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Substance Use Treatment Accessibility for Pregnant and Postpartum Women

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BY

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ABSTRACT

This study aimed to (1) characterize substance use treatment preferences, barriers, and attitudes in an under-represented sample of pregnant and postpartum women; (2) examine associations between barriers and help-seeking preferences, treatment attitudes, treatment engagement, substance use, and well-being; and (3) examine moderating effects of culture. Participants were 27 women, most of whom were treatment-experienced, of ethnic minority status, and from lower-income households. Results indicated flexibility in treatment preferences, and positive attitudes about treatment despite an extensive number of barriers. Participants indicated greater interference from stigma, relative to instrumental barriers. Qualitative responses revealed unique barriers experienced by this sample, and offspring well-being was most frequently mentioned as a factor motivating treatment engagement. Aim 2 associations were not demonstrated. However, limiting analyses to an ethnic minority subsample revealed unique associations of acculturation and enculturation with each other and family-related treatment barriers. Conclusions include implications for intervention and future research with this population.

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Introduction

Maternal substance use poses significant risks to the physical health and well-being of both mother and child, and is associated with significant distress within the family. Prenatal substance use has been associated with poorer infant health indicators at birth including premature birth, low infant weight, fetal alcohol spectrum syndrome, substance withdrawal symptoms, and later problems such as delayed mental and motor development (Behnke & Eyler, 1992; Centers for Disease Control and Prevention (CDC), 2009; Coleman, Coleman, & Murray, 1990; Handmaker, Miller, & Manicke, 1999; Little et al., 1989; Nuckolls, Cassel, & Kaplan, 1972). During the postnatal months, maternal substance use has been associated with greater risk of child abuse and neglect, loss of custody, and physical, academic, and socio-emotional delays in the child (Conners, Bradley, Mansell, Liu, Roberts, & Burgdorf, et al., 2004; Jester et al., 2000; McGlade, Ware, & Crawford, 2009). Additionally, problems with substance use directly impact mothers' physical and mental well-being, often being associated with poorer nutrition, higher rates of depression, poorer relationship satisfaction, and increased risk of intimate partner violence (Chapman & Wu, 2013; Fleming et al., 2008; Marshall, 2003; Mellingen, Torsheim, & Thuen, 2013; Fleming et al., 2008; Jester et al., 2000).

Pregnancy and the time following birth represent acute periods of adjustment and place additional mental and physical demands on the mother, rendering this a time of heightened stress and vulnerability for some. For mothers with histories of substance use problems, their child's health and well-being has been cited as an instrumental motivator for abstinence during pregnancy and reduction in use following birth (Fried et al., 1985). Nevertheless, added stressors during pregnancy and the postpartum period also may place some women at risk for continued use or relapse. It has been estimated that 5-20% of women continue to drink after recognizing

they are pregnant, and approximately 2-6% of women continue to binge drink while pregnant (4 or more drinks in one sitting; CDC, 2002; 2009; Chang, 2000; Flynn et al., 2003; Jagodzinski & Fleming, 2007; McLeod et al., 2002; Stratton et al., 1996; Ockene et al., 2002; Pirie et al., 2000). It has been estimated that 5.4% of women have used illicit drugs such as opiates and opioids, stimulants, cannabis, and non-prescribed prescription medication while pregnant (US Department of Health and Human Services (USDHHS), Office of Applied Studies, 2013). Although these are relatively small percentages, they represent large numbers of women and the known risks render these numbers clinically significant. Furthermore, researchers caution that the above statistics are likely underestimates given the likelihood of underreporting (USDHHS, Office of Applied Studies, 2010).

Given the risks involved with maternal substance use, engaging this population in treatment has been an ongoing endeavor for clinicians and researchers alike. However, women generally are less likely than men to enter substance use treatment (Greenfield et al., 2007); among pregnant and postpartum women who meet criteria for any psychiatric disorder, only 5-10% have been found to seek treatment (Andersson et al., 2003, 2006; Kelly, Russo, & Katon, 2001). Furthermore, studies have shown that women who use substances while pregnant are likely to have fewer monetary resources, less education, histories of abuse and trauma, and less access to healthcare (Brady, Visscher, Feder, & Burns, 2003). These factors also serve as barriers to treatment; thus the most vulnerable members of the community are more likely to struggle with substance use around the time of pregnancy and experience more challenges gaining access to care. Given the continued prevalence of prenatal substance use and its impact, efforts to improve treatment accessibility are imperative.

Treatment Barriers

Women, and specifically mothers, face a number challenges that deter help seeking behavior. These obstacles include a complex intertwining of instrumental, emotional, and ethno-cultural factors.

Instrumental barriers. Instrumental barriers are those that involve monetary resources or one's physical ability to seek treatment. Particularly for mothers, these barriers include child care needs, lack of insurance, time, transportation, and financial constraints (Caplan & Whittemore, 2013; Dworkin et al., 2017; Goodman, 2009). Given these barriers, the appropriateness of available treatment models has been called into question. Most extant substance use treatments are based on individualistic, male-based recovery models and do not cater to the specific needs of women or mothers (Copeland & Hall, 1992; Finkelstein, 1993). Traditionally, many treatment programs require extended stays and do not offer childcare assistance (Breibart, Chavkin, & Wise, 1994). Furthermore, many treatment options are limited to private insurance holders and do not provide transportation assistance (Breibart, Chavkin, & Wise, 1994). Lastly, many stand-alone mental health treatment providers will not accept pregnant users into treatment due to liability concerns (Lester, Andreozzi, & Appiah, 2006). Thus the availability of substance use treatment for pregnant women is both limited and at times inaccessible for those with constrained resources.

Emotional, stigma, and cultural barriers. Emotional barriers are those that involve mistrust in treatment providers or fear of negative repercussions as a result of treatment engagement. One of the most prevalent and impactful emotional barriers to substance use treatment among pregnant and postpartum mothers is fear of being separated from their children as a result of child protective service involvement (Jessup, Humphreys, Brindis, & Lee, 2003). Given mandatory reporting laws and the likelihood of child protective service involvement

regardless of child placement outcomes, this often is a realistic fear with which mothers seeking treatment have to contend.

