assessed and no-contact controls did not significantly reduce the days of heavy drinking or incidents of IPV. These findings do not support a brief motivational intervention in this setting.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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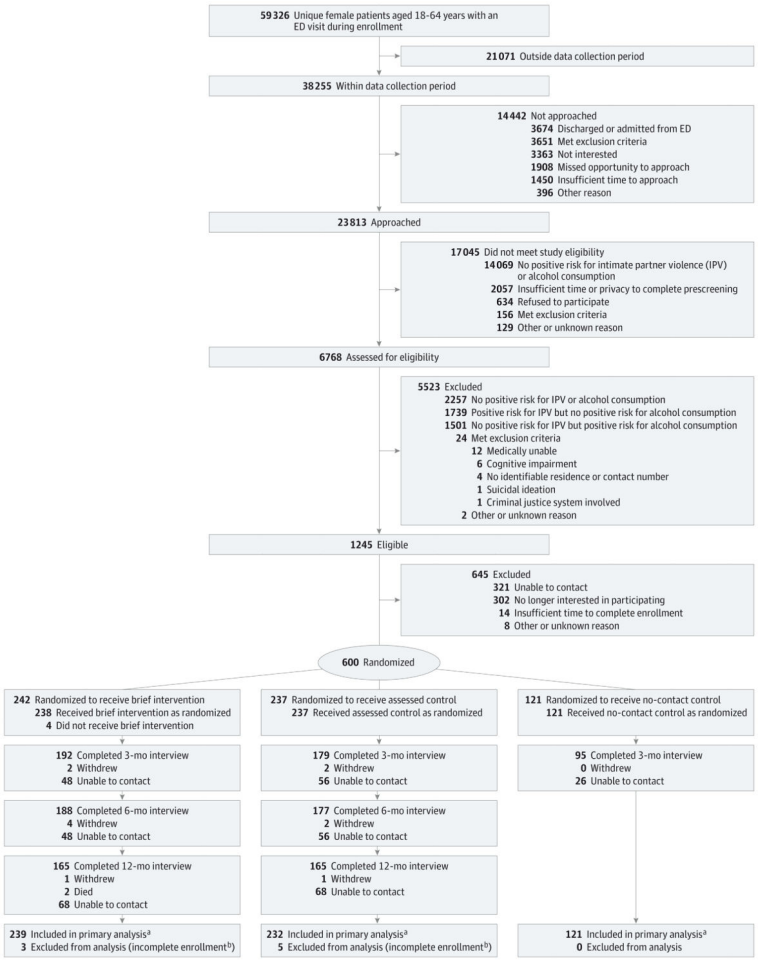

Figure 1. Flow of Female Patients Approached at Emergency Departments (EDs) to Participate in Study to Assess Effects of Intimate Partner Violence and Heavy Drinking

[a]Of 592 total participants included in primary analysis.

[b]Defined as failing to complete all enrollment and any follow-up activities.

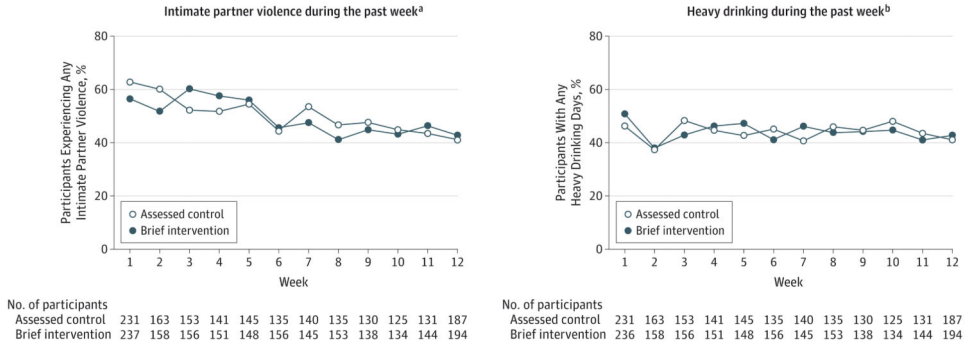

Figure 2. Participants Experiencing Intimate Partner Violence or Heavy Drinking in Assessed Control and Brief Intervention Groups

[a]Indicates a response of 1 or more. Using a binary outcome of any overall violence experienced, this graph presents the percentage of participants in each group who reported any experience with intimate partner violence, including any incidence of physical, verbal, emotional, and sexual abuse for the 12-week follow-up period. Experiencing intimate partner violence is defined as answering “yes” to 1 or more of the questions coded as “Victimization” on the Revised Conflict Tactics Scales assessment.

