

Outcomes Associated With Participation in a Sober Living Home for Women With Histories of Domestic and Sexual Violence Victimization and Substance Use Disorders

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Domestic and sexual violence (DSV) and substance use disorders (SUDs) co-occur at high rates among women. Yet, the extent to which sober living homes promote healing and recovery among women with histories of DSV and SUDs is unknown. The purpose of the proposed study was to examine this gap in the literature by conducting a pilot evaluation of the Support, Education, Empowerment, and Directions (SEEDs) program in Phoenix, Arizona. SEEDs is a trauma-informed, gender-responsive sober living home that provides transitional housing to women with histories of DSV and SUDs. Participants ($N = 59$) completed three surveys (baseline and 6 and 12 months) to determine how engagement with SEEDs predicted changes over time across several outcomes. Results suggest that SEEDs participants improved over time for primary (i.e., victimization, perpetration, and substance use) and other (i.e., posttraumatic stress, depressive symptoms, financial worries, and housing instability) outcomes. Sense of purpose, posttraumatic growth, and personal empowerment did not change over time. Length of stay and program involvement in SEEDs were the most consistent predictors of improvements at the 12-month follow-up. Finally, women who lived only at SEEDs throughout the course of the study fared better on most outcomes compared with women who lived places other than SEEDs during the study period. Although further experimental research is needed, preliminary research suggests that SEEDs is a promising approach to facilitate healing and recovery among women with histories of DSV and SUDs.

Keywords: domestic violence, sexual violence, substance abuse, sober living home, recovery

Domestic and sexual violence (DSV) are major public health epidemics in the United States. Indeed, epidemiological data showed that 43.6% of women report experiencing a sexual assault (ranging from unwanted touching to attempted/completed rape) at some point in their lives, and 35.6% of women report being raped,

physically abused, or stalked by an intimate partner (Black et al., 2011a). DSV leads to a host of deleterious outcomes for victims, and these forms of violence cost billions of dollars annually in medical costs, lost earnings, pain, suffering, and lost quality of life (Black et al., 2011b; Peterson et al., 2017). Research also suggests that DSV intersects with substance use disorders (SUDs; Edwards et al., 2017; McKee & Hilton, 2019), and similar to DSV, SUDs are related with numerous deleterious outcomes (e.g., employment-related issues and death) and cost more than \$440 billion dollars each year (Sacks et al., 2015). Although there is a growing body of literature examining interventions for women with histories of victimization and addiction, most of this research occurs within the context of clinical or institutional settings (Bailey et al., 2019; Kirkner et al., 2018; Najavits, 2009; Swopes et al., 2017). There is little research to date on the ways in which sober living homes (SLHs) may facilitate healing and recovery among women with histories of DSV and SUDs. SLHs are facilities that provide substance-free housing and a supportive, structured living environment. The purpose of the current study was to examine this gap in the literature by conducting a pilot evaluation of a trauma-informed, gender-responsive SLH designed specifically for women with histories of DSV and SUDs.

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Decades of research demonstrate that DSV and SUDs are highly related (Ritter et al., 2014), and this may be especially the case for women (Hien, 2009; McKee & Hilton, 2019; Rhew et al., 2017). For example, researchers found that 80% of women and 30% of men seeking outpatient treatment for drug addiction reported DSV victimization (Fernández-Montalvo et al., 2015). Other research has documented similarly high rates of DSV among women in inpatient SUD treatment (Jason & Ferrari, 2010; Liebschutz et al., 2002), and female victims of DSV are up to six times more likely to struggle with SUDs than the general population (Afifi et al., 2012; Capezza et al., 2015).

Research suggests that there are complex associations with DSV and SUDs among women. For example, Edwards et al. (2018) found that for some women alcohol and drugs were often used as a mechanism to cope with DSV victimization, whereas for other women alcohol and drugs increased risk for DSV victimization, often through perpetrators using alcohol and drugs to inhibit their ability to leave the abusive relationship. Indeed, some women with SUDs depend on their abusive partners to supply them with substances which exacerbates entrapment in abusive relationships (Edwards et al., 2017; Gadd et al., 2019). Among women with histories of victimization, alcohol and drug use increase risk for revictimization (Hébert et al., 2021; Walsh et al., 2014). For example, in a nationally representative sample of adult women, Walsh et al. (2014) documented that among women with histories of sexual assault, 59% had been sexually assaulted multiple times, whereas 41% reported a single sexual assault. In this same study, researchers found that women who were sexually revictimized reported more illicit drug use than women with a single sexual assault experience (Walsh et al., 2014). Women with SUDs as well as those with histories of childhood abuse are also at increased risk to perpetrate domestic violence (Jones et al., 2020; Kubiak et al., 2017). DSV and SUDs co-occur at high rates with mental health problems (e.g., depression and posttraumatic stress disorder [PTSD]), physical health problems, and housing instability and financial worries (Adams et al., 2021; Brady & Lydiard, 2021; Gadd et al., 2019; Meyer et al., 2019). Overall, this research highlights the complex associations among DSV and SUDs and the urgent needs for trauma-informed, gender-responsive programs to address these frequently co-occurring issues among women. Research is also needed to examine strengths-based outcomes among women with histories of DSV and SUDs, consistent with calls to move beyond deficit-only focused outcomes (Grych et al., 2015).