Fear of stigmatization is another emotional barrier that has been widely studied and is of particular concern for pregnant and postpartum mothers struggling with substance use. Vogel and colleagues (2007) defined stigma as "a mark or flaw resulting from a personal or physical characteristic that is viewed as socially unacceptable." Studies demonstrate that even during recent years the general public has espoused negative attitudes about people with identifiable disorders or those seeking mental health care (Angermeyer & Dietrich, 2006; Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000; Vogel, Wade, & Haake, 2006). Furthermore, societal views of substance use as a moral failing or a result of weak willpower intensify the stigma attached to those experiencing substance use problems, resulting in more punitive and unforgiving attitudes toward mothers (Finkelstein, 1994; Jessup & Green, 1987). Studies have indicated that public stigma is perceived and internalized by mothers struggling with substance use, and the resulting feelings of inadequacy as a mother, as well as guilt and shame, can discourage women from seeking help (Jacobs, 2014). In many cases potential clients fear judgment not only from providers, but also from their families and social circles, leaving many mothers socially isolated in their efforts to stop or reduce substance use (Jessup et al., 2003; Mayer & Timms, 1970).

Some research indicates that the negative impacts of perceived stigma on treatment engagement may be compounded for ethnic minority individuals. Gary (2006) proposed that ethnic minority individuals experience "double stigma" as a result of societal marginalization based on racial discrimination combined with marginalization due to mental illness. In partial support of this theory, Nadeem and colleagues (2008) found that Black immigrant women were more likely than White women to report stigma-related barriers to mental health care. However,

differences between White and other minority participants in this study were not observed. Although Nadeem and colleagues' (2008) study was not specific to women with substance use concerns, the findings may be translatable to this specific population.

It also has been proposed that ethnic minority individuals may experience compounded threats of stigma due to specific cultural values. For instance, individuals from more collectivistic cultural backgrounds may perceive greater threats of stigma if they believe that exposing a mental health or substance use problem would stigmatize their family as well (Gary, 2006). Individuals from more collectivistic backgrounds also may be more influenced by the opinions of family members and fear of negative feedback from family members may inhibit help-seeking behaviors. As an example, Caplan and Whittemore (2013) interviewed Latina women who met criteria for depression and experienced abuse within their families. They found that women who attributed their depressive symptoms to their experiences of family violence did not expect their families to be supportive and expected to be blamed for their experiences. They cited these as reasons for not seeking help from family members or treatment programs. Caplan and Whittemore (2013) also determined that participant responses evidenced strong values of *familismo* (strong identification with, attachment to, and loyalty within one's family) and *marianismo* (feminine submissiveness and self-sacrificing generosity). Caplan and Whittemore (2013) concluded that collectivistic cultural values, traditional gender roles, and fear of negative responses from family members influenced participants' choices to keep their problems to themselves and not seek assistance. Thus, certain cultural values regarding fealty towards one's family may be in conflict with help-seeking behaviors when perceived threats of stigma are present. Given that perceived stigma is a well-documented treatment barrier among many

mothers with substance use concerns, it is possible that felt stigma due to racial discrimination or familial repercussions may augment stigmatic effects in this population as well.

Other emotional or cultural barriers may persist as a result of communal attitudes toward mental health care. For instance, past negative experiences with providers as a result of discriminatory practices or language barriers may lower a community's overall confidence in western treatment models and in turn effect lower rates of treatment engagement. Furthermore, in social circles where professional mental health care is used less frequently, awareness of available services may be lacking (Diez Roux, 2012). As those with fewer monetary resources are less likely to engage in treatment, awareness of available services may be particularly lacking in lower income communities (Diez Roux, 2012). Thus emotional and instrumental treatment barriers are usually overlapping, and at times compounded by ethno-cultural factors for some individuals.

Treatment Studies

Unfortunately, treatment barriers not only impact lower income and ethnic minority individuals' access to care but also their representation in the treatment literature. Most studies of substance use treatment for pre- and post-natal mothers have recruited women from obstetric centers, thereby testing substance use treatment on samples of already treatment-engaged individuals and women who likely have more resources at their disposal. Many of these samples have been constituted primarily of white, middle class, English-speaking women. Despite this limitation, studies have provided some meaningful indications for improving treatment access for women.

Residential care. Research has indicated that meeting the gender-specific and parenting needs of women can lead to better substance use treatment outcomes. For instance, Copeland

and Hall (1992) compared characteristics of female patients choosing to attend a female-centered versus a coed inpatient substance use treatment facility. Aside from gender distributions, the treatment programs differed in specific programming content and whether children were allowed to accompany patients in the female-centered treatment facility. The researchers found that women choosing to enter the female-only treatment program were more likely than women in the coed facility to have young children, to identify as lesbian, to have a mother with a history of substance use problems, and to have been subjected to sexual abuse during childhood (Copeland & Hall, 1992). This study indicated some significant barriers to substance use treatment, including childcare needs and histories of trauma that might lead women to avoid coed treatment groups and require specific treatment approaches. Copeland and Hall (1992) concluded that programs attempting to meet gender-specific needs may reach a sector of the population that might not otherwise seek treatment, or perhaps drop out of treatment prematurely.

Integrated health care programs. Within samples of pregnant and postpartum women, researchers found that integrated substance use treatment programs have demonstrated promise in meeting the needs of pregnant and postpartum mothers. These programs take a holistic approach to substance use treatment in order to address substance use as well as other areas of well-being that might influence women's sobriety or challenge their ability to engage in treatment. Such programs typically combine case-management, psychological, and medical services.

Jansson and colleagues (1996) evaluated the outcomes from one such program and compared them with outcomes from a group of matched controls. Participants were patients at the Center for Addiction and Pregnancy, a comprehensive care program developed by the Maryland State Alcohol and Drug Abuse Administration and the Johns Hopkins Bayview

Medical Center. Participants were primarily African-American (85%) and demonstrated some high risk characteristics upon admission, including high unemployment rates (67.7%), criminal justice system involvement (16.1% on probation or parole and 56.5% endorsing previous arrests), and histories of mental health concerns including depression (48.4%), anxiety (21.0%), and suicidal ideation (32.3%). Jansson and colleagues (1996) found that compared to women in the comprehensive care program, matched controls were 2.5 times more likely to have infants requiring NICU stays. Furthermore, NICU stays were, on average, six times longer for controls than for infants of women participating in the comprehensive care program. Collectively, the savings in hospital costs amounted to about $5,000 per mother-infant pair. Two later studies demonstrated that a particularly important component of integrated care programs might be case management services, as intensifying or providing more case management has been related to better treatment retention, lower substance use rates, and higher rates of child custody retention (Jansson et al., 2003; 2005).