[b]Indicates a response of at least 1 incidence. This graph presents the percentage of participants in each group who reported any heavy drinking days (≥4 drinks) during the past week for the 12-week follow-up period.

Table 1

Baseline Demographics and Risk Factors by Study Group[a]

	Overall	Brief Intervention Group	Control Groups	
			Assessed	No Contact
Sociodemographics				
No. of women	592	239	232	121
Age, y				
Mean (95% CI)	32.1 (31.3-33.0)	32.3 (30.9-33.6)	32.1 (30.6-33.6)	32.0 (30.0-33.9)
Median (IQR)	29 (23-40)	29 (24-39)	29 (24-41)	28 (23-40)
Level of education				
Some high school	116 (19.6)	49 (20.5)	48 (20.7)	19 (15.7)
High school degree	164 (27.7)	61 (25.5)	65 (28.0)	38 (31.4)
Some college or degree	273 (46.1)	107 (44.8)	106 (45.7)	60 (49.6)
Some postgraduate or degree	37 (6.3)	22 (9.2)	12 (5.2)	3 (2.5)
Missing or unknown	2 (0.3)	0	1 (0.4)	1 (0.8)
Household income, $				
≤10 000	174 (29.4)	61 (25.5)	72 (31.0)	41 (33.9)
10 000-19 999	129 (21.8)	51 (21.3)	52 (22.4)	26 (21.5)
20 000-49 999	164 (27.7)	73 (30.5)	60 (25.9)	31 (25.6)
≥50 000	70 (11.8)	34 (14.2)	23 (9.9)	13 (10.7)
Missing	55 (9.3)	20 (8.4)	25 (10.8)	10 (8.3)
Employment				
No	299 (50.5)	119 (49.8)	114 (49.1)	66 (54.5)
Yes	291 (49.2)	120 (50.2)	117 (50.4)	54 (44.6)
Missing	2 (0.3)	0	1 (0.4)	1 (0.8)
Marital status				
Single	459 (77.5)	184 (77.0)	181 (78.0)	94 (77.7)
Married	86 (14.5)	37 (15.5)	31 (13.4)	18 (14.9)
Divorced, widowed, or separated	46 (7.8)	18 (7.5)	19 (8.2)	9 (7.4)
Missing	1 (0.2)	0	1 (0.4)	0
Partnership status				
Single				
Not dating	61 (10.3)	27 (11.3)	22 (9.5)	12 (9.9)
Dating	93 (15.7)	34 (14.2)	38 (16.4)	21 (17.4)
Relationship				
Off and on	96 (16.2)	31 (13.0)	41 (17.7)	24 (19.8)
Committed	330 (55.7)	141 (59.0)	128 (55.2)	61 (50.4)
Missing	12 (2.0)	6 (2.5)	3 (1.3)	3 (2.5)
Sex of partner				

