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Comparison of Adding Treatment of PTSD During and After Shelter Stay to Standard Care in Residents of Battered Women's Shelters: Results of a Randomized Clinical Trial

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Abstract

This study explored the acceptability, feasibility, and initial efficacy of an expanded version of a PTSD treatment developed for residents of battered women's shelters, Helping to Overcome PTSD through Empowerment (HOPE) in women who received standard shelter services (SSSs). A Phase I randomized clinical trial comparing HOPE + SSSs ($n = 30$) to SSSs ($n = 30$) was conducted. Primary outcome measures included the Clinician-Administered PTSD Scale (Blake et al., 1995) and the Revised Conflict Tactic Scales (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Participants were followed at 1-week, and 3- and 6-months posttreatment. Only 2 women dropped out of HOPE + SSS treatment. Latent growth curve analyses found significant treatment effects for PTSD from intimate partner violence (IPV) ($\beta = -.007$, $p = .021$), but not for future IPV ($\beta = .002$, $p = .709$) across follow-up points. Significant effects were also found for secondary outcomes of depression severity ($\beta = -.006$, $p = .052$), empowerment ($\beta = .155$, $p = .022$), and resource gain ($\beta = .158$, $p = .036$). Additionally, more women in HOPE + SSSs were employed at 3- and 6-month follow-up compared to those in SSSs only. Results showed the acceptability and feasibility of adding IPV-related treatment to standard services. They also suggested that HOPE may be a promising treatment for residents of battered women's shelters. Further research with a

larger sample, utilizing more diverse shelter settings and a more rigorous control condition, is needed to confirm these findings.

Intimate partner violence (IPV) is a significant public health problem in the United States with the most recent national surveys estimating that approximately one in three women experience rape, physical violence, and/or stalking by an intimate partner in their lifetime (Black et al., 2011). Although multiple psychiatric disorders are associated with IPV (e.g., major depressive disorder and substance use disorder; Hien & Ruglass, 2008), posttraumatic stress disorder (PTSD) is one of the most common psychiatric consequences of IPV (Hien & Ruglass, 2008) and is associated with significant psychosocial impairment (Johnson, Zlotnick, & Perez, 2008).

Those exposed to IPV who seek shelter tend to present with more severe abuse histories and higher rates of PTSD than women who do not seek shelter (Jones, Hughes, & Unterstaller, 2001). The impairment associated with both IPV and PTSD from IPV can interfere with women who seek to effectively use shelter and other community resources and establish safety for themselves and their children (Johnson et al., 2008). Given these risks, shelter may provide an opportune time to initiate treatment for PTSD from IPV, as well, treatment at this time could reduce risk for revictimization (Johnson, Zlotnick, & Perez, 2011). Women who seek shelter have already initiated a change in their life and are seeking resources to establish safety. Further, shelters are prevalent throughout the United States, with a recent survey estimating that over 36,000 victims sought services in a shelter in a single day in 2014 (National Network to End Domestic Violence, 2015). Battered women's shelters provide access to a difficult-to-serve population of women who face many barriers to receiving mental health treatment (Johnson & Zlotnick, 2007). A recent meta-analysis found that interventions offered both during and after shelter were beneficial to women (Jonker, Sijbrandij, van Luitelaar, Cuijpers, & Wolf, 2014). The majority of existing interventions for shelter residents, however, do not specifically address PTSD from IPV. Although multiple effective treatments have been developed to treat PTSD (e.g., Foa et al., 2005; Resick et al., 2008), there were no treatments we could locate that addressed the unique needs of women in shelter who often have ongoing contact with their abuser and face continued risk for being reabused. The only other treatment developed for PTSD from IPV we identified (e.g., Kubany et al., 2004) is intended for women who have permanently left their abuser and have established physical safety.