Meta-analytic and systematic reviews of integrated program outcome data have reported similarly positive findings. One meta-analysis of ten studies from 1990 to 2009 found that integrated substance use programs, compared to non-integrated stand-alone substance use treatment, were related to better birthing outcomes including higher birth weights, larger head circumferences, fewer birth complications, fewer positive toxicology screens, and fewer pre-term births (Milligan et al., 2011b). Milligan and colleagues (2011b) also found that participation in integrated programs was related to more prenatal visits. More recent systematic reviews of integrated substance use treatment for mothers have corroborated these findings. Niccols and colleagues (2012a) examined child outcomes in a literature review of 13 studies of integrated substance use treatment for mothers from 1990 to 2011. Two of these studies included non-

treatment comparison groups; the collective results of these studies indicated that children of women in the integrated programs demonstrated superior outcomes in terms of growth measurements following birth (i.e., weight, height, and head circumference) as well as emotional and behavioral development. Niccols and colleagues (2012b) conducted a separate systematic review of integrated substance use programs and found similarly positive effects for mothers. Of the 31 studies reviewed (dated from 1990 to 2011), three were randomized trials that included treatment-as-usual comparison groups. These studies collectively attributed a small effect in improved parenting to the integrated substance use programs. Furthermore, these studies found that improvements in parenting skills were related to particular aspects of the integrated programs, including participation in attachment-based parenting interventions and having one's children live with them at the facility. Improvements in parenting also were found to be related to overall maternal mental health and well-being (Niccols et al., 2012b). In terms of treatment engagement, a systematic review by Milligan and colleagues (2011a) found that integrated treatment programs, compared to non-integrated treatment programs, were related to more days in treatment. It is likely that the success of integrated healthcare programs lies primarily in their ability to address many of the barriers described above due to their multifaceted, wraparound approach and variety of care providers. Furthermore, some researchers have suggested that access to prenatal medical services may serve as a gateway to mental health care involvement, and that combining services obviates the need for patients to navigate the sometimes limited availability of stand-alone mental health services (Bien et al., 1993).

Family therapy models. Some research has indicated potential benefits for moving away from individualistic models of therapy to offering substance use treatment in the context of couple or family therapy. A brief intervention trial by Chang and colleagues (2005) offered

partner-involved treatment to obstetric patients who had engaged in prenatal alcohol use. A total of 304 pregnant women and their partners were randomized to the brief intervention condition or assessment only control group. Participants in the brief intervention condition received a single 25 minute session delivered by a nurse practitioner or the study's principal investigator. This session was formatted to include a knowledge assessment with feedback, a section on contracting and goal setting, behavior modification, and a summary discussion. Following the post-intervention assessment, Chang and colleagues (2005) found that alcohol use declined for both the treatment and control groups, but among pregnant women identified as heavy drinkers at the time of study enrollment, the brief intervention was more effective than assessment alone. Chang and colleagues (2005) also were able to test the potential benefit of including a partner in treatment, as an unintended subsample of 14 participants had partners who did not participate in the brief intervention. Thus, Chang and colleagues (2005) compared the results of this subsample to the 118 participants who received the brief intervention as planned. Ultimately they found that the brief intervention was more effective for heavier drinking women who participated with a partner. Given the prior research that has indicated the benefits of partner-involved treatment (McCrady et al., 1991; 2009; 2017), it seems plausible that the presence of a partner could have accounted for the observed treatment gains. However, it also is possible that participants with absent partners represented a subsample with overall lower levels of social support or perhaps greater relationship distress. The lack of randomization for this analysis makes it difficult to rule out this possibility or draw causal conclusions regarding the benefit of partner-involved treatment. Nevertheless, these findings suggest a potential benefit of focusing treatment efforts on environmental and social factors in addition to individual factors.

Brief interventions in primary care settings. Individual treatment for pre- and post-natal substance use has often been studied in brief intervention format using participants from obstetric care offices. Fleming and colleagues (2008) spearheaded one such study through their Healthy Moms Project. This research initiative recruited women who were receiving routine postpartum care. Potential participants were screened initially and determined to be at high risk of alcohol misuse based on their quantity and frequency of use prior to or during pregnancy. In total, 235 participants were randomized to receive the brief intervention or usual care. The brief intervention consisted of four 15 minute sessions, guided by motivational interviewing and cognitive behavioral therapy concepts. At six months following treatment, Fleming and colleagues (2008) found that women who received the brief intervention reduced their alcohol use to a significantly greater extent than the control group.

In another study, Yonkers and colleagues (2012) conducted a trial of a brief intervention for pregnant mothers that combined motivational enhancement therapy with cognitive behavioral therapy into six 30 minute sessions delivered by trained nurses. These sessions were administered at an obstetrics office, alongside the patients' prenatal and immediate postpartum care appointments. This intervention was compared to a brief advice condition, which was delivered by the participants' physicians and lasted about one minute per visit. The outcome of interest was days of use in the three months prior to and three months following delivery. Yonkers and colleagues (2012) found that both the intervention and brief advice control groups demonstrated a typical pattern of reducing their combined drug and alcohol use over the course of pregnancy and increasing use following delivery. However, Yonkers and colleagues (2012) found no significant differences between groups in the percentage of using days during the two assessment periods, before and after delivery.

In a more recent study, Rubio and colleagues (2014) presented data from a randomized, controlled, effectiveness trial of a brief motivational enhancement intervention for pregnant mothers. Participants were 330 women who were at least 20 weeks pregnant at the time of enrollment, and who had reported at least weekly alcohol use or a binge of four or more drinks during the year prior to their pregnancy. Participants in the treatment condition were given five sessions of brief motivational enhancement therapy (Miller, Zweben, DiClemente, & Rychtarik, 1992). Overall, Rubio and colleagues (2014) found that the brief motivational intervention was not significantly more effective than the treatment-as-usual control condition.

Overall, neither study that began during pregnancy demonstrated significant treatment effects. One aspect that Yonkers et al. (2012) and Rubio et al. (2014) had in common is that, perhaps in part because they were recruiting during pregnancy, many of the women in their studies had already reduced or ceased substance use at the time of assessment, thereby limiting the amount of change that could occur over the course of treatment. Both Yonkers et al. (2012) and Rubio et al. (2014) used past substance use as an indicator of risk. Yonkers and colleagues (2012) assessed for substance use prior to pregnancy, and Rubio and colleagues (2014) assessed for substance use in the 28 days prior to intake, likely toward the beginning of patients' pregnancies. However, substance use at the start of the prenatal intervention, which is typically lower than pre- pregnancy and early pregnancy drinking rates, was what was compared to follow-up assessments. Yonkers and colleagues (2012) acknowledged this possibility of a ceiling effect, also noting that their brief intervention might have been more effective in a higher risk sample.