Despite clear associations among DSV and SUDs, little research has examined the ways in which SLHs may help to promote healing and recovery among women with histories of DSV and SUDs. Nevertheless, there is an extensive body of literature on the Oxford Houses, established by Paul Molloy in 1975 (Jason et al., 2001). Oxford Houses are widely evaluated SLHs that offer sex-specific housing to men and women in SUD recovery (Jason et al., 2001). The Oxford House model is based on the belief that a residential, self-run, peer-monitored living option for individuals with histories of SUDs may increase odds of success in recovery (Jason et al., 2001). Across various evaluations, compared with men and women who went to aftercare as usual (e.g., other recovery homes and return to high-risk environments), individuals in Oxford Houses had less SUD relapse, higher employment, less poverty, and lower rates of incarceration (Jason et al., 2001, 2007, 2014; Jason &

Ferrari, 2010). Some research on Oxford Houses has focused specifically on women. For example, Hunter et al. (2012) documented that a number of women in Oxford Houses used the setting as a place to disclose past experiences of sexual assault, and that these disclosures were related to higher self-esteem and social support compared with women in Oxford Houses who did not disclose past experiences of sexual assault. Furthermore, Harvey and Jason (2011) found that women in Oxford Houses reported more supportive relationships and felt more comfortable discussing personal problems, compared with men in Oxford Houses. No research to date, however, has examined the ways in which Oxford Houses promote healing and recovery among women with histories of DSV and SUDs. Furthermore, Oxford Houses designate their primary purpose is to function as drug-free homes and are not necessarily trauma-informed or gender-responsive.

Given there are gender-specific pathways for etiology, presentation, and recovery from SUDs (Covington, 2008; Salisbury & Van Voorhis, 2009; Tuchman, 2010), SLHs that are both trauma-informed and gender-responsive may be especially important for women with histories of DSV. Trauma-informed services consider the role of trauma in etiology, onset, and recovery; avoid triggering reactions or retraumatization; support women's coping capacities; and promote empowerment so that survivors can manage their trauma symptoms successfully (Covington, 2008; Fallo & Harris, 2002; Purtle, 2020). Gender-responsive treatments for SUDs acknowledge the realities of women's lives, which include the high prevalence of violence, other forms of abuse, and experiences with sexism and discrimination (Covington, 2008; Sugarman et al., 2017). Gender-responsive services include an "environment—through site selection, staff selection, program development, and program content and materials—that reflects an understanding of the realities of women's and girls' lives and that addresses and responds to their challenges and strengths" (Covington, 2008, pp. 377–378).

A review of literature produced only one trauma-informed, gender-responsive SLH (i.e., Support, Education, Empowerment, and Directions [SEEDs]) with preliminary data suggesting its potential effectiveness in promoting healing and recovery among women with histories of addiction and victimization (Edwards et al., 2017, 2018). SEEDs, located in Phoenix Arizona, is a community-based, nonprofit agency that began in 2003 to provide trauma-informed, gender-responsive, transitional housing for women with histories of DSV and SUDs. The SEEDs program was developed on the principles and traditions of self-help and the belief that every woman has worth regardless of past experiences, race, ethnicity, sexual preference, age, or abilities. The SEEDs program offers a supportive, holistic environment where women help themselves while helping one another. Residents are offered a variety of supports to enhance their ability to live independently such as peer support, DSV support groups, and culturally grounded case management services, which link women to community-based services to meet their myriad needs. Residents also learn business and service skills in a coffee shop owned by the SEEDs program. The SEEDs program hires current and former residents as house managers and case managers. SEEDs homes help residents enhance basic living skills, such as cooking and cleaning, along with money and self-management skills. Staff provide mentorship and assist residents in setting and prioritizing goals for healthy living. Many women in SEEDs seek to regain custody of their children,

and SEEDs supports women in this endeavor and has SLHs that are specifically for women who have partial or full custody of their children. A Resident Advisory Committee helps to guide all activities, policies, and procedures of SEEDs. Should a resident relapse while participating in SEEDs, she is referred to a local substance abuse program partner for treatment and can reenter the program once medically cleared.

Preliminary research suggests that SEEDs has promise in helping to promote healing and recovery among women with histories of DSV and SUDs. In a study of 28 women who were current or former residents of SEEDs, qualitative interview data suggested that women's participation in SEEDs played a significant role in their recovery, specifically through fulfilling their needs for tangible resources (e.g., food, clothing, and shelter) and the community's provision of emotional support (e.g., family, love, and consistency) to promote recovery (Edwards et al., 2017). In this same study, cross-sectional survey data suggested that as women's sense of community (specific to SEEDs) increased, PTSD and depressive symptoms decreased (Edwards et al., 2018).

Despite the potential promise of SEEDs, no longitudinal research to date has examined how engagement with SEEDs may promote various psychosocial outcomes over time. The purpose of the current study was to address this gap in the literature by conducting a pilot evaluation. Primary outcomes of interest included DSV victimization and perpetration and alcohol and drug use. Other outcomes included indicators of mental health (i.e., PTSD and depressive symptoms) as well as physical health, financial worries, and housing instability. Moving beyond deficit focused only outcomes (Grych et al., 2015), we also examined how engagement with SEEDs related to posttraumatic growth, sense of purpose, and personal empowerment. In addition to examining changes over time in outcomes (Aim 1), we also examined the ways in which changes over time related to engagement with and perceptions of SEEDs (Aim 2). Engagement with SEEDs included length of stay in a SEEDs home and participation in various SEEDs' activities (e.g., support groups and working at the SEEDs coffee shop). Furthermore, we examined the extent to which sense of community (specific to SEEDs) impacted changes in outcomes over time. Finally, we examined differences in women's outcomes for those who lived only at SEEDs compared with women who lived at other places (e.g., other SLH or homeless) during the 1-year study period.

Method

Procedures

Women were invited over a 28-month project period (March 2017 to July 2019) within 1 week of their arrival to the SLH (i.e., SEEDs) to participate in the study. To participate, individuals had to be at least 18 years old, able to read and speak English, identify as a woman, and be able to provide consent to participate in the study. Women were recruited within a few days upon their entrance to SEEDs. All women residing in SEEDs at the time of the study commencement were also invited to participate regardless of length in the program. A staff member of the program provided women with a recruitment letter from the research team. Women

were instructed to inform program staff of whether they wanted to participate. From there, program staff would notify the research team, and a trained research assistant would meet with the potential participant to explain the study. Women were informed that their participation in the study would in no way impact their ability to receive services from SEEDs and that the program staff would never have access to their data. If the women consented to participate, the research assistant would enroll them in the study. Data were collected at baseline and both 6 months and 1 year after baseline. Participants received \$50 gift cards for each survey, and those completing all three surveys received an additional \$50 gift card. This study was approved by the University of New Hampshire's institutional review board.