Helping to Overcome PTSD through Empowerment (HOPE; Johnson et al., 2011) is a present-centered cognitive-behavioral therapy (CBT) and empowerment-based individual treatment created to address PTSD from IPV and the many clinical challenges of residents of battered women's shelters who have ongoing safety and case management concerns. The theoretical underpinnings and rationale for the creation of the shelter version of HOPE have been extensively described elsewhere (see Johnson & Zlotnick, 2009; Johnson et al., 2011). HOPE incorporates many of the traditional components of CBT for PTSD (e.g., cognitive-restructuring, skill building) with a focus on helping women realistically appraise the degree of threat they are under and to learn how to manage their PTSD symptoms without increasing them or risking safety. HOPE also incorporates empowerment strategies, helping

women to identify aspects of their situation that are under their control and providing them with the skills (e.g., assertiveness with safety planning) to reclaim their power. HOPE was originally designed as an intervention exclusively offered in shelter; if needed, women were provided referrals for further treatment after shelter. A randomized clinical trial (RCT) comparing the shelter version of HOPE to standard shelter services (SSSs) in 70 shelter women found the shelter-only version of HOPE to be feasible, acceptable, and associated with significant improvements in depression symptoms (Cohen's $d = 0.96$), empowerment (Cohen's $d = 0.34$), and social support (Cohen's $d = 0.35$), as well as lower rates of reabuse over 6-month postshelter follow-up (Johnson, Worell, & Chandler, 2005). No significant difference, however, was found for PTSD symptom severity. A majority of women left shelter prior to completing treatment (62.9%). Further, at postshelter, a significant number of women still met full or partial criteria for PTSD (45.9%) and had ongoing contact with their abuser (87.9%). These findings suggested that women would likely benefit from further treatment after leaving shelter. To address these issues, we expanded HOPE from a 12-session exclusively shelter-based intervention to a 16-session intervention that continued for 3 months after leaving shelter (see below).

This study was a Phase I developmental randomized trial designed to evaluate the feasibility, acceptability, and initial efficacy of this expanded 16-session version of HOPE as an adjunct to standard shelter services with those exposed to IPV who sought shelter. The overall aim of the trial was to assess acceptability and feasibility of HOPE, and to determine estimates of ranges of effect sizes for future larger-scale trials. As HOPE was designed primarily to address PTSD from IPV and the impact those symptoms had on a woman's safety, primary outcomes were PTSD severity and reabuse severity. As HOPE is a treatment that focuses on the acquisition of resources, secondary outcomes included empowerment, gain of personal and social resources, and employment status. Given the high rates of comorbidity of depression in shelter women and that our prior research with HOPE had found HOPE to be associated with significant reductions in depression symptoms (Johnson et al., 2011), depression severity was also a secondary outcome. Finally, as a primary aim of the study was to assess acceptability of HOPE, satisfaction with HOPE was also examined.

Method

Participants and Procedure

Participants were 60 female residents of four regional shelters in the Midwest. A summary of sample characteristics by treatment group can be found in Table 1. Participants were primarily recruited through flyers posted in shelter and brochures advertising the study distributed to residents upon admission to shelter. Additionally, research staff would occasionally attend shelter meetings to describe the study and answer questions from those interested in participating. Interested participants would call the research line to complete a phone screen. If participants were not screened out and consented to continue, they were scheduled for a baseline assessment in shelter to further assess eligibility. Of the 197 shelter women who contacted the research line, 44 (22.3%) refused or did not show up for their baseline assessment (see Figure 1). To be eligible, participants had to be a resident of one of the four participating shelters at the time of the baseline assessment, report IPV the month

prior to shelter, and meet *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994) diagnostic criteria for current PTSD or subthreshold PTSD from IPV using the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995). To meet criteria for subthreshold PTSD, participants had to meet Criterion A (exposure to IPV), B (reexperiencing symptoms), E (symptom duration of at least 1 month), and F (significant distress or impairment of functioning), as well as either Criterion C (avoidance symptoms) or D (increased arousal; Stein, Walker, Hazen, & Forde, 1997). We chose to use subthreshold PTSD as an inclusion criterion to increase the generalizability of findings because subthreshold PTSD is associated with significant impairment and morbidity (Stein et al., 1997). Participants were excluded from the study if they reported psychotic symptoms, met *DSM-IV* diagnostic criteria for lifetime bipolar disorder or current substance dependence on the Structured Clinical Interview for DSM-IV Axis I Disorders-Patient Version (SCID-I/P; First, Gibbon, Spitzer, Williams, & Benjamin, 1996), endorsed significant suicidal ideation with intent and plan, reported concurrent individual therapy, or reported any change in medication dose or type in the last month. All research procedures were approved by the University of Akron's Institutional Review Board and all participants provided informed consent. A Certificate of Confidentiality was received from the National Institute of Mental Health. To assess treatment effects, participants were reassessed at 1-week posttreatment (PT), and 3- and 6-months PT. Participants were paid \$50 for each assessment. All assessments were conducted by trained and blinded doctoral students in psychology. Four therapists (two postdoctoral fellows and two advanced doctoral students) conducted all therapy sessions under licensed supervision.