	Overall	Brief Intervention Group	Control Groups	
			Assessed	No Contact
Male	489 (82.6)	203 (84.9)	186 (80.2)	100 (82.6)
Female	41 (6.9)	17 (7.1)	16 (6.9)	8 (6.6)
Other	2 (0.3)	1 (0.4)	1 (0.4)	0
Missing	60 (10.1)	18 (7.5)	29 (12.5)	13 (10.7)
No. of children (age <18 y) in household				
0	261 (44.1)	116 (48.5)	96 (41.4)	49 (40.5)
1	124 (20.9)	49 (20.5)	47 (20.3)	28 (23.1)
≥2	186 (31.4)	65 (27.2)	81 (34.9)	40 (33.1)
Missing	21 (3.5)	9 (3.8)	8 (3.4)	4 (3.3)
Race/ethnicity[b]				
Black	471 (80.1)	178 (74.8)	187 (81.3)	106 (88.3)
White	108 (18.4)	53 (22.3)	38 (16.5)	17 (14.2)
Native American	20 (3.4)	11 (4.6)	5 (2.2)	4 (3.3)
Hispanic	28 (4.8)	13 (5.5)	12 (5.2)	3 (2.5)
Pacific Islander	3 (0.5)	2 (0.8)	0	1 (0.8)
Asian	8 (1.4)	4 (1.7)	3 (1.3)	1 (0.8)
Other	35 (6.0)	14 (5.9)	17 (7.4)	4 (3.3)
Missing	4 (0.7)	1 (0.4)	2 (0.9)	1 (0.8)
Pregnant during the first 3 mo				
No	477 (80.6)	196 (82.0)	199 (85.8)	82 (67.8)
Yes	86 (14.5)	43 (18.0)	33 (14.2)	10 (8.3)
Missing	29 (4.9)	0	0	29 (24.0)
Chief concern at enrollment				
Injury	78 (13.2)	30 (12.6)	30 (12.9)	18 (14.9)
Medical	420 (70.9)	173 (72.4)	165 (71.1)	82 (67.8)
Gynecologic or urinary	79 (13.3)	28 (11.7)	32 (13.8)	19 (15.7)
Other	15 (2.5)	8 (3.3)	5 (2.2)	2 (1.7)
Risk Factors				
No. of women	566	239	232	95[c]
Women's Experience with Battering Scale[26] score[d]				
Mean (95% CI)	19.6 (18.5-20.7)	19.7 (17.8-21.4)	20.5 (18.6-22.3)	17.1 (14.5-19.5)
Median (IQR)	13 (10-24)	13 (10-25)	13 (10-27)	11 (10-20)
Danger Assessment[27] score[e]				
Mean (95% CI)	9.9 (9.3-10.5)	10.0 (9.1-10.9)	10.3 (9.3-11.2)	8.5 (7.2-9.8)
Median (IQR)	13 (4-13)	13 (4-14)	9 (5-14)	7.5 (4-12)
Alcohol dependence[f]	87 (15.5)	32 (13.0)	39 (16.4)	17 (17.9)
Smoking	334 (59.0)	135 (56.7)	144 (62.3)	55 (57.9)

	Overall	Brief Intervention Group	Control Groups	
			Assessed	No Contact
Drug use				
Illegal, including marijuana	258 (45.7)	100 (46.1)	105 (49.5)	34 (35.8)
Illegal, not including marijuana	98 (17.4)	41 (17.2)	46 (20.0)	11 (11.6)
Prescription misuse	64 (11.6)	24 (10.4)	33 (14.8)	7 (7.4)
Depression score[g]	488 (86.2)	210 (87.9)	231 (85.3)	79 (84.0)
Posttraumatic stress disorder[h]	228 (40.4)	100 (41.8)	95 (41.3)	32 (34.0)
Childhood sexual abuse	243 (43.2)	100 (41.8)	98 (42.8)	45 (47.9)
Partner drinking	110 (20.0)	46 (19.4)	38 (16.6)	12 (12.5)

Abbreviation: IQR, interquartile range.

[a] Data are expressed as No. (%) unless otherwise indicated. For the between-treatment comparisons, age was analyzed using a general linear model and all categorical variables were analyzed using the χ^2 test.

[b] Participants instructed to “check all that apply”; therefore, percentages add to more than 100%. Differences between groups used a binary variable (black vs not black).

[c] Data were only collected at 3 months for those who completed the follow-up interview (n = 95; 79% retention).

[d] Score range: 10 to 40 (0-19 indicating lower severity and ≥20 indicating higher severity).

[e] Score range: 0 to 39 (level of danger: 0-7, variable; 8-13, increased; 14-17, severe; ≥18, extreme).

[f] Indicated by an Alcohol Use Disorders Identification Test[28] (AUDIT) score of greater than 13.

[g] Indicated by a Center for Epidemological Studies-Depression 10 score of 10 or greater (score range: 0-30).

[h] Indicated by a Primary Care Post-Traumatic Stress Disorder score of 3 or greater (score range: 0-4).