Participants

Participants were 59 women living in SEEDs homes with histories of domestic and/or sexual violence who agreed to participate in the study. The mean age of participants was 41.6 ($SD = 12.0$; range: 22–67). Most participants were White non-Hispanic ($n = 47, 79.7%$) and identified as heterosexual ($n = 51, 86.4%$). At the time of the baseline (Time 1; T1) survey, approximately half of participants were unemployed ($n = 32, 54.2%$), or working, part or full time ($n = 27, 45.8%$); and household income was under \$20,000 ($n = 47, 79.7%$). Sixty-nine women were invited to participate and 59 enrolled (85.5%). Of the 59 women who completed the initial survey, 52 women (88.1%) completed the 6-month follow-up survey (Time 2; T2), and 51 (86.4%) women completed the 12-month follow-up survey (Time 3; T3). Attrition analyses revealed no differences between women who stayed in the study and women who did not on any of the independent or dependent variables except for length of stay at SEEDs. More specifically, women who completed all three survey timepoints stayed at SEEDs significantly longer than women who missed one or more survey timepoints, $t(57) = 2.31, p < .05$ (18.89 days compared with 225.06 days).

Measures

Dependent Variables

Intimate Partner Violence. Intimate partner violence (IPV) was assessed using eight items from the Conflict Tactics Scale Revised Short Form. IPV victimization was captured by asking whether the respondent's partner had done any of the following to them: (a) insulted or swore or shouted or yelled, (b) pushed, shoved, or slapped, (c) punched, kicked, or beat, and (d) destroyed something belonging to me or threatened to hit me, in the past 6 months. IPV perpetration was captured by asking whether the respondent had done any of the following to an intimate partner: (a) insulted or swore or shouted or yelled, (b) pushed, shoved, or slapped, (c) punched, kicked, or beat up, and (d) destroyed something belonging to my partner or threatened to hit my partner, in the past 6 months. Response options were binary (0 = no, 1 = yes) to capture separately the presence or absence of psychological or physical IPV victimization or perpetration in the past 6 months. The items were summed and recoded to be dichotomous variables at each timepoint (0 = no, 1 = yes).

Sexual Victimization. Two items from the Revised Sexual Experiences Survey were used to assess unwanted sexual contact (excluding sexual intercourse) and unwanted sexual intercourse participants had experienced. Instructions defined sexual contact excluding sexual intercourse as “attempting or actually kissing, fondling, or touching someone in a sexually intimate way.” The items were modified to separately capture the occurrence of unwanted sexual contact (i.e., has someone had sexual contact with you when you didn’t want to?) and sexual intercourse (i.e., have you had sexual intercourse with someone when you didn’t want to?). Response options were binary (0 = no, 1 = yes) to capture the presence or absence of unwanted sexual contact or unwanted sexual intercourse in the past 6 months across all three timepoints.

Substance Use. Alcohol use was captured by asking participants to note each month in the past 6 months that they have either had any alcohol or felt drunk/buzzed from alcohol. Each month was summed and dichotomized to assess past 6-month alcohol use (0 = no, 1 = yes). Drug use was captured by asking participants to note each month in the past 6 months that they had used any of the following drugs: heroin, methadone, other opiates/analgesics, barbiturates, other sedative/hypnotic/tranquilizers, cocaine powder or crack, amphetamines, cannabis/weed, hallucinogens, or inhalants. Items were summed and dichotomized to reflect any drug use in the past 6 months (0 = no, 1 = yes).

Posttraumatic Stress. Posttraumatic stress was measured using the PTSD Checklist–Civilian Version (Weathers et al., 1993), which consists of 17 items assessing PTSD symptoms in the past 6 months. Respondents were asked to rate 17 symptoms in the past 6 months using a Likert scale, ranging from 1 (*not at all*) to 5 (*extremely*) in relation to their most stressful life experience. Responses were summed with higher scores indicating higher PTSD symptomatology. Internal consistency was high among the indicators at all three timepoints (T1 $\alpha = .92$, T2 $\alpha = .93$, and T3 $\alpha = .93$).

Posttraumatic Growth. The Posttraumatic Growth Inventory–Short Form (PTG-SF; Hamby et al., 2015; Tedeschi & Calhoun, 1996) was used to measure positive outcomes among women who had experienced adverse or stressful events. The PTG-SF includes nine items that assess increased strengths (e.g., “I discovered that I am stronger than I thought I was”), spiritual change (e.g., “I have a stronger religious faith”), new life possibilities (e.g., “I am able to do better things with my life”), and appreciation of life (e.g., “I have a greater appreciation for the value of my own life”). In our study, participants answered the PTG-SF questions in response to their self-reported most stressful life experience. Responses are recorded on a Likert scale from 1 (*not true about me*) to 4 (*mostly true about me*) and then summed to create a total score, with higher scores indicating more posttraumatic growth. Posttraumatic growth is measured at all three timepoints. In this study, internal consistency was similar between timepoints (T1 $\alpha = .87$, T2 $\alpha = .86$, and T3 $\alpha = .86$).

Depressive Symptoms. The Center for Epidemiological Studies Depression Scale (Radloff, 1977), a 20-item self-report measure, was used to capture depressive symptomatology among participants. Respondents were asked to reported frequency of each item in the previous 6 months on a 4-point Likert scale ranging from 0 (*rarely or none of the time [less than 1 day]*) to 3 (*most or all of the time [5–7 days]*). Responses were summed to

produce an overall score with higher values indicative of more severe depressive symptoms. Internal consistency was high among indicators across timepoints (T1 $\alpha = .95$, T2 $\alpha = .93$, and T3 $\alpha = .93$).