Data were collected between May 2008 and 2011. A randomized, controlled, repeated measures design was used to assess the efficacy of HOPE plus standard shelter services (SSSs; HOPE + SSSs; $n = 30$) compared with SSSs alone ($n = 30$). No significant demographic differences were identified between HOPE + SSSs and SSSs (all $ps > .05$). Given that we expanded HOPE to include postshelter sessions in an effort to increase treatment effects, sample size was determined to assure our ability to detect large effects (Cohen's $d = 0.80$). The project coordinator randomly assigned participants to HOPE + SSSs or SSSs using urn randomization (Stout, Wirtz, Carbonari, & DelBoca, 1994) stratifying participants according to PTSD diagnosis and medication status. All participants received SSSs that included primarily supportive and crisis management services (i.e., shelter therapeutic milieu, case management, and attendance of shelter support or educational groups). SSSs does not include any mental health treatment or counseling for IPV.

The content of the expanded version of HOPE was informed by four focus groups of former shelter residents and a small developmental trial. Focus groups explored participants' treatment needs, their desire and motivation for treatment, and barriers and facilitators to attending therapy sessions after leaving shelter. Based on focus group participant and therapist feedback, HOPE was expanded to include a maximum of 10 shelter sessions and 6 sessions in the 3 months following shelter stay. Modifications to HOPE (Johnson et al., 2011) included the following: (a) a re-evaluation of goals and safety after leaving shelter; (b) ongoing case management postshelter, including a monthly postshelter case management group; (c) expanded modules on substance relapse and emotional numbing; and (d) two

booster sessions to reinforce what participants previously learned in treatment and to help women cope with new and ongoing stressors after shelter.

The expanded HOPE protocol allowed participants to receive up to 10 sessions in shelter over 10 weeks and then up to 6 sessions postshelter for 3 months for a total of 16 sessions throughout the treatment period (i.e., shelter through 3 months after leaving shelter). Participants who left the shelter before attending their 10 sessions could then attend the remainder of the 16 sessions within the 3-month postshelter period. Session length was 1 hour, and session frequency varied according to length of shelter stay (i.e., those who stayed in shelter longer were seen less frequently postshelter). Given that participants were disallowed from participating in other therapy while in the trial and that it would be unethical to stop treatment for an extended period of time in shelter women with ongoing PTSD and other mental health concerns, participants who stayed in shelter longer than the 10-week shelter treatment period received monthly booster sessions for the duration of their shelter stay. Booster sessions did not present any new material, but rather included a check-in and discussion of how to use HOPE tools to manage any ongoing concerns. All shelter sessions occurred in a private office or the participant's room in shelter. Postshelter sessions occurred in the participant's home when safe, or in another private, safe location of the participant's choosing (e.g., community room in public library).

Measures

The CAPS (Blake et al., 1995) was used to assess diagnostic criteria for PTSD from IPV and past-month symptom severity. Criterion A for PTSD was assessed with a combination of the CAPS and the CTS2 (see below). The CAPS is a structured interview with established reliability and validity (Weathers, Keane, & Davidson, 2001). Interrater reliability was assessed by one of three trained study research assistants listening to audio-recorded interviews they did not conduct for 29 randomly selected interviews for CAPS-derived PTSD diagnoses ($\kappa = .81$). Total CAPS scores had internal consistency of $\alpha = .92$ at baseline.

The Revised Conflict Tactic Scales (CTS2), a self-report measure with established validity and reliability (Straus et al., 1996), which assesses the extent to which 39 acts of IPV were perpetrated against participants, was used to assess IPV the month prior to shelter admission and at follow up points. To assess IPV severity at each time point, the number of types of abusive acts endorsed on the CTS2 was summed, resulting in a range of possible scores from 0 to 39. Research has shown that summing the number of types of abusive acts reported on the CTS2 provides a valid measure of severity of violence (Regan, Bartholomew, Kwong, Trinke, & Henderson, 2006). For this study, internal consistency for the CTS2 was $\alpha = .93$ at baseline.