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Table 2

Incidence of Intimate Partner Violence (IPV) and Alcohol Consumption Outcomes at 3 Months and Assessment Reactivity

	Brief Intervention Group				Control Groups					
					Assessed				No Contact	
	Baseline (n = 239)[a]	At 3 mo (n = 192)	At 6 mo (n = 188)	At 12 mo (n = 165)	Baseline (n = 232)[a]	At 3 mo (n = 179)	At 6 mo (n = 176)	At 12 mo (n = 165)	Baseline (n = 121)[a]	At 3 mo (n = 95)
Incidence of IPV										
CTS2S score[b]										
Mean (95% CI)	9.4 (8.3-10.6)	8.5 (7.0-10.0)	6.2 (5.1-7.3)	5.6 (4.5-6.7)	9.9 (8.6-11.2)	8.5 (7.0-10.0)	6.1 (4.8-7.4)	6.2 (4.7-7.7)	12.2 (10.2-14.2)	7.4 (5.4-9.4)
Median (IQR)	7 (3-12)	4.5 (0.5-12.0)	4 (0-8.5)	3 (0-9)	6 (3-12)	5 (1-14)	4 (0-8)	2 (0-8)	7 (5-18)	4 (0-11)
Experienced IPV[c]										
Mean (95% CI)	4.5 (3.8-5.2)	4.3 (3.5-5.2)	3.0 (2.3-3.6)	2.7 (2.1-3.3)	4.9 (4.0-5.7)	4.7 (3.8-5.6)[d]	3.3 (2.6-4.1)	3.3 (2.4-4.2)	5.9 (4.7-7.2)	3.3 (2.3-4.3)[d]
Median (IQR)	3 (1-6)	2 (0-6)	1 (0-4)	1 (0-4)	3 (1-6)	2.5 (0-7.0)	2 (0-4)	1 (0-3)	3.5 (1.5-8.0)	2 (0-5)
Perpetration[e]										
Mean (95% CI)	5.0 (4.4-5.5)	4.2 (3.5-5.2)	3.2 (2.6-3.8)	2.9 (2.3-3.5)	5.1 (4.4-5.7)	3.8 (3.1-4.5)	2.8 (2.2-3.4)	2.9 (2.2-3.7)	6.3 (5.3-7.3)	4.2 (3.2-5.2)
Median (IQR)	4 (2-6)	3 (0-6)	2 (0-5)	2 (0-5)	3 (2-6)	3 (0-6)	2 (0-4)	1 (0-4)	4.0 (2.5-9.0)	2.5 (0-6.0)
Incidence of Risky Drinking										
AUDIT score[f]										
Mean (95% CI)	7.9 (7.3-8.6)	9.0 (8.1-9.9)	8.4 (7.3-9.5)	7.4 (6.4-8.4)	8.7 (7.9-9.5)	9.7 (8.6-10.7)	7.7 (6.8-8.6)	7.4 (6.3-8.5)	8.2 (7.2-9.3)	8.3 (6.9-9.7)
Median (IQR)	6.0 (4.4-10.0)	7 (4-12)	6 (3-11)	6 (4-9)	6 (5-10)	7.0 (4.4-13.0)	6 (4-10)	5 (3-10)	6.0 (5.0-9.5)	7 (4-10)
Heavy episodic drinking, No. (%)[g]										
Never	20 (8.4)	47 (24.6)	51 (27.3)	41 (24.9)	27 (11.7)	34 (19.1)	44 (25.0)	40 (24.4)	10 (8.3)	23 (24.4)
<Monthly	98 (41.2)	51 (26.7)	48 (25.7)	58 (35.2)	92 (39.8)	53 (29.8)	51 (29.0)	55 (33.5)	56 (46.7)	30 (31.9)
Monthly	77 (32.4)	37 (19.2)	41 (21.9)	40 (24.3)	57 (24.7)	46 (25.8)	43 (24.4)	39 (23.4)	30 (25.0)	24 (25.5)
Weekly	35 (14.7)	47 (24.6)	34 (18.2)	18 (10.9)	45 (19.5)	35 (19.7)	31 (17.6)	23 (14.0)	21 (17.5)	12 (12.8)
Daily or almost daily	8 (3.4)	9 (4.7)	13 (7.0)	8 (4.9)	10 (4.3)	10 (5.6)	7 (4.0)	7 (4.3)	3 (2.5)	5 (5.3)

Abbreviation: IQR, interquartile range.

[a]The baseline value of the outcome variable was included in the model as a covariate.

[b] Revised Conflict Tactics Scales (CTS2S) is a 16-item assessment. The scores range from 0 to 96 (higher scores indicate more instances of violence). No IPV during past 3 months is a score of zero on the CTS2S. All participants had a score of 1 or higher to be eligible for study enrollment.

[c] Defined as answering yes to 1 or more of the questions coded as "Victimization" (8 items; score range: 0-48) on the CTS2S.