Computerized brief interventions with postpartum women. As exemplified above, many of the intervention studies targeting prenatal or postpartum substance use have been

conducted with samples of women receiving routine obstetrics care. A key benefit of recruiting from obstetric care facilities is that it targets women who might not otherwise seek treatment for their substance use. Brief interventions in primary care settings might address some barriers by providing a convenient way to receive services while getting routine medical care. Brief interventions also have the potential to be cost effective for both the patient and the hosting clinic (Handmaker, Miller, & Manicke, 1999; Handmaker & Wilbourne, 2001; Jannson et al., 1996; McCollister & French, 2003). Furthermore, brief interventions might serve as stepping stones to other treatment providers and community services if longer-term counseling is desired.

Nevertheless, interventions based in obstetric clinics neglect a substantial portion of the target population, particularly those who may lack the resources to seek routine obstetric care; and much of the research on prenatal alcohol use in primary care facilities has been conducted with samples of primarily white non-Hispanic, middle class, English-speaking women (e.g., Chang et al., 2005; Fleming et al., 2008; Wilton et al., 2009). Ondersma and colleagues (2014) noted that although not all women seek routine prenatal care, most women in the U.S. give birth in hospitals. Thus conducting hospital intervention trials with women shortly after birth may be a way to target a more representative sample. Ondersma and colleagues (2005; 2007; 2014; 2016) developed a computerized substance use intervention, intended to be integrated with routine hospital care following birth. The intervention is delivered in a single session by an animated narrator and involves three major components guided by motivational interviewing and brief intervention tenets: (a) computerized feedback based on the participant's self-reported drug use, consequences, and readiness to change, (b) elicited interaction in which the participant chooses from a list of pros and cons those that are most applicable to themselves, and (c) a summary and optional goal-setting. Randomized trials of this intervention have been conducted

for both alcohol and drug use. In each study, participants were recruited from hospital settings shortly after giving birth, and samples were constituted primarily of lower income, African American mothers (81.3%-97.2%). An earlier randomized trial of this intervention (2007) was tested with women who reported high-risk illicit drug use prior to pregnancy. Participants were assessed for drug use shortly after birth and reassessed four months following. A significant effect was found favoring the intervention group, such that controls tended to demonstrate higher levels of drug use at the four month follow-up assessment. A later randomized trial of the computerized intervention (2014) found that drug use was lower for the intervention group compared to controls at three months follow-up, but not six months follow-up. This indicated that although the intervention demonstrated some initial gains, benefits were not maintained over the extended assessment period. This may have been due partially to additional components offered in the earlier randomized trial that were not included in the later randomized trial; the omitted components included an incentive for seeking additional treatment and two added motivational mailings. Ondersma and colleagues (2016) also tested this computerized intervention with recently postpartum women demonstrating high risk alcohol use prior to pregnancy. Although qualitative data indicated that the intervention was well-received by participants (Ondersma et al., 2005), quantitative measurement of alcohol use trends following birth indicated no significant differences between the intervention group and controls at three months follow-up (Ondersma et al., 2016). It is possible, again, that these samples were representative of slightly lower risk individuals given that inclusion criteria were based on pre-pregnancy rather that during-pregnancy substance use rates. In line with human-delivered brief intervention research, it is possible that computerized brief interventions might be more effective with higher risk samples. It also is possible that human factors such as empathy and positive

regard are crucial and partially accountable for the lack of effects demonstrated by computerized interventions. Although computerized brief interventions have yielded mixed results, it is possible that their demonstrated accessibility and feasibility warrant further research consideration.

Interventions with community samples. In continued effort to address the gap in diversity within treatment samples, some researchers have sought participants outside medical care settings. As an example, O'Connor and Whaley (2007) conducted brief intervention trials in 12 Special Supplemental Nutrition Programs for Women, Infants, and Children (WIC) centers in Southern California. They recruited a low income minority-majority sample of 345 pregnant women who were still drinking at the time they were screened. Participants were randomized to either the brief intervention or an assessment-only condition. As a part of the usual WIC program, participants were already receiving individual nutrition education. The brief intervention in this study involved adding a workbook to be completed at these meetings with a nutritionist. The workbooks included components of education and feedback, cognitive behavioral techniques, goal setting, and contracting related to alcohol use. Follow-up data indicated that women who had received the brief intervention were five times more likely to be abstinent by the third trimester, compared to women who had received assessments only.

In another minority-majority sample, Field and colleagues (1998) provided educational and social services to adolescent postpartum mothers in a vocational program. The treatment group consisted of poly-substance using mothers who had had substance-exposed pregnancies. Outcomes from this group were compared to two control groups: one without substance use histories and one with substance use histories who did not receive treatment. Participants in the treatment condition attended half-day sessions of school, which included vocational and

parenting classes along with social skills, self-care, and substance use treatment. The substance use treatment portion included group therapy, psychoeducation, urine tests, 12 step self-help groups, and individual therapy. Participants were additionally provided with instrumental support through child care, vocational advisement, and housing assistance. Several health indicators were monitored over the course of the intervention and compared between groups. At the start of treatment, substance-using participants were significantly higher on measures of depression and anxiety, and assessed to have inferior interactions with their infants, compared to non-substance using participants. By the 6th month of treatment, these differences between groups had diminished. They also found that compared to non-treatment controls, the mothers with drug exposed pregnancies demonstrated fewer incidents of relapse, fewer repeat pregnancies, higher rates of school completion, and more job placements following the program. Thus the success in multiple domains reported by this study seems to mirror the multiple benefits found by other wraparound service providers as described above (Milligan et al., 2011a; Niccols et al., 2012b).

Collectively, the above treatment studies indicate that pre- and post-natal substance use interventions seem to be most successful when targeting high risk clients, providing instrumental support, and taking into account the client's larger social context. Given the evidence that some interventions might be particularly helpful for more disadvantaged women (Field et al., 1998; O'Connor & Whaley, 2007), an ongoing challenge is to determine what discourages women from seeking treatment so that those barriers can be addressed. Seeking study samples from the community in lieu of medical centers may help illuminate these barriers, and yield more generalizable findings through the recruitment of more diverse samples.