The mood, anxiety (excluding PTSD), substance-use, and psychotic screen modules of the SCID-I/P (First et al., 1996) were administered to establish presence or absence of these diagnoses at the baseline assessment. The SCID is the benchmark structured interview for clinical diagnoses with established reliability and validity (e.g., Lobbetauel, Leurgans, & Arntz, 2011). Both current and lifetime diagnoses were explored. Interrater reliability was calculated using audio-recordings by one of three trained study research assistants who did

not conduct the interview for the current sample's most frequent co-morbid diagnosis, major depression, for 19 randomly selected interviews ($\kappa = .84$).

The Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) was used to assess depression severity over the past week at baseline and across the follow-up period. The BDI, a 21-item self-report measure of depression severity has established reliability and validity. This measure utilizes a 4-point scale ranging from 0 = *not at all* to 3 = *severely*. A severity score was calculated for each time point by summing all 21 items on the BDI, resulting in a range from 0 to 63 with higher scores indicating greater severity. The BDI had internal consistency of $\alpha = .90$ at baseline.

Gain of personal and social resources was assessed with the Conservation of Resources-Evaluation (COR-E; Hobfoll & Lilly, 1993), a 74-item self-report measure with excellent validity that assesses the degree to which participants experienced gain in material, energy, work, interpersonal, family, and personal resources in the past month at baseline and across the follow-up period. Each item of the COR-E is rated on a 3-point scale ranging from 0 = *no gain* to 2 = *a great deal of gain*. A total score was calculated at each time point by summing all items resulting in a range from 0 to 148 with higher scores representing more resource gain. The COR-E attained internal consistency of $\alpha = .96$ at baseline.

The Personal Progress Scale-Revised (PPS-R; Johnson, Worell, & Chandler, 2005), a 28-item self-report measure on which participants rate the extent to which they agreed or disagreed with each item on a 7-point scale ranging from 1 = *almost never* to 7 = *almost always* was used to measure women's empowerment. The measure was administered at baseline, as well as across the follow-up period. Items are summed to create a total score at all time points to reflect overall empowerment (Johnson et al., 2005). Scores range from 28 to 196 with higher scores indicative of greater feelings of empowerment. The measure has shown good reliability and validity (Johnson et al., 2005). Internal consistency was $\alpha = .88$ at baseline.

The Social Support Questionnaire: Short Form (SSQSF; Sarason, Sarason, Shearin, & Pierce, 1987) was utilized to measure quality of social support at baseline and across the follow-up period. The SSQSF, a 6-item self-report, assesses for satisfaction with support (i.e., quality) on a 6-point scale ranging from 1 = *very dissatisfied* to 6 = *very satisfied*. A mean is calculated from all six items resulting in an average quality of support score ranging from 1 to 6. The SSQSF has demonstrated good reliability and validity (Sarason et al., 1987). The SSQSF had an internal consistency of $\alpha = .91$ at baseline.

The Client Satisfaction Questionnaire (CSQ; Attkisson & Zwick, 1982) was administered only to participants who completed HOPE and was used to specifically assess participants' overall satisfaction with HOPE at 1-week, and 3- and 6-months posttreatment (PT). The CSQ is a 14-item self-report measure with established reliability and validity that asks participants to rate their degree of satisfaction with an intervention on a 4-point scale ranging from 1 = *quite dissatisfied* to 4 = *quite satisfied* on a variety of dimensions (e.g., quality of service, amount of help received, convenience, confidentiality). An overall

satisfaction score was determined by the mean of all 14 items. Scores range from 1 to 4 with higher scores indicating greater satisfaction. Internal consistency was $\alpha = .92$ at PT.

For treatment integrity, using an adapted HOPE Adherence and Competence Scale (Johnson et al., 2011), 30 randomly selected sessions were rated for adherence and competence by a study therapist who did not conduct the session being rated. Each session was rated on 19 core components of HOPE. Adherence to these core components was found to be good, with therapists adhering to 91.2% of rated items. Overall adherence and competence were rated on 5-point scales anchored from *poor* to *excellent*. Both adherence and competence were rated as good to excellent ($M = 4.70$, $SD = 0.47$ & $M = 4.87$, $SD = 0.35$, respectively).