[d] $P = .03$ for comparison between the assessed control group and the no-contact control group when controlling for baseline, which indicates a lack of any assessment reactivity because results favor greater reduction in IPV experience among participants in the no-contact control group. Calculated using analysis of variance.

[e] Defined as answering yes to 1 or more of the questions coded as "Perpetration" (8 items; score range: 0-48) on the CTS2S.

[f] The Alcohol Use Disorders Identification Test (AUDIT) consists of 10 items (score range: 4-40).

[g] Indicates a single item on the AUDIT that indicates the frequency (on a Likert scale) of heavy drinking episodes, which for females is 4 or more drinks on any single occasion.

Table 3

All Secondary Outcome Measures for the Brief Intervention Group vs the Assessed Control Group at 3, 6, and 12 Months[a]

	Brief Intervention Group				Assessed Control Group			
	Baseline (n = 239)[b]	At 3 mo (n = 192)	At 6 mo (n = 188)	At 12 mo (n = 165)	Baseline (n = 232)[b]	At 3 mo (n = 179)	At 6 mo (n = 176)	At 12 mo (n = 165)
Composite Abuse Scale[c]								
Overall score, mean (95% CI)	12.7 (10.3-15.0)	12.2 (9.5-14.9)	7.6 (5.5-9.6)	7.3 (5.2-9.4)	15.9 (13.0-18.8)	12.6 (9.8-15.5)	8.6 (6.5-10.6)	11.1 (7.9-14.3)
Physical, No. (%)	70 (29.3)	61 (31.8)	34 (18.1)	33 (20.0)	84 (36.4)	57 (29.7)	42 (24.3)	38 (23.2)
Emotional, No. (%)	179 (74.9)	122 (63.5)	94 (50.0)	82 (49.7)	186 (80.5)	114 (63.7)	95 (54.9)	86 (52.4)
Stalking, No. (%)	81 (33.9)	70 (36.5)	59 (31.4)	44 (26.7)	80 (34.6)	65 (36.3)	53 (30.6)	44 (26.8)
Severe combined abuse, No. (%)	53 (22.2)	50 (26.0)	25 (13.3)	17 (10.3)	51 (22.0)	40 (22.3)	22 (12.7)	24 (14.6)
Timeline Follow-Back[d]								
Drinking frequency								
Days/mo, % (95% CI)	27.0 (24.0-30.3)	26.4 (22.5-30.3)	23.3 (19.0-27.0)	20.0 (17.0-24.0)	26.8 (23.3-30.3)	26.3 (22.0-30.0)	26.4 (22.0-31.0)	21.4 (18.0-25.0)
Days/wk, mean (95% CI)	1.9 (1.7-2.0)	1.8 (1.6-2.1)	1.6 (1.4-1.9)	1.4 (1.2-1.7)	1.9 (1.7-2.1)	1.8 (1.6-2.1)	1.90 (1.57-2.14)	1.5 (1.2-1.8)
No. of drinks/d, mean (95% CI)	1.1 (0.9-1.1)	0.9 (0.8-1.1)	0.9 (0.7-1.1)	0.7 (0.5-0.8)	1.1 (0.9-1.2)	1.0 (0.7-1.2)	0.9 (0.7-1.1)	0.7 (0.6-0.9)
Heavy alcohol consumption (≥4 drinks/d), mean (95% CI), d	3.0 (2.5-3.6)	3.1 (2.3-3.9)	2.2 (1.5-2.8)	2.3 (1.5-3.0)	3.4 (2.7-3.8)	3.1 (2.2-4.0)	2.0 (1.4-2.5)	2.2 (1.5-2.9)
Quality of Life (QOL) Scale, Mean (95% CI)[e]								
How would you rate your QOL?	2.3 (2.2-2.4)	2.2 (2.1-2.4)	2.1 (2.0-2.3)	2.2 (2.1-2.3)	2.3 (2.2-2.5)	2.4 (2.2-2.5)	2.2 (2.0-2.3)	2.2 (2.0-2.3)
How much do you enjoy life?	2.3 (2.2-2.5)	2.3 (2.2-2.4)	2.3 (2.1-2.4)	2.2 (2.0-2.4)	2.4 (2.2-2.5)	2.4 (2.2-2.5)	2.3 (2.1-2.5)	2.4 (2.2-2.5)
How safe do you feel in your daily life?	2.2 (2.1-2.3)	2.1 (2.0-2.3)[f]	2.1 (2.0-2.3)	2.1 (1.9-2.2)	2.2 (2.1-2.3)	2.3 (2.2-2.5)[f]	2.2 (2.0-2.3)	2.2 (2.1-2.4)
Self-Rated Health								
How would you say your health has been? mean (95% CI)[g]	3.2 (3.0-3.3)	3.0 (2.8-3.1)	2.8 (2.6-2.9)[h]	2.9 (2.7-3.1)	3.4 (3.3-3.6)	3.2 (3.1-3.4)	3.1 (2.9-3.3)[h]	3.0 (2.8-3.2)