Healthy Days. Healthy days were measured with an abridged version of the Healthy Days Measures (<https://www.cdc.gov/hrqol/pdfs/mhd.pdf>; Hamby et al., 2015). Five items assessed physical health and health-related quality of life. Participants were first asked to rate their overall health on a Likert scale from 1 (*poor*) to 5 (*excellent*). On the remaining four items, participants were asked to indicate how many days in the past 30 days each item applied to them on a Likert scale from 0 days to everyday (e.g., During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, school/work, or recreation?). Items were summed to create a total score for health-related quality of life, with higher scores indicating better health-related quality of life. Internal consistency was similar between timepoints (T1 $\alpha = .84$, T2 $\alpha = .88$, and T3 $\alpha = .86$).

Personal Progress. Self-perceptions of empowerment were assessed using 12 items from the Personal Progress Scale–Revised (Johnson et al., 2005). These items (e.g., “I am in control of my life”) measured self-perceptions of empowerment via perceived control, efficacy, and competence (Hunter et al., 2012). Item responses were summed with higher scores indicating greater self-perceptions of empowerment. Internal consistency at the three timepoints was acceptable (T1 $\alpha = .82$, T2 $\alpha = .86$, and T3 $\alpha = .81$).

Sense of Purpose. Sense of purpose and reason for living was assessed with three statements (Hamby et al., 2015). Statements were as follows: “My life has a clear sense of purpose,” “I have a good sense of what makes my life meaningful,” and “Overall, I expect more good things to happen to me than bad.” At all three timepoints, participants responded to these statements in relation to themselves in the past 6 months, on a Likert scale from 1 (*not true about me*) to 4 (*mostly true about me*). All items were summed with higher scores indicating increased perceptions of purpose; internal consistency at the three timepoints was T1 $\alpha = .88$, T2 $\alpha = .84$, and T3 $\alpha = .76$.

Financial Worries. Financial worries were assessed through eight items inquiring about whether the participant had enough money in the past 6 months to pay for items such as food, rent, and transportation (Mowbray et al., 2005). The responses to the eight questions were reverse coded and summed with higher scores indicating more financial worries. Internal consistency was high among indicators across timepoints (T1 $\alpha = .86$, T2 $\alpha = .89$, and T3 $\alpha = .88$).

Housing Instability. Housing instability was assessed using the Housing Instability Index (Rollins et al., 2012), a 10-item scale developed for domestic violence survivors. Participants indicated whether they experienced housing instability (e.g., “In the past 6 months, have you had to borrow money or ask friends/family or others for money to pay your rent/mortgage payment?”) over the past 6 months. Responses were summed across items, with higher scores indicating higher levels of housing instability. Internal consistency was fair among indicators across timepoints (T1 $\alpha = .73$, T2 $\alpha = .80$, and T3 $\alpha = .77$).

Independent Variables

Length of Stay. At baseline, participants were asked how long they had resided at SEEDs and/or the approximate date of entry. At each of the two 6-month follow-ups, participants were asked how long during the past 6 months they resided at SEEDs and/or the approximate date of leaving. Participants' responses were converted to days at each timepoint and then summed so that the dependent variable reflects total number of days resided at SEEDs during the study period ($M = 193.61$, $SD = 255.33$, range: 2–1,080): Women's length of stay was also confirmed by SEEDs staff.

Place of Residence. At both follow-ups, women were asked where they had resided during the past 6 months. Over the course of the 1-year follow-up period, 66.0% ($n = 35$) resided at SEEDs, 64.2% ($n = 34$) resided in a house or apartment, 32.1% ($n = 17$) resided in another SLH and/or domestic violence shelter, 17.0% ($n = 9$) were in a substance abuse treatment facility, 15.1% ($n = 8$) were homeless, and 7.5% ($n = 4$) were incarcerated; percentages exceed 100% because women could have resided in more than one place during the study period. Given some of the low cell sizes, in analyses women were coded as one of the following: resided at SEEDs only ($n = 13$; 22.0%), any time spent homeless ($n = 8$; 13.6%), any time spent in a house or apartment but not at a SLH or domestic violence shelter other than SEEDs ($n = 17$; 28.8%), any time spent in a house or apartment and/or SLH or domestic violence shelter (other than SEEDs; $n = 11$; 18.6%), and multiple/other ($n = 10$; 16.9%).

SEEDs Program Involvement. We created a nine-item measure of SEEDs program involvement. At all three timepoints, participants were asked to select all items (e.g., participated in SEEDs peer support, received SEEDs case management services, received advice from a SEEDs resident, alum, or staff) that applied to them in the past 6 months. A mean score was calculated at each timepoint (T1, T2, and T3), with higher mean scores indicating greater program involvement. At T1, the mean was 4.27 ($SD = 2.01$, range: 1–9). At T2, the mean was 5.08 ($SD = 2.78$, range: 0–9). At T3, the mean was 2.90 ($SD = 3.26$, range: 0–9). In analyses, SEEDs program involvement was summed across timepoints to create an overall measure of SEEDs program involvement.

Sense of Community. To assess participants' sense of community at SEEDs, the Brief Sense of Community Scale (BSCS; Peterson et al., 2008) was used at all timepoints. The BSCS captured four elements of perception of sense of community, including membership (e.g., "I feel like a member of SEEDs"), influence (e.g., "I have a say about what goes on in SEEDs"), need fulfillment (e.g., "I can get what I need in SEEDs"), and emotional connection (e.g., "I have a good bond with others in SEEDs"). The BSCS is made up of eight items, with two items representing each element of community perception forming an individual subscale. At all three timepoints, participants rated how much the statements reflect how they feel about SEEDs. Response options were 4-point Likert scales from 0 (*not at all*) to 3 (*completely*). Responses were averaged to create an overall score of sense of community score, with high reliability across all timepoints (T1 $\alpha = .90$, T2 $\alpha = .92$, and T3 $\alpha = .92$). At T1, the mean was 2.14 ($SD = .66$, range: 0–3). At T2, the mean was 1.81 ($SD = .87$, range: 0–3). At T3, the mean was 1.86 ($SD = .87$, range: 0–3). In analyses, the BSCS was summed across timepoints to create an overall measure of sense of community throughout the study duration.