Participant safety was monitored by an external data and safety monitoring board. Two participants in SSSs met criteria for significant clinical deterioration (i.e., 50% increase in CAPS scores), and per protocol were provided additional referrals for treatment beyond what was normally provided in the standard protocol. Two HOPE + SSSs participants were removed from the treatment protocol and provided appropriate referrals when study personnel became aware that the participants no longer met study inclusion criteria secondary to onset or relapse of substance dependence. All participants removed from the HOPE + SSSs or SSSs protocols were followed with research procedures and their data were included in all intent-to-treat analyses reported below. There were no unanticipated research-related serious adverse events (SAEs). There were 19 anticipated non-study related SAEs: 16 hospitalizations (12 medical, 1 IPV related, 3 psychiatric), two life-threatening traumatic experiences, and one person who exhibited active suicidality. No SAEs led to removal from the treatment protocol.

The participant flow is demonstrated in Figure 1 from phone screen through 6-months PT. Sixty women met study criteria and 30 each were randomized into HOPE + SSSs or SSSs alone. In regard to SSSs, participants reported meeting from 0–30 ($M = 6.45$, $SD = 7.34$) times with their case manager and attending from 0–44 ($M = 4.96$, $SD = 8.06$) support groups while in shelter. No significant differences were found between HOPE + SSSs and SSSs in their experience of SSSs (all $ps > .05$).

Two participants dropped out of HOPE treatment. One participant randomized to SSSs dropped out of the study. Women in HOPE attended an average of 5.78 ($SD = 3.65$) sessions in shelter, 6.93 ($SD = 4.90$) sessions postshelter, and 12.70 ($SD = 5.07$) sessions in total. Five participants stayed in shelter long enough to receive monthly booster sessions. Participants who did not complete the maximum of 10 allotted shelter sessions of HOPE (26.7%) left shelter prior to their completion. Participants attended 0–6 case management groups, with most ($n = 16$; 53.3%) not attending any groups ($M = 1.07$, $SD = 1.55$).

Data Analysis

Latent growth curve analyses (Preacher, Wichman, MacCallum, & Briggs, 2008) via Mplus were used to estimate trajectories of change within the current sample. Growth curve models were fit for all continuous outcome measures with treatment condition (i.e., HOPE + SSSs or SSSs) as the predictor to evaluate whether treatment had an effect on the slopes (i.e., change in the outcomes over time). Consistent with our prior research (Johnson et al., 2011),

as well as other research evaluating the efficacy of PTSD treatments (e.g., Monson et al., 2006), the current data were mapped using quadratic trajectories. Growth trajectories included baseline, 1-week, and 3- and 6-months PT. Given substantial variability in length of shelter stay (i.e., time between baseline and 1-week PT) time was modeled using baseline as the anchor. Additionally, due to the potential impact of reabuse on PTSD and other symptoms, CTS2 scores at each follow-up time point were entered as a time-varying covariate for growth trajectories.

Data were screened for pattern of missingness, skewedness, and kurtosis. Data were determined to be missing completely at random (MCAR) using Little's (1988) MCAR test, $\chi^2(107) = 112.99, p = .333$; therefore, full information maximum likelihood (FIML) was utilized to account for missing data. Based on George and Mallery's (2010) standards for skewedness and kurtosis, the CAPS and BDI demonstrated violations in kurtosis in the positive direction, and the CTS was positively skewed and demonstrated kurtosis. Therefore, to account for these violations, CAPS, CTS, and BDI scores were log transformed for all time points. For purposes of interpretation, means and standard deviations reported are based on raw, nontransformed data.

The intent-to-treat sample was utilized for all analyses, including all participants irrespective of how many HOPE sessions they completed. In addition to latent growth curve analyses, effect sizes (Cohen's *d*) were computed for each continuous outcome at 1-week, and 3- and 6-months PT adjusting for baseline outcome levels. The reliable change index (Jacobson & Truax, 1991) was computed for CAPS total score at follow-up to establish if clinically significant change in PTSD symptoms had occurred. Finally, χ^2 s, odds ratios (*OR*), and relative risk (*RR*) values were computed for binary outcomes. Descriptive statistics for all outcomes are found in Table 2 and a summary of effect sizes for all treatment effects is found in Table 3.