	Brief Intervention Group				Assessed Control Group			
	Baseline (n = 239)[b]	**At 3 mo (n = 192)**	**At 6 mo (n = 188)**	**At 12 mo (n = 165)**	**Baseline (n = 232)[b]**	**At 3 mo (n = 179)**	**At 6 mo (n = 176)**	**At 12 mo (n = 165)**
Relationship Satisfaction Scale score, mean (95% CI)[j]	3.2 (3.0-3.4)	3.2 (3.0-3.5)	3.6 (3.3-3.8)[j]	3.3 (3.1-3.6)	3.0 (2.8-3.2)	2.9 (2.6-3.1)	3.2 (2.9-3.4)[j]	3.4 (3.1-3.6)
Exercise frequency, mean (95% CI), d/wk	3.1 (2.8-3.4)	3.2 (2.8-3.5)	2.8 (2.5-3.1)	3.2 (2.8-3.5)	3.0 (2.7-3.4)	3.2 (2.8-3.6)	3.0 (2.7-3.5)	3.2 (2.9-3.7)
Amount of sleep, mean (95% CI), h/night	5.6 (5.4-5.9)	5.8 (5.5-6.0)	5.7 (5.5-6.0)	6.0 (5.7-6.3)	5.5 (5.2-5.7)	5.8 (5.5-6.1)	5.9 (5.6-6.2)	5.8 (5.6-6.1)
Smoke cigarettes, No. (%)	135 (56.7)	98 (51.0)	96 (51.1)	79 (47.9)	144 (62.3)	101 (56.4)	102 (58.0)	89 (53.9)
Self-efficacy[k]								
Mean (95% CI)	30.5 (29.8-32.0)	31.9 (30.6-33.2)	31.7 (30.3-33.4)	31.4 (30.4-32.4)	29.6 (28.9-31.3)	29.8 (28.4-31.3)	29.7 (28.7-30.7)	30.3 (29.4-31.3)
Median (IQR)	30 (27-35)	32 (28-36)	31 (27-36)	32 (28-36)	30 (26-34)	30 (25-34)	30 (26-35)	31 (26-36)
Readiness to Change Scale[l]								
Drinking								
Mean (95% CI)	4.1 (3.6-4.6)	4.4 (3.9-5.0)[m]	4.3 (3.7-4.9)	4.6 (3.9-5.2)	4.3 (3.9-4.8)	3.5 (2.9-4.0)[m]	3.9 (3.3-4.4)	3.9 (3.2-4.5)
Median (IQR)	5 (0-8)	5 (0-8)	5 (0-8)	5 (0-8)	5 (1-8)	2 (0-8)	3 (0-8)	2 (0-8)
Relationship								
Mean (95% CI)	5.9 (5.5-6.3)	5.8 (5.3-6.4)	6.0 (5.5-6.5)	5.9 (5.3-6.5)	6.0 (5.6-6.4)	5.5 (5.1-6.0)	5.6 (5.1-6.1)	6.0 (5.5-6.6)
Median (IQR)	6 (5-8)	8 (2-8)	8 (2-9)	8 (2-10)	6 (5-8)	5 (2-8)	5 (2-8)	8 (4-10)
Social Support, No. (%)								
Do you have someone to talk to about any problem?	196 (83.1)	170 (89.5)	165 (87.8)	146 (88.5)	193 (83.9)	154 (86.0)	150 (85.2)	140 (84.9)
Stay with if needed?	188 (81.0)	157 (82.6)	160 (85.6)[n]	141 (85.5)[n]	174 (75.7)	138 (77.1)	136 (77.3)[n]	125 (75.8)[n]
Borrow money from if needed?	172 (74.1)	145 (75.6)	145 (77.5)[o]	127 (80.0)[o]	149 (65.1)	124 (69.7)	115 (65.0)[o]	107 (65.6)[o]
Engagement With Services, No. (%)								
Any	35 (14.6)	28 (14.6)	26 (13.9)	13 (8.0)	44 (19.1)	26 (14.5)	22 (12.6)	20 (12.2)
Police or courts for family violence	18 (7.5)	12 (6.3)	11 (5.9)	5 (3.0)	20 (8.7)	13 (7.3)	11 (6.3)	9 (5.6)
Domestic violence	10 (4.2)	15 (7.8)	9 (4.8)	4 (2.4)	23 (10.0)	9 (5.0)	7 (4.0)	10 (6.1)