Covariates

Prior levels (T1 baseline) of each of the outcomes were controlled for in the models. Participant's household income (T1) was also included as a covariate. Household income was collected via one question: "Approximately what is your household's yearly income? Please provide your best estimate and only include income that is made legally." Data were coded from 1 (*unemployed, disabled, or not working*) to 10 (*\$151,000 or more per year*). Whether participants were a new resident in the program at baseline was also included as a covariate. This variable was coded as 0 (*No [30 more days in the program at T1]*) and 1 (*Yes [less than 30 days at T1]*).

Analytic Strategy

For Aim 1, examining changes in outcomes over time, we used χ^2 analyses for the primary outcomes, given they are categorical in nature. For each outcome variable, differences in endorsement over time were examined. Risk ratios for incidence are reported across the timepoints. For continuous measured variables, repeated measures analysis of variance were used via a Wald test in Mplus to retain power and reduce bias due to missing data. As a measure of effect size, the d statistic for the difference between timepoints was also calculated (<https://journals.sagepub.com/doi/abs/10.1111/1467-8721.ep10768783>). For Aim 2, to examine predictors of change in outcomes, logistic regression (categorical primary outcomes) or linear regression analysis (continuous outcomes) in Mplus was used. Prior levels (T1) of the outcomes, household income, and new resident status were included in all models as covariates. For Aim 3, to examine outcomes as a function of living at SEEDs versus places other than SEEDs, similar to Aim 2 we used Mplus and either logistic (categorical) or linear (continuous) regression. In these models, four dummy variables representing place of residence during the SEEDs program (i.e., homeless, house/apartment, other SLH or domestic violence shelter, or any other location), with SEEDs only as the reference group, were used as predictors. Covariates (T1 outcomes, household income, and new resident status) were also included. In all models, full information maximum likelihood estimation was used to limit bias due to missing data. Models were fully saturated; thus, model fit statistics are not produced.

Results

Aim 1: Changes in Outcomes Over Time

Results for Aim 1, examining changes in outcomes over time, overall support positive change over time across all domains (Table 1). Starting with the primary outcomes, χ^2 tests for all outcomes, except for unwanted sexual intercourse, supported our hypothesis related to improvements over time from baseline (T1) to 12-month follow-up (T3) for SEEDs participants. In particular, follow-up analyses and examination of risk ratios overall support that risk of IPV victimization and perpetration, alcohol and drug use decreased over time, with varying patterns of change depending on the outcome. For example, the largest reduction of risk was from T1 to T3 for IPV physical victimization; risk decreased by 64.1%. Alternatively, for sexual victimization (unwanted sexual intercourse), the decrease in risk was greatest when comparing T2

Table 1*Descriptive Statistics and Results of Repeated Measures Chi-Square or Analysis of Variance Among Outcome Variables of Interest*

Variable	Time 1 %	Time 2 %	Time 3 %	Repeated measures tests						
				χ^2	RR (T1–T2)	RR (T1–T3)	RR (T2–T3)	<i>M</i>	<i>SE</i>	
Primary outcomes										
Intimate partner violence										
Psychological victimization	42.40	35.60	27.10	8.80*	.840	.639	.761			
Physical victimization	23.70	18.60	8.50	9.31*	.785	.359	.457			
Psychological perpetration	35.60	35.60	27.10	20.89*	1.000	.761	.761			
Physical perpetration	15.30	15.30	8.50	19.64*	1.000	.556	.556			
Sexual victimization										
Unwanted sexual contact	20.30	20.30	16.90	3.92*	1.000	.833	.833			
Unwanted sexual intercourse	13.60	15.30	6.80	.24	1.125	.500	.444			
Substance use										
Alcohol use	44.10	25.40	30.50	10.59*	.576	.692	1.201			
Drug use	30.50	25.40	18.60	10.38*	.833	.610	.732			
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	Wald (<i>df</i> = 2)	<i>d</i> (T1–T2)	<i>d</i> (T1–T3)	<i>d</i> (T2–T3)
Other outcomes										
Posttraumatic stress	48.37	2.10	45.43	2.20	40.32	2.24	9.31*	.122	.334*	.211*
Posttraumatic growth	29.25	.83	28.59	.88	29.08	.89	.65	.069	.018	-.052
Depressive symptoms	32.22	1.98	25.33	1.87	21.92	1.88	30.19*	.313*	.466*	.167*
Healthy days	19.09	.73	19.77	.88	20.62	.76	5.05†	-.077	-.182*	-.091
Personal progress	69.34	1.27	70.14	1.42	70.73	1.25	1.03	-.054	-.098	-.039
Sense of purpose	9.37	.38	9.60	.35	10.08	.33	2.98	-.055	-.175	-.130
Financial worries	4.17	.36	3.25	.38	2.53	.37	19.22*	.222*	.403*	.173†
Housing instability	4.10	.31	3.16	.36	2.28	.32	25.12*	.255*	.514*	.233*

Note. *N* = 59. Time 1 = baseline; Time 2 = 6-month follow-up; Time 3 = 12-month follow-up. RR = risk ratio for incidence change across time (for RR < 1, to calculate reduction in risk: [1-RR]*100).

† *p* < .10. * *p* < .05.

with T3; decrease in risk was 55.6%. For alcohol use, the decrease in risk was greatest from T1 to T2 (42.4%).

Turning to the other outcomes, repeated measures analyses estimated using regression analysis support mean differences over time for four of the eight outcomes (i.e., posttraumatic stress, depressive symptoms, financial worries, housing instability; i.e., Wald test column; Table 1). Examination of the effect sizes for mental health outcomes suggest the largest positive improvements when comparing T1 with T3 (i.e., *d* columns; Table 1). Posttraumatic stress also improved from T2 to T3. Depressive symptoms improved across all comparison points. Furthermore, the effect sizes suggest financial worries and housing instability decreased over time, with the largest difference when comparing T1 with T3 (i.e., *d* columns; Table 1). Healthy days increased over time (*p* < .10), particularly when comparing means at T1 with T3. Posttraumatic growth, sense of purpose, and personal empowerment did not change over time.