Alternative Treatment and Help-Seeking Preferences

There is consistent evidence to suggest that immigrant and minority community members continue to be an underserved population in treatment. For example, in a survey study of pregnant and postpartum adolescents entering substance use treatment, Coleman-Cowger (2012) found that despite comparable levels of treatment need as indicated by co-occurring diagnoses, criminal justice system involvement, and histories of trauma, African American and Hispanic girls received less mental health treatment compared to their Caucasian counterparts. Furthermore, substance use treatment outcome data indicate poorer outcomes for Latinx clients relative to the general population, despite comparable levels of overall use (Alvarez et al., 2007). Given these treatment disparities, some investigators have looked into whether ethno-cultural background influences help-seeking preferences, and whether alternative support is sought in lieu of western health services. Data on women's help-seeking preferences are lacking for mothers with pre- or postnatal substance use concerns; however several studies have examined the treatment preferences of pregnant and recently postpartum women experiencing depression or other emotional problems. For instance, Alvidrez and Azocar (1999) found that Black, Latina, and White women in obstetrics settings collectively preferred individual therapy and psychoeducational classes about general health, followed by group therapy, prevention programs, and mood management classes. Medication was found to be least desirable. Nadeem and colleagues (2008) interviewed women from low-income service providers, such as WIC and Title X family planning clinics, and sought to determine whether ethnic differences were seen in treatment experiences and preferences. Their sample was made up primarily of U.S.-born Black participants (n=873) and immigrant Latina participants (n=736), along with U.S.-born White participants (n=145), Immigrant Black participants (n=101), and U.S.-born Latina participants (n=33). Participants who had self-identified as having an emotional problem were asked about

their preferences and experiences with five different sources of help including medication, individual counseling, group counseling, family and friend support, and faith. The researchers found that only 10% of those with an emotional problem were receiving mental health treatment. Of the entire sample that endorsed having an emotional issue, whether or not they were receiving treatment, differences by ethnic group were seen in which help sources participants viewed as potentially helpful. With the exception of U.S.-born Latinas, minority women were less likely than White women to report psychotropic medication as potentially useful. Differences also were seen in therapy preferences, as immigrant Latinas were more likely to endorse individual and group therapy as potentially helpful compared to White women. In terms of alternative forms of support, minority women, minus the U.S-born Latinas, were more likely than White women to report faith and spirituality as potentially helpful. Groups did not differ in their endorsements of family and friends as potential sources of support. Most of the participants in this sample were uninsured, which likely affected participants' access to care and could have influenced attitudes about treatment. In a U.K. study, in which participants were recipients of universal healthcare, some differences in help-seeking preferences still were noted. Within a sample of White British, Black Caribbean, and Bangladeshi participants who met criteria for a mental health problem, Rüdell and colleagues (2008) found that White participants were more likely than the other groups to use self-help strategies and seek social support, and less likely to engage in faith-based healing practices. Both White and Black participants reported greater use of complementary treatments such as massage or traditional healers. Bangladeshi participants were more likely to endorse medication as a treatment choice, relative to the other groups. Immigration status also was related to treatment preferences, as self-help strategies, social support, and complementary treatment were endorsed more by non-migrants and participants

who had migrated as children, compared to adult migrants. Faith based treatment was preferred less by non-migrant participants, compared to the two migrant groups. Overall, Rüdell and colleagues (2008) also found that, rather than serving as a replacement for western medicine, seeking help from family and traditional healers was related to the use of primary care. This finding suggests that those who seek help for a mental health issue may do so in a variety of ways, whereas those who are less likely to seek help through Western means also may be less likely to seek help from family or community members. Whether greater flexibility in help-seeking preferences actually influenced mental health outcomes was not assessed in either of the above studies, but some researchers have indicated that flexibility, rather than access to any one particular type of care, is a key component in health disparity outcomes (Diez Roux, 2012).

Neither of the above studies was specific to pre- and postnatal mothers with substance use concerns; studies of alternative help seeking behaviors and preferences in this population are lacking. Given the disparities in women seeking substance use treatment, especially women of ethnically diverse backgrounds, clarifying the factors that underlie differences in attitudes about treatment in this population is needed.

Health Disparity Models

Mechanisms underlying the observed disparities in women seeking substance use treatment have not been fully clarified. However, a number of causal and mediating factors have been suggested as influencing the persistence of disparities in health more generally. As an example, the Fundamental Cause Model posits that social conditions perpetuated by socio-economic disparities are the root causes of health disparities via their impacts on access to care (Diez Roux, 2012). Under the original model developed by Link and Phelan (1995), it was proposed that health disparities persist over time because of a consistent socioeconomic gradient

in society, in which people of higher socio-economic status consistently have access to a wider range of resources, which allows for greater flexibility in their ability to take preventative health measures and obtain higher quality care when needed. Such instrumental advantages include financial solvency, mobility, time flexibility, access to technology, and knowledge of available resources (Diez Roux, 2012; Jessup et al., 2003; Phelan, Link, & Tehranifar, 2010; Yonkers et al., 2012). Although there is substantial evidence to support this model, it has a singular focus on socio-economic barriers, neglecting the potential roles of cultural and attitudinal barriers. Williams (1997) expanded upon the original Fundamental Cause Model to include culture, racial prejudice, economic structures, and political and legal inequalities as fundamental causes of racial health disparities. Under this model, racial prejudice is explained to underlie legal policies and ensuing economic structures that systematically limit socioeconomic mobility. Thus through racism, race has been associated with socioeconomic status, which in turn, directly impacts health.

A key characteristic of the Fundamental Cause Model is its emphasis on distal causes that persist over time (i.e., SES and ethnicity). In contrast, the Pathways Model of health disparities gives greater consideration to the mediating pathways through which SES and ethnicity are linked with health outcomes (Diez Roux, 2012). Some of the proposed mediating pathways have included barriers and resources, acculturative processes, and health care. It is thought that these pathways are more mutable than distal underlying causes (Diez Roux, 2012). Thus, while focusing on mediating pathways neglects the larger structure of social injustice to some extent, attending to mediating pathways may be one way to effect more immediate change on a smaller scale.

Ethno-Cultural Identity as a Key Factor in Substance Use Treatment Disparities

Diez Roux's (2012) Pathway Model suggests that acculturative processes may serve as mediating pathways underlying the relation between SES and health outcomes. The association between instrumental resources and mental health outcomes has been well established among pregnant and postpartum mothers struggling with substance use. However, the role of cultural factors in this relationship has been given little attention in the pre- and postnatal substance use literature. Outside the literature on pre- and postnatal substance use, several studies have indicated the potential for cultural identity to have strong associations with substance use, and in some cases, serve as a protective factor.