	Brief Intervention Group				Assessed Control Group			
	Baseline (n = 239)[b]	At 3 mo (n = 192)	At 6 mo (n = 188)	At 12 mo (n = 165)	Baseline (n = 232)[b]	At 3 mo (n = 179)	At 6 mo (n = 176)	At 12 mo (n = 165)
Alcohol or drug	11 (4.6)	13 (6.8)	12 (6.4)	6 (3.6)	13 (5.7)	10 (5.6)	7 (4.0)	6 (3.6)
Engagement With Treatment, No. (%)								
Any	161 (67.7)	132 (69.4)	121 (64.7)	107 (64.8)	169 (73.2)	120 (67.0)	117 (66.5)	122 (73.9)
Medical	149 (62.6)	117 (60.9)	112 (60.2)	97 (58.8)	160 (69.3)	109 (61.0)	104 (59.1)	114 (69.1)
Mental health	40 (17.2)	37 (19.4)	30 (16.0)	33 (20.1)	49 (21.4)	39 (22.0)	39 (22.3)	38 (23.0)
Drugs or alcohol	12 (5.2)	14 (7.3)	7 (3.8)	10 (6.1)	9 (3.9)	12 (6.7)	11 (6.3)	8 (4.9)
Family problems	16 (7.7)	13 (6.9)	12 (6.4)	8 (4.8)	18 (8.2)	9 (5.3)	15 (8.7)	12 (7.4)
Taken steps to obtain safety[p]		55 (29.0)	45 (24.2)	53 (32.1)		58 (32.6)	51 (29.5)	47 (28.5)

Abbreviation: IQR, interquartile range.

[a] In creating composite variables, only those women who had at least 80% of nonmissing data for the individual items obtained a value for the composite variable. Otherwise, the composite score for the woman was set to missing.

[b] The baseline value of the outcome variable was included in the model as a covariate.

[c] Contains 30 questions (score range: 0-150). Specific individual items were used to determine if the results indicate the presence of physical, emotional, stalking, or severe combined abuse.

[d] Data are collected using a calendar to record the number of drinks each day for the past month (28 days).

[e] For the question regarding QOL, a score of 1 indicates very good and 5 indicates very poor. For the question regarding enjoyment of life, a score of 1 indicates extremely and 5 not at all. For the question regarding feelings of safety, a score of 1 indicates extremely and 5 not at all.

[f] $P = .03$ at 3 months controlling for baseline. Calculated using analysis of variance.

[g] A score of 1 indicates excellent and 5 indicates poor.

[h] $P = .006$ at 6 months controlling for baseline. Calculated using analysis of variance.

[i] This is 1 representative item from the Dynamic Relationship Scale (score range: 0, extremely unhappy; 6, extremely happy).

[j] $P = .03$ at 6 months controlling for baseline. Calculated using analysis of variance.

[k] The Self-Efficacy Scale scores range from 10 to 40; greater scores indicate greater levels of self-efficacy.

[l] Measures readiness to make changes on a scale from 0 (okay with changes) to 10 (maintaining changes made).

[m] $P = .004$ at 3 months controlling for baseline. Calculated using analysis of variance.

[n] $P = .04$ at 6 months and $P = .01$ at 12 months (both controlling for baseline). Calculated using the χ^2 test.

[o] $P = .02$ at 6 months and $P = .03$ at 12 months (both controlling for baseline). Calculated using the χ^2 test.

[p] Captured with a binary and the following questions: "Have you taken any steps in the past 3 months to increase your safety? What are they?" These questions were only asked at the 3 follow-up time points and not at baseline.