Aim 2: The Role of Program Involvement and Perceptions

Results of logistic regression analyses addressing Aim 2, which examined the role of program involvement and perceptions, suggest different patterns depending on the outcome variable. Starting with primary outcomes, models explained a moderate-to-large amount of variance across outcomes (Table 2). Among the covariates, there was variation as to which outcomes (as detailed in parentheses) they were related. Specifically, T1 levels of the outcome (i.e., IPV physical victimization and psychological perpetration; and sexual victimization—unwanted sexual contact and intercourse), income (i.e., IPV physical

victimization), and new resident status (i.e., IPV psychological and physical victimization, and psychological perpetration; and drug use) were significant. Among the independent variables, length of stay at SEEDs related to a decreased likelihood of sexual victimization (unwanted sexual contact) and substance use (alcohol and drug use) at the 12-month follow-up. Program involvement is related to a decreased likelihood of IPV physical victimization and to an increased likelihood of sexual victimization (unwanted sexual intercourse) both at the 12-month follow-up. Sense of community related to increased odds of IPV physical victimization at the 12-month follow-up.

Turning to the other outcomes, regression models explained a moderate-to-large amount of variance (Table 3). Among the covariates, T1 levels of the outcome (i.e., posttraumatic growth, depressive symptoms, healthy days, personal progress, financial worries, and housing instability) and household income (i.e., posttraumatic stress, depressive symptoms, healthy days, and sense of purpose) were significant. Among the independent variables, length of stay was related to decreased posttraumatic stress at the 12-month follow-up. Program involvement was related to increased posttraumatic growth, healthy days, and sense of purpose at the 12-month follow-up.

Aim 3: Living at SEEDs Versus Living at Places Other Than SEEDs

Regression models were used to examine the effects of living at SEEDs as compared with other places (Table 4). Women who lived at SEEDs did not differ from women who lived other places on substance use (alcohol and drug use), sexual victimization, physical victimization or perpetration, or posttraumatic growth.

Table 2
Results of Standardized Logistic Regression Models Predicting Primary Outcomes (T3)

Primary outcomes	Outcome ^a		Covariates (T1)		New resident status		Length of stay		Program involvement		Sense of community		R ²
	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR	
	Independent variables (T1–T3)												
Intimate partner violence	.20 (.18)	2.22	.12 (.16)	1.14	-.37* (.19)	.18*	-.43 (.29)	1.00	-.07 (.25)	.98	.31 (.20)	2.55	.16
Psychological victimization	.35* (.18)	16.07	.29* (.15)	1.78	-.69* (.21)	.00	-.11 (.22)	1.00	-.69* (.26)	.66*	.49* (.24)	12.49	.71*
Physical victimization	.32* (.15)	4.00	-.13 (.20)	.86	-.43* (.18)	.13*	-.35 (.28)	1.00	-.04 (.23)	.99	.07 (.20)	1.27	.24†
Psychological perpetration	.65* (.21)	.00	-.03 (.42)	.89	-.70 (.63)	.00	.07 (.43)	1.00	-.09 (.56)	.89	-.16 (.94)	.19*	.93
Physical perpetration													
Sexual victimization													
Unwanted sexual contact	.27* (.13)	7.04	-.04 (.16)	.83	-.06 (.17)	.65	-.99* (.25)	.99†	.32 (.22)	1.18	.20 (.17)	2.43	.63*
Unwanted sexual intercourse	.48* (.12)	140.28	.35† (.20)	2.08	.17 (.20)	4.09	-.05 (.43)	1.00	.72* (.27)	1.58	-.53† (.32)	.06*	.74*
Substance use													
Alcohol use	.06 (.11)	1.43	-.04 (.11)	.94	-.10 (.14)	.48	-.101* (.19)	.99*	.29† (.17)	1.17	.01 (.13)	1.05	.64*
Drug use	.24† (.13)	5.22	-.31 (.22)	.56†	-.33* (.17)	.08*	-.96* (.27)	.99†	.22 (.21)	1.14	.05 (.16)	1.31	.68*

Note. N = 59. T1 = baseline; T2 = 6-month follow-up; T3 = 12-month follow-up. OR = odds ratio.

^aBaseline (T1) measure of outcome of interest as listed in each row. Small, medium, and large R² are .0196, .1304, and .2592, respectively (<https://journals.sagepub.com/doi/abs/10.1111/1467-8721.ep10768783>).

† p < .10 (highlighted in italics). * p ≤ .05 (highlighted in bold).

However, the likelihood of psychological victimization and perpetration decreased for women living at SEEDs had $p < .10$ as compared with those living in another SLH or any homelessness, respectively. Furthermore, PTSD increased for those women living anywhere other than SEEDs. Compared with living at SEEDs, being homeless, living in a house/apartment, or other SLH related to increased depressive symptoms. Furthermore, being homeless and living at another SLH related to decreased personal empowerment and to increased financial worries compared with living at SEEDs. Healthy days increased for those living at SEEDs only compared with those living at other residences. Finally, at the level of $p < .10$, effects for healthy days, sense of purpose, and housing instability were in the expected directions for those living only at SEEDs compared with other residences during the study period.

Discussion

Little research to date has examined the role of SLHs in promoting recovering and healing among women with histories of DSV and SUDs. The purpose of this study was to examine changes over time in several psychosocial outcomes among women residing in SEEDs and to determine the extent to which engagement in and perceptions of SEEDs impacted changes over time. Overall, findings from this pilot study provide preliminary data that SEEDs promotes healing and recovery across several domains among women with histories of DSV and SUDs. More specifically, overall reductions in negative mental and physical health symptoms, alcohol, and drug use, DSV, and financial and housing insecurity were observed over time (Aim 1). Yet, there was no overall change over time in resilience-based outcomes, including posttraumatic growth and personal empowerment (Aim 1). It is possible that resilience-based types of outcomes take more time to emerge, perhaps after more immediate psychological, physical, relational, and financial/housing needs are met.