Acculturation and enculturation have been studied extensively in relation to substance use, particularly among immigrant community members. Sun and colleagues (2016) operationalized these constructs as "adaptation into mainstream group" (acculturation) and "adherence to culture of heritage" (enculturation). Much of the research on substance use and acculturation has been done using male, adolescent, or college samples, and they converge on a similar conclusion regarding the positive association between acculturation and higher rates of substance use (Gil, Wagner, & Vega, 2000; Ortega et al., 2000; Schwartz et al., 2010). More specific to women and substance use, Vega and colleagues (1998) found that within a sample of Mexican-origin California residents, acculturation was associated with greater drug use among both men and women; however the effect was stronger for women. In a clinical trial sample of Hispanic participants, Lee and colleagues (2014) found that acculturation was not associated with alcohol use in men; however acculturation was associated with more hazardous drinking in women. Thus findings from both a community and treatment sample have indicated stronger associations between acculturation and substance use among Hispanic women, relative to their male counterparts.

Unfortunately most studies in the substance use literature focus unitarily on acculturation, neglecting the potential protective factor of enculturation. Furthermore, given that mainstream cultural values have the potential to conflict with cultural values of heritage, enculturation and acculturation have been frequently conceptualized as mutually opposing processes. Although there is literature to support an inverse association (e.g., Berry & Annis, 1974), study outcomes for this construct frequently have been influenced by unilinear measurement models. Using bilinear measurement models, several studies have demonstrated a more nuanced process by which individuals may endorse both acculturation and acculturation strongly (integration), either acculturation or enculturation alone (assimilation or separation, respectively), or neither (marginalization; e.g., Berry, et al. 1989; Yoon et al., 2013). Nevertheless, some studies still indicate a potentially conflicting association, particularly when taking family contextual factors into account (Dinh et al., 2013)

Research generally has indicated that an integrated cultural identity is related to more favorable mental health outcomes, whereas scoring high on acculturation alone has been associated with more negative outcomes. Reflecting this, one meta-analysis analyzed 325 studies and categorized study dependent variables into positive mental health outcomes versus negative mental health outcomes, concluding that high endorsement of both acculturation and enculturation (integration) was most strongly associated with more positive mental health outcomes (Yoon et al., 2013). Within a sample of Latino men seeking substance use treatment, Lopez-Tamayo, Seda, and Jason (2016) found that patients who endorsed higher enculturation values reported fewer years of substance use while in treatment. While acculturation appears to have negative associations with substance use outcomes, this association appears to be strongly moderated by enculturation. Thus ethnicity as well as flexibility with one's ethnic identity

appears to influence health behaviors; however how this relationship manifests among mothers with substance use concerns is unknown.

Original Study Aims and Hypotheses

Given the disparities in help-seeking and receipt of services among women with substance use concerns, particularly pregnant and postpartum mothers of low income and minority background, a clearer picture of where and why needs are being unmet is needed for this specific population. Since most studies of treatment needs and perceived barriers have been based on treatment seeking samples, more studies of individuals who are less treatment engaged and more economically and ethnically diverse are needed. To remedy these gaps in the literature, this study had three overarching aims: (1) to characterize the help seeking preferences, perceived treatment barriers, and attitudes about substance use treatment of pregnant and postpartum women with histories of substance use problems, in an ethnically diverse, bilingual sample from low-income sectors of the community; (2) to examine the relation between perceived barriers and (a) help seeking preferences, (b) attitudes about professional treatment, (c) treatment engagement, (d) substance use, and (e) subjective well-being; and (3) to determine whether the associations tested in aim 2 are moderated by cultural identification.

Aim 1: Characterize help seeking preferences, perceived treatment barriers, and attitudes about substance use treatment.

Aim 1a. Help seeking preferences. Among pregnant and postpartum mothers endorsing a substance use problem, which treatment types or care resources are perceived as more or less desirable?

Hypothesis 1a-1: Individual therapy will be endorsed more frequently relative to group therapy, faith-based support, and medication.

Hypothesis 1a-2: Differences between ethnic groups will be seen such that mothers of minority background will report more favorable attitudes toward faith-based services, relative to white counterparts.

Aim 1b. Perceived treatment barriers. Among pregnant and postpartum mothers endorsing a substance use problem, what are their perceived barriers to substance use treatment?

Hypothesis 1b-1: Participant reports will reflect higher scores on stigma-related relative to non-stigma-related barriers to treatment.

Hypothesis 1b-2: Participants of ethnic minority background will report more stigma-related barriers, relative to white participants.

Aim 1c. Attitudes about substance use treatment. How do pregnant and postpartum mothers with substance use concerns perceive professional treatment services?

Hypothesis 1c: Women of ethnic minority background will report less positive attitudes about professional substance use treatment than non-minority participants.

Aim 2: Perceived barriers' association with substance use, treatment, and mental health. Among pregnant and postpartum mothers with substance use concerns, how are perceived treatment barriers related to (a) help-seeking preferences, (b) attitudes toward professional care, (c) treatment engagement, (d) substance use, and (e) subjective well-being?

Hypothesis 2a: Endorsement of more treatment barriers will be related to fewer help seeking preferences.

Hypothesis 2b: Endorsement of more treatment barriers will be related to more negative attitudes about professional treatment.

Hypothesis 2c: Endorsement of more treatment barriers will be associated with lower levels of treatment engagement.

Hypothesis 2d: Endorsement of more treatment barriers will be related to greater severity of substance use.

Hypothesis 2e: Endorsement of more treatment barriers will be associated with lower levels of subjective well-being.

Aim 3: Cultural identity as a moderator. Does high endorsement of both enculturation and acculturation moderate the associations specified in Aim 2?

Hypothesis 3a: High endorsement of both enculturation and acculturation will serve as a moderating protective factor, such that participants identifying as high on both scales will demonstrate weaker associations (specified in Aim 2) relative to participants identifying as separated, assimilated, or marginalized (see Figure 1).

Method

Participants

Participants were 27 women, ages 23-43 (M = 31 years). Study inclusion criteria required that participants be (a) 18 or older, (b) able to speak English or Spanish, (c) currently pregnant or recently postpartum (within two years of giving birth), and (d) positively screened for problematic substance use (either within the past year, or a year prior to their pregnancy). Problematic substance use was determined by a minimum score of 8 on the AUDIT (Saunders et al., 1993) or 3 on the DAST (Skinner 1982). Sources of recruitment for the present study sample included substance use treatment centers (n = 21), WIC offices (n = 2), temporary housing programs (n = 1), online community boards (n = 1), and word of mouth (n = 2; see Table 1).