Results

Retention rates at each follow-up time point for HOPE + SSSs were 85% at 1-week PT ($n = 26$), 90% at 3-months PT ($n = 27$), and 90% at 6-months PT ($n = 27$). Retention rates for SSSs were 83.3% at 1-week PT ($n = 25$), 76.7% at 3-months PT ($n = 23$), and 70.0% at 6-months PT ($n = 21$). Data for all follow-up periods was completed for 83.3% of HOPE + SSSs participants ($n = 25$) and 70.0% of SSSs participants ($n = 21$). Participants lost to follow-up across all follow-up points were more likely to identify as lesbian (14.3%) than were participants retained through 6-month follow-up (0%), $\chi^2(2, N = 60) = 7.40, p = .025$. No other differences were identified between participants lost at follow-up and those retained.

Table 2 includes means and standard deviations by treatment condition for all continuous outcomes. Latent growth curve analysis yielded significant treatment effects for CAPS scores across time points ($\beta = -.007, p = .021$). Chi-square analyses evaluating PTSD diagnostic status demonstrated a significant effect at 6-months PT, $\chi^2(1, N = 48) = 6.10, p = .014$, in which participants in HOPE + SSSs (18.5%) were significantly less likely to meet criteria for PTSD/subthreshold PTSD than SSSs participants (52.4%), $OR = 0.21, 95\%$

confidence interval (CI) [0.06, 0.75], $RR = 2.20$, 95% CI [1.03, 4.72]. No differences, however, were identified at PT, $\chi^2(1, N = 51) = 0.16$, $p = .690$, or 3-months PT, $\chi^2(1, N = 50) = 1.09$, $p = .301$. The reliable change index as outlined by Jacobson and Truax (1991) was calculated for CAPS scores at 1-week, and 3- and 6-months PT. Using a 95% CI, a change of more than 26 points on the CAPS was required to indicate reliable change at 1-week PT, 21 at 3-months PT, and 26 6-months PT. Using these criteria, 76.9% of participants randomized to HOPE + SSSs achieved reliable change at 1-week PT, 85.2% at 3-months PT, and 81.5% at 6-months PT. Using the same criteria, 66.7% of participants randomized to SSSs achieved reliable change at 1-week PT, 68.0% at 3-months PT, and 76.2% at 6-months PT. Latent growth curve analysis modeling time did not yield significant treatment effects for CTS scores across time points ($\beta = .002$, $p = .709$).

Latent growth curve analyses yielded significant treatment effects for BDI scores ($\beta = -.006$, $p = .052$), PPS scores ($\beta = .155$, $p = .022$), and COR-Gain scores ($\beta = -.158$, $p = .036$) across time points. No significant difference was found for satisfaction with social support on the SSQS ($\beta = .023$, $p = 0.557$) between HOPE + SSSs and SSSs. Pearson χ^2 analyses exploring employment status identified significant treatment effects at 3-months PT, $\chi^2(1, N = 50) = 4.43$, $p = .035$, and 6-months PT, $\chi^2(1, N = 48) = 6.03$, $p = .014$, but not at 1-week PT. HOPE + SSSs participants were significantly more likely to be employed at 3-months PT (55.6%), $OR = 3.54$, 95% CI [1.07, 11.77], $RR = 0.47$, 95% CI [0.22, 1.01], and 6-months PT (59.3%), $OR = 4.66$, 95% CI [1.32, 16.48], $RR = 0.40$, 95% CI [0.18, 0.92] as compared to SSSs participants (26.1%; 23.8%).

Average satisfaction ratings for those who received HOPE + SSSs were 3.68 ($SD = 0.36$) at 1-week PT, 3.66 ($SD = 0.47$) at 3-months PT, and 3.62 ($SD = 0.43$) at 6-months PT on the 4-point scale of the *CSQ* (Attkisson & Zwick, 1982).

Discussion

This study expanded upon previous work (Johnson et al., 2011), highlighting the importance of the treatment of PTSD from IPV in residents of battered women's shelters. Shelter residents in HOPE reported less severe PTSD from IPV and depression symptoms, more gain of personal and social resources, and increased empowerment over a 6-month follow-up compared to women who only received SSS. Further, shelter residents who received HOPE were more likely to report being employed at the 3- and 6-month follow-up time points, compared to women who only received SSSs. Thus, treatment at the time it was delivered in this study can lead to meaningful improvement for shelter residents exposed to IPV. Findings highlighted the importance of continuing services with IPV victims during the vulnerable period when they leave the safe environment of shelter.