It is worth noting that although symptoms of PTSD and depression significantly decreased over time, they remained on average high at the follow-ups suggesting that a number of participants were still experiencing clinically significant distress. This aligns with previous research suggesting that PTSD and depression are often chronic conditions that co-occur with DSV, especially when tied to traumas such as sexual assault/partner violence in women (Morina et al., 2014; Steinert et al., 2015). What is more, the current study documented the ways in which engagement in SEEDs impacted healing and recovery across numerous domains. Length of stay at SEEDs was the most consistent predictor of positive outcomes over time. This is consistent with research on Oxford House residents, which finds that individuals with lengths of stays over 6 months have better outcomes specific to alcohol and drug use as well as employment compared with those staying less than 6 months (Jason et al., 2016). Interestingly, program involvement and sense of community were infrequently related to changes in outcomes over time, and sense of community was actually related to increased physical IPV victimization (although this could be a spurious finding or related to measurement issues; see limitations). Although in need of future research, this finding suggests that even among women who may not fully engage in SEEDs and or feel particularly connected to other women in SEEDs, if they continue to reside in SEEDs, positive outcomes are more likely.

Table 3
Results of Regression Models Predicting Other Outcomes (T3)

Outcome (T3)	Covariates (T1)						Independent variables (T1–T3)						<i>R</i> ²
	Outcome ^a		Income		New resident status		Length of stay		Program involvement		Sense of community		
	<i>b</i> (SE)	<i>B</i>	<i>b</i> (SE)	<i>B</i>	<i>b</i> (SE)	<i>B</i>	<i>b</i> (SE)	<i>B</i>	<i>b</i> (SE)	<i>B</i>	<i>b</i> (SE)	<i>B</i>	
Posttraumatic stress	.17 (.13)	.18	3.23* (.13)	.36	−9.90 [†] (5.24)	−.27	−.03* (.01)	−.48	−.36 (.47)	−.13	6.61 [†] (3.55)	.28	.29*
Posttraumatic growth	.40* (.12)	.40	−.59 (.43)	−.16	1.88 (2.13)	.13	−.00 (.00)	−.17	.46* (.18)	.40	1.70 (1.33)	.17	.40*
Depressive symptoms	.50* (.10)	.57	2.00* (.89)	.26	−5.84 (4.19)	−.19	−.01 (.01)	−.21	−.13 (.37)	−.05	−.01 (2.85)	.00	.41*
Healthy days	.61* (.10)	.64	−.96* (.33)	−.30	1.60 (1.53)	.13	.00 (.00)	.02	.26* (.13)	.27	−.25 (1.04)	−.03	.53*
Personal progress	.30* (.11)	.33	−1.13 [†] (.62)	−.22	1.42 (2.98)	.07	.01 (.01)	.16	.23 (.25)	.15	2.38 (1.96)	.17	.36*
Sense of purpose	.07 (.11)	.09	−.38* (.17)	−.28	−.73 (.88)	−.14	−.01 (.00)	−.15	.15* (.07)	.35	.42 (.57)	.12	.30*
Financial worries	.41* (.13)	.43	.13 (.19)	.09	−.90 (.91)	−.15	−.00 (.00)	−.13	.03 (.08)	.07	−1.13 [†] (.61)	−.28	.35*
Housing instability	.34* (.14)	.35	.15 (.18)	.11	−.63 (.85)	−.12	.00 (.00)	.11	−.06 (.08)	−.15	−.29 (.57)	−.08	.16[†]

Note. *N* = 59. T1 = baseline; T2 = 6-month follow-up; T3 = 12-month follow-up.

^a Baseline (T1) measure of outcome of interest as listed in each row. Small, medium, and large *R*² are .0196, .1304, and .2592, respectively (<https://journals.sagepub.com/doi/abs/10.1111/1467-8721.ep10768783>).

[†] *p* < .10 (highlighted in italics). * *p* ≤ .05 (highlighted in bold).

It is important to note that for several outcomes, engagement in SEEDs and SEEDs sense of community did not predict changes over time. For example, despite reductions in most forms of DSV victimization and perpetration over time, engagement in SEEDs and SEEDs sense of community were unrelated to these changes. It is possible that shorter lengths of stay at SEEDs could have helped women to achieve safety as well as skills and confidence that reduced their subsequent risk for DSV. Indeed, in a previous study with women who had participated in the SEEDs program, higher SEEDs sense of community was cross-sectionally related to higher sexual assault resistance self-efficacy (Edwards et al., 2018). Alternatively, environments other than SEEDs (e.g., other

SLHs and inpatient treatment) may also play a role in helping to reduce risk for subsequent DSV. Despite not predicting reductions in DSV over time, engagement in SEEDs did reduce depressive and PTSD symptoms associated with DSV experiences.

Findings also documented that living at SEEDs for the entire duration of the project was, in general, related to better outcomes compared with women who lived at other SLHs and women who were homeless. Although the finding regarding homelessness is not surprising, the finding that women who resided at SEEDs fared better in general compared with women at other SLHs is an interesting finding that warrants future research given the vast heterogeneity in the types of SLHs that exist and that women with

Table 4
Results of Standardized Models Examining Place of Residence on Outcomes (T3)