Participants self-identified as Hispanic (44.4%), White (25.9%), Native American (14.8%), Multi-Ethnic (11.1%), or African American (3.7%). All participants spoke English, and nearly half (n = 13) were bilingual in a second language (primarily Spanish, n = 10). Average

annual household income was $22,036; although 37.0% of the sample reported $0 income and 81.5% of the sample met poverty guidelines for financial, medical, and/or nutritional assistance (NM Human Services Dept., 2018a; 2018b). Most participants were medically insured (96.3%) and born in New Mexico (70.4%). At the time of study interviews, 9 (33.3%) participants were pregnant and 18 (66.7%) participants were postpartum. Participants reported a mean of 1.5 children living in the home. Additional sample demographic information is provided in Table 2.

Measures

Qualitative interview. A short qualitative interview was conducted and included the following questions: (a) Tell me about your family; who lives with you at home? (b) From your perspective, do you believe alcohol or drug use has been a problem in your life? (c) Have you ever received treatment for alcohol or drug use in the past? *If yes,* what helped encourage you to seek treatment and attend appointments? What did you learn or gain from treatment? (d) What about seeking treatment was difficult or undesirable?

Demographic information. Demographic information was collected using the Demographic Interview 2.2 (CASAA Research Division, 1997). This measure included questions regarding age, gender, ethnic identity, employment status, household income, and education. The Demographic Interview 2.2 was adapted to include bi-ethnic and multi-ethnic identity options as well as questions to elicit the participant's country of birth, number of years lived in the United States, and health insurance status.

Barriers to substance use treatment. Barriers to treatment were assessed using the Barriers to Access to Care Evaluation scale version 2 (BACE v2; Clement et al., 2012). The measure was adapted to be specific to substance use treatment. In its original form, the BACE is a 36-item measure that includes subscales for stigma-related and non-stigma-related barriers.

Items query participants about their experience of barriers such as "feeling embarrassed or ashamed" (stigma-related) or "having problems with childcare while I receive professional care" (non-stigma-related). Response options range from 0 ("not at all") to 3 ("a lot"), with higher scores indicating a greater barrier to treatment. It ends with spaces for an open-response option to record participant-reported barriers that were not listed in the measure. The BACE v2 has been shown to have acceptable internal consistency (α = .72; Kuhl et al., 1997) and good test-retest reliability (kappa values .61-.80; Clement et al., 2012). A shortened 30-item version of the measure was developed by omitting five of the original items that garnered low response rates and combining two of the original items that yielded high correlations (BACE v3; Clement et al., 2012). Although the shorter BACE v3 has been recommend for future use, the BACE v2 was administered for the present study as the BACE v3 was not developed using a sample of pregnant or postpartum women with substance use concerns, and some of the items omitted appeared relevant to this population. Within this study sample, the adapted measure showed good internal consistency for the full measure, as well as its stigma and non-stigma subscales (α = .93, α = .89, α = .89, respectively).

Drug Use. Severity of drug use was measured using the Drug Abuse Screening Test (DAST-10; Skinner et al., 1982). The DAST was developed as a brief screener for harmful drug use. The DAST-10 is a shortened version of the original 20-item measure. It consists of 10 questions about drug use behavior, with binary "yes" or "no" response options. In its original 20-item form, tests within a clinical sample yielded strong internal consistency reliability (α = .92; Skinner 1982). Within a clinical sample of 501 patients, DAST scores between 5 and 6 were 85% accurate in detecting drug use disorders according to DSM-III criteria, indicating scores within that range could be used as a benchmark for problematic drug use (Gavin et al., 1989).

The shorter DAST-10 has been validated cross-culturally. Within a clinical sample of Spanish speakers in Mexico, a cutoff score of 3 identified 98% of the patients with a substance use disorder determined by the Mini International Neuropsychiatric Interview 5.0 (MINI 5.0; Villalobo-Gallegos et al., 2015). Within the same sample, reliability was strong ($\alpha = .80$; Villalobo-Gallegos et al., 2015). However, among a sample of pregnant women screened for drug use, hair and urine analysis indicated 24% of participants tested positive for drug use and the DAST sensitivity in detecting use was determined to be only .47 (Grekin et al., 2010). This finding indicated that this self-report measure may be less effective when used to assess drug use during pregnancy. Hence for the present study, two time periods were assessed: past year and the year prior to pregnancy.

Alcohol Use. Severity of alcohol use was assessed using the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). This is a measure intended to detect harmful levels of drinking and the possible presence of an alcohol use disorder (Allen, Reinert, & Volk, 2001). Ten items ask respondents to rate their drinking behaviors on five- and three-point Likert-type scales, yielding scores that range from 0 to 40 (e.g., "How often do you have six or more drinks on one occasion?"). A cutoff score of 8 has been suggested as indicating hazardous alcohol use (Conigrave, Hall, & Saunders, 1995). The AUDIT has demonstrated good internal consistency (Cronbach's alphas in the .80s; Allen, Litten, Fertig, & Babor, 1997) as well as good test-retest reliability ($r = .88$; Daeppen, Yersin, Landry, Pecoud, & Decrey, 2000). For the present study, two time periods were assessed: past year, and the year prior to pregnancy.

Help seeking preferences. An adapted measure from Nadeem and colleagues (2008) was intended to assess help seeking preferences, engagement, and flexibility. In a study of mental

health care preferences within an ethnically diverse sample, Nadeem and colleagues (2008) asked participants who had indicated an emotional problem, "Do you think these problems could be helped with any of the following?" Participants were asked to provide "yes" or "no" responses to five items: "medication, individual counseling, group counseling, family and friends support, and faith." This measure was adapted to include a category for complementary health practices. The initial question was adapted to be specific to substance use concerns. Endorsement of a greater number of categories was expected to indicate greater flexibility in participants' treatment preferences. Internal consistency for the adapted measure was low (α = .53).

Attitudes about professional treatment. Attitudes regarding professional treatment were measured using the abbreviated Attitudes Toward Seeking Professional Psychological Help scale (ATSPPH; Fischer & Farina, 1995). This is a 10-item measure, shortened from its original 29 item form (Fischer & Turner, 1970). Respondents are instructed to read statements and indicate their "agreement, probable agreement, probable disagreement, or disagreement." Items include statements such as "The idea of talking about problems with a psychologist strikes me as a poor way to get rid of emotional conflicts," and "If I were experiencing a serious emotional crisis at this point in my life, I would be confident that I could find relief in psychotherapy." The ATSPPH has demonstrated good internal consistency (α = .84) as well as good test-retest reliability (r = .80 over one month; Fischer & Farina 1995). The language in this measure was adapted for gender agreement to reflect the female respondents in the present study, as well as to be more specific to substance use treatment and "counseling" rather than psychotherapy. Internal consistency on the adapted measure was acceptable (α = .66).