Results suggested that continuing treatment after women leave shelter is acceptable and feasible to women, with women receiving a majority of the 16 sessions available to them ($M = 12.7$), and reporting high satisfaction with their treatment. Further, as the shelter only version of HOPE did not lead to statistically significant improvements in PTSD severity over a 6-month follow-up relative to SSS alone (Johnson et al., 2011), current findings of statistical significance in PTSD from IPV suggested that continuing treatment after shelter is

associated with improved outcomes in PTSD from IPV. Further, most women in HOPE experienced clinically significant reductions in their PTSD from IPV symptoms (76.9% at PT) and these changes were maintained over time. Our finding that only 18.5% of participants in HOPE met full or partial criteria for PTSD from IPV at 6-month follow-up was consistent with prior research with women exposed to interpersonal violence (e.g., Resick et al., 2008). Thus, HOPE was associated with similar reductions in PTSD to existing research-supported PTSD treatments. The continued improvement in PTSD from IPV symptoms observed postshelter, with significantly fewer HOPE participants relative to control participants meeting full or sub-threshold criteria for PTSD from IPV at the 6-month follow-up, suggested that HOPE participants initiate positive changes in shelter that were sustained after leaving shelter.

Our finding that HOPE was not associated with increased satisfaction with social support was inconsistent with prior research with HOPE finding improved social support posttreatment (Johnson et al., 2011). Participants reported relatively high levels of satisfaction with support (see Table 2), suggesting that perhaps SSSs are sufficient for fostering supportive resources. Additionally, our finding that HOPE was not associated with reduced IPV severity was inconsistent with another study (Iverson et al., 2011) and the prior HOPE study (Johnson et al., 2011). One notable difference between the sample in this study and the first study on HOPE is in the average length of shelter stay of residents ($M_s = 106.86$ & 73.18 , respectively). Research has suggested that length of shelter stay is associated with reduced IPV after leaving shelter (Perez, Johnson, Walter, & Johnson, 2012). Thus, the increased time in shelter for participants may have accounted for our lack of treatment effects on IPV. Additionally, the Iverson et al. (2011) study investigated IPV as outcome in victims of diverse interpersonal traumatic events and did not look exclusively at women with histories of severe IPV. Given the differences in samples between extant studies, future research is still needed to identify the mechanisms through which treatment of PTSD may affect future IPV risk.

Although former shelter residents suggested that a group component to treatment would be beneficial to women after they leave shelter, current results suggested that women are unlikely to attend group sessions after they leave shelter. Given the competing demands on this vulnerable population, finding group times that worked with participants' schedules was challenging. Thus, a future iteration of HOPE will remove this group component.

The results of this study were preliminary and should be viewed with caution. The strengths of this study included the use of an RCT design with blind assessors, an ethnically diverse sample, good retention, and the use of reliable and valid measures. It is unclear if findings generalize to those exposed to IPV who do not seek shelter. Further, given the positive skew of much of our data, it is unclear if findings would generalize to less severe populations. Finally, it was unclear if factors specific to the HOPE protocol were responsible for observed treatment effects or if nonspecific factors common to psychotherapy in general were responsible. Additional limitations included the small sample size and lack of an independent review of treatment fidelity and interview reliability. Future research should evaluate HOPE in diverse shelter settings, utilize community therapists, include a more rigorous control condition, and be powered to look at predictors of treatment response (e.g.,

number of sessions). Despite its limitations, the current study's findings are promising and highlight the potential benefits of treatment of PTSD from IPV in this vulnerable group of women.

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Figure 1.

CONSORT (Consolidated Standards of Reporting Trials) diagram of participant flow through the protocol. HOPE = Helping to Overcome PTSD through Empowerment; IPV = intimate partner violence; PTSD = posttraumatic stress disorder; wk = week; PT = posttreatment; SSS = standard shelter services.