Outcome (T3)	Independent variable (T2–T3 dummy codes)				<i>R</i> ²
	Any homelessness <i>β</i> (SE)	Apartment/house <i>β</i> (SE)	Other shelter <i>β</i> (SE)	Other residence <i>β</i> (SE)	
Intimate partner violence					
Psychological victimization	.29 (.18)	−.02 (.22)	.31[†] (.18)	.29 (.22)	.26*
Physical victimization	.06 (.61)	−.11 (1.08)	.01 (.20)	−.76 (4.53)	.83
Psychological perpetration	.34[†] (.18)	.05 (.22)	.24 (.19)	.04 (.25)	.31*
Physical perpetration	.01 (.12)	.02 (.26)	.03 (.33)	−.44 (10.71)	.95
Sexual victimization					
Unwanted sexual contact	.18 (1.39)	.04 (.35)	.16 (1.29)	−.80 (2.94)	.80
Unwanted sexual intercourse	−.72 (6.78)	−.05 (.47)	.01 (.16)	−.68 (8.40)	.85
Substance use					
Alcohol use	.85 (.41)	.94 (2.10)	.94 (.64)	.78 (1.73)	.90
Drug use	.79 (7.29)	.81 (8.79)	.72 (7.62)	.02 (18.59)	.92
Other outcomes					
Posttraumatic stress	.51* (.13)	.36* (.13)	.31* (.13)	.51* (.16)	.38*
Posttraumatic growth	−.16 (.13)	−.08 (.14)	.16 (.14)	−.11 (.19)	.32*
Depressive symptoms	.45* (.12)	.23* (.12)	.33* (.12)	.24 (.15)	.51*
Healthy days	−.22 [†] (.12)	−.17 (.12)	−.10 (.12)	−.36* (.15)	.53*
Personal progress	−.51* (.12)	−.11 (.13)	−.29* (.13)	−.17 (.17)	.43*
Sense of purpose	−.24 [†] (.13)	−.07 (.14)	−.08 (.14)	−.34* (.18)	.30*
Financial worries	.33* (.12)	−.05 (.12)	.34* (.12)	.24 (.16)	.46*
Housing instability	.43* (.13)	−.08 (.13)	.20 (.13)	.30[†] (.17)	.38*

Note. *N* = 59. Covariates (T1 outcome, income, and new resident status) were included in the model (as represented in Tables 2 and 3) but are not presented here for simplicity. Place of residence reference group (0) = SEEDs only. Small, medium, and large *R*² are .0196, .1304, and .2592, respectively (<https://journals.sagepub.com/doi/abs/10.1111/1467-8721.ep10768783>). SEEDs = Support, Education, Empowerment, and Directions program.

[†] *p* < .10 (highlighted in italics). * *p* ≤ .05 (highlighted in bold).

histories of DSV and SUDs are likely in need of SLHs that are both trauma-informed and gender-responsive, such as SEEDs. These findings also align with research showing benefits of gender-specific treatments and recovery programs for women with alcohol problems and trauma (Greenfield et al., 2014; Hien et al., 2009; Najavits et al., 2006; Zemore et al., 2018).

Notwithstanding the important information gleaned from the current study, there are several limitations that should be noted. First, the sample size was small and lacked diversity, and SEEDs is located in one city in the United States, which means the findings may not be generalizable to more diverse groups of women and that SEEDs may not have similar outcomes in other regions of the United States. Second, we did not conduct an experimental evaluation and thus causality is unknown. Future research using larger, more diverse samples comparing outcomes among women participating in various SLH models is needed. Similarly, research is needed that examines women with histories of DSV and SUDs who reside in SLHs compared with women with histories of DSV and SUDs who receive treatment and do not reside in SLHs. However, this type of evaluation could be challenging given that there is no standardized intervention delivered to women in SEEDs as the program is tailored to the needs of women and depends on their adherence to recommended services. Along these lines, we did not have a sufficient sample size to examine if the type of SEEDs activities with which women engaged predicted outcomes over time. Thus, we were limited in our analyses to a count of the number of different ways in which women engaged with SEEDs. Also, data were all self-report so subject to potential recall and response bias. Future research could benefit from obtaining objective sources of data (e.g., medical records). Furthermore, the follow-up periods were relatively short, which limits understanding of long-term impacts of participation in SEEDs. Also, data were self-report which raises concern about recall bias especially on some variables such as length of stay at SEEDs. What is more, although we assessed current relationship status at each timepoint, we did not assess if participants were in any type of relationship during the past 6 months, which precluded us from selecting only women in recent relationships (past 6 months) for IPV analyses. Finally, we used an older version of the PTSD Checklist–Civilian Version (Weathers et al., 1993) which is based on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, rather than *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, criteria for PTSD.

Despite the limitations, the current study offers several important implications for practice. As documented in the current study, women with histories of DSV and SUDs have myriad needs which suggest that SLHs will likely be most impactful if they provide comprehensive, trauma-informed, and gender-responsive services to women and/or ensure that there are ways to connect women with community resources to support their needs. Furthermore, these data suggest that engagement in, and to some extent perceptions of a trauma-informed, gender-responsive SLHs, plays an important role in promoting recovery from DSV and SUDs. As such, finding ways to enhance the length of stay among women in SLHs and engagement in various activities and services offered by SLHs is critical. Also, there is a great deal of variability in the approximately 17,900 SLHs in the United States, and they often lack regulatory oversight (Jason et al., 2020; Miles et al., 2021). The extent to which existing SLHs foster environments for recovery and

healing specifically for women with histories of DSV and SUDs is unknown. Thus, there is a need to develop a directory of SLHs in the United States that includes detailed information about each SLH, including the extent to which they are designed specifically for women with histories of DSV and SUDs (Jason et al., 2020). Along these lines, operators of SLHs are often in need of technical assistance to enhance the provision of evidence-based services (Miles et al., 2021), and this likely includes technical assistance on creating spaces conducive to recovering and healing among women with histories of DSV and SUDs.

In conclusion, data from the current study provide preliminary evidence that a trauma-informed, gender-responsive SLH promotes recovery and healing among women with histories of DSV and SUDs. What is more, length of stay with the SEEDs program was the most consistent predictor of changes in outcomes over time. Although in need of more rigorous evaluation, these preliminary data suggest that similar models to SEEDs should be considered in other locales to increase the range of options available when addressing the unique needs of women with histories of DSV and SUDs.

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