Table 1

Characteristics of Sample by Treatment Group

Variable	HOPE + SSSs (<i>n</i> = 30)		SSSs (<i>n</i> = 30)	
	<i>M</i> or <i>n</i>	<i>SD</i> or %	<i>M</i> or <i>n</i>	<i>SD</i> or %
Age	33.30	10.48	33.20	10.39
Race/ethnicity				
African American	17	56.7	17	56.7
Caucasian	13	43.3	13	43.3
Hispanic	2	6.7	2	6.7
Education				
Less than high school	10	33.3	11	36.6
High school/GED	10	33.3	5	16.7
Completed some college	9	30.0	12	40.0
Graduated from college	1	3.3	2	6.7
Receiving public assistance	24	80.0	25	83.3
Employed	9	30.0	5	16.7
Have children	28	93.3	26	86.7
Cohabiting/married to abuser	28	93.3	27	90.0
Have restraining order	11	37.9	11	36.7
Current PTSD status				
Full	28	93.3	29	96.7
Subthreshold	2	6.7	1	3.3
Current comorbidity				
Major depression	18	60.0	18	60.0
Other anxiety disorder	17	65.4	9	34.6
Psychotropic medication	9	30.0	10	33.3
IPV in past month				
Psychological	14	46.7	15	50.0
Physical	11	36.7	11	36.7
Sexual	0	0.0	2	6.7
Contact with abuser	18	60.0	19	63.3
Prior lifetime IPV	20	66.7	20	69.0
Frequency prior trauma	3.30	2.64	3.83	2.48
Days in shelter at baseline	21.43	17.80	26.33	33.09
Length of stay	113.28	92.88	100.37	66.40

Note. HOPE = Helping to Overcome PTSD through Empowerment; SSSs = standard shelter services; GED = general equivalency diploma; PTSD = posttraumatic stress disorder; IPV = intimate partner violence.

Table 2

Means and Standard Deviations of Outcomes at Four Time Points by Group

Variable	HOPE + SSSs								SSSs							
	Baseline <i>n</i> = 30		1-Week post <i>n</i> = 26		3-Months post <i>n</i> = 27		6-Months post <i>n</i> = 27		Baseline <i>n</i> = 30		1-Week post <i>n</i> = 25		3-Months post <i>n</i> = 23		6-Months post <i>n</i> = 21	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PTSD	61.80	25.75	14.31	21.25	12.54	21.03	12.11	20.78	64.17	17.38	27.84	28.23	30.87	28.01	25.95	29.96
IPV	21.80	6.05	0.50	1.50	1.26	3.39	1.30	4.09	21.27	5.45	1.52	4.67	2.22	4.98	2.29	4.72
Depression	22.13	9.73	7.77	8.70	8.63	9.55	7.78	9.48	21.57	9.70	12.16	12.63	13.57	13.89	12.00	13.91
Empowerment	122.30	27.44	146.58	32.05	148.65	27.79	144.70	31.58	124.23	21.82	128.26	21.35	137.14	23.20	134.24	25.13
Resource gain	47.17	27.42	80.56	36.46	72.81	38.62	68.96	42.45	42.73	17.97	59.22	31.49	49.73	32.63	44.52	32.52
Social support	29.33	7.87	33.62	2.97	32.23	5.50	31.89	6.88	25.37	8.43	27.35	8.73	29.19	7.79	28.86	8.18

Note. HOPE = Helping to Overcome PTSD through Empowerment; SSSs = standard shelter services; PTSD = posttraumatic stress disorder symptoms; IPV = intimate partner violence.

Table 3

Effect Size (Cohen's d) for Difference Between SSSs and HOPE + SSSs at Three Time Points

Variable	1-Week post (HOPE+ $n = 26$; SSSs $n = 25$)		3-Months post (HOPE+ $n = 27$; SSSs $n = 23$)		6-Months post (HOPE+ $n = 27$; SSSs $n = 21$)	
	d	95% CI	d	95% CI	d	95% CI
PTSD	0.57	[0.01, 1.13]	0.70	[0.12, 1.27]	0.63	[0.04, 1.21]
IPV	0.18	[-0.37, 0.73]	0.27	[-0.29, 0.83]	0.07	[-0.51, 0.64]
Depression	0.59	[0.03, 1.15]	0.44	[-0.12, 1.01]	0.67	[0.08, 1.25]
Empowerment	0.77	[0.19, 1.35]	0.52	[-0.06, 1.11]	0.40	[-0.18, 0.97]
Resource gain	0.62	[0.04, 1.20]	0.74	[0.15, 1.32]	0.71	[0.12, 1.30]
Social support	0.82	[0.23, 1.40]	0.35	[-0.23, 0.93]	0.26	[-0.31, 0.83]

Note. Cohen's d calculated with adjusted means accounting for baseline scores. HOPE = Helping to Overcome PTSD through Empowerment; SSSs = standard shelter services; PTSD = posttraumatic stress disorder symptoms; IPV = intimate partner violence.