Treatment engagement. Items 8-15, 22-25, and 29-35 from the Form 90 (Miller, 1996) were used to assess treatment engagement, including types of treatment sought and time spent in treatment. The Form 90 in its original form includes a calendar measure and is intended to assess substance use, time in treatment, and some aspects of general functioning over the course of 90 days. The items that were used for this study, including days in religious attendance, days in medical care, and days in inpatient treatment, have shown good temporal stability (r = .79-.98, .74-.99, .63-.99, respectively; Tonigan, Miller, & Brown, 1997; Westerberg, Tonigan, & Miller, 1998).

Subjective well-being. Subjective well-being was measured using the Satisfaction with Life Scale (SWLS; Diener et al., 1985). This is a five-item measure in which participants read a series of statements and are asked to rate the extent to which they agree or disagree with each statement. Four response options are presented on a Likert-type scale and range from 1 ("strongly disagree") to 4 ("strongly agree"), with higher scores indicating greater life satisfaction. Items include statements such as "The conditions of my life are excellent," and "In most ways my life is close to my ideal." The SWLS has demonstrated high internal consistency (α = .87) as well as acceptable temporal stability (r = .87 over 2 months and .54 over four years; Pavot & Diener, 1993). However, the measure also has been shown to be sensitive to changes in clinical samples undergoing treatment (Pavot & Diener, 1993).

Acculturation and enculturation. Acculturation and enculturation were measured using the Abbreviated Multidimensional Acculturation Scale (AMAS-ZABB; Zea et al. 2003). The AMAS-ZABB is a 2-subscale instrument developed to measure acculturation and enculturation in three dimensions: identity, cultural competence, and language competence. Respondents are asked to rate 42 items on a 4-point Likert-type scale ranging from 1 ("strongly disagree" or "not

at all") to 4 ("strongly agree" or "extremely well"). Higher scores are indicative of higher levels of acculturation or enculturation. As an example, one of the acculturation items asks, "How well do you know popular American newspapers and magazines?" One of the enculturation items asks, "How well do you speak your native language with family?" Within a sample of Latino/a participants, the AMAS-ZABB demonstrated good internal reliability for both the acculturation and enculturation scales (α = .89 and .96; Zea et al., 2003).

Procedures

The original recruitment plan included face-to-face recruitment of women at four local WIC centers; yet ultimately the WIC Director for NM determined that this procedure was inconsistent with WIC policy. The centers did, however, continue to support recruitment flyers being left available in their waiting rooms. Study investigator and research assistants additionally distributed bilingual recruitment flyers at community centers (e.g., parks, libraries, laundromats, thrift and grocery stores), medical offices and hospitals, behavioral health treatment centers, online community boards, and through email and newsprint advertisement. In-person recruitment took place at a farmers market, flea market, and health fair. See Figure 2 for participant recruitment and retention data, and Table 1 for a full list of recruitment sources.

Recruitment flyers included the study description, eligibility criteria, and contact information. Interested participants called the number on the flyer to get more information and to be screened for eligibility. Study personnel were bilingual Spanish and English speakers. All phone conversations were conducted in the caller's preferred language, determined by either how the caller initiated the conversation, the language used in their voice message, or by asking the caller about their language preference. Interested and eligible participants were then scheduled for an interview appointment. Although this issue did not arise, screenings and interviews were

set to be rescheduled if signs of intoxication were present. For the interview appointment, alcohol intoxication was tested using saliva test strips.

Participants attended a 60-minute appointment at the Center on Alcoholism, Substance Abuse, and Addictions (CASAA). Appointment procedures were available in English and Spanish. The participants' language preferences were typically determined through their initial phone screens, though study materials and interviews were available in English and Spanish at all times. During the interview appointment, participants were first guided though consent procedures. These included giving the participant a copy of the consent agreement to read, followed by the interviewer explaining key points of the agreement (i.e., their right to end participation at any time without penalty, confidentiality limitations, potential risks and benefits), and lastly offering to answer any remaining questions about the study before signing the consent document. A copy of the informed consent agreement was given to the participant to keep.

After consent was provided, the assessment portion of the study began with a short qualitative interview, during which responses from the participant were written down by the interviewer. Participants were then guided through a series of written questionnaire measures. Participants were given the option of completing the measures on their own or having the questions read to them out loud by the study investigator. At the end of their appointment, participants were given a list of potentially helpful community resources, asked if they had any questions or concerns about the study, and given a $25 gift card for their participation.

Data Analysis

Prior to testing study hypotheses, basic descriptive statistics were generated to characterize the sample on socio-demographic, independent, and dependent variables. Next, preliminary analyses were conducted to ensure that the underlying statistical assumptions for the

planned analyses were upheld. This included checking for normal measurement distributions, absence of multicollinearity, homoscedasticity, and linear relationships between independent and dependent variables. Once underlying statistical assumptions were assessed, the hypotheses for aims 1-3 were tested. In the case of assumption violation, alternative steps were taken to address the study aims and hypotheses. These alternative approaches are introduced briefly below and discussed more thoroughly in the results. Lastly, qualitative data from participant interviews were used to further characterize the study sample and allow for added quantifiable data.

Aim 1: Characterize help seeking preferences, perceived treatment barriers, and attitudes about professional care.

Aim 1a. Help seeking preferences. ANOVA was the planned analysis to assess differences between help-seeking preference categories (e.g., individual or group therapy, faith-based support, and medication), as well as differences based on ethnic identity (hypotheses 1a-1 and -2). Due to severely limited variability within the Help-Seeking Preferences scores, items from the Form 90 Treatment Engagement measure were used to assess participants' use of individual counseling, medication, and religious service attendance. Although these items assess participants' use of services rather than their preferences, the items address support services comparable to those assessed in the Help-Seeking Preferences measure (i.e., counseling, medication, and religion/spirituality). The items therefore were used to best approximate participants' treatment decisions, despite acknowledging that other factors besides preference may factor into their treatment decisions. Unfortunately these items did not assess for use of group therapy, specifically. To ensure that the appropriate statistical assumptions were met, a Wilcoxon test was used to assess differences between types of support. A Mann-Whitney U test was used to examine potential differences between cultural groups.

Aim 1b. Perceived barriers. A paired *t*-test was used to test for differences between stigma and non-stigma barrier types (hypothesis 1b-1). Given that these subscales are unequal in size, comparisons between scales were made using average scores in lieu of raw totals. Given that underlying assumptions appeared to have been met by these measures, the planned hierarchical regression analyses were performed to test for ethnic differences in stigma and non-stigma barriers (hypothesis 1b-2). Given the small, uneven subsamples of white (n = 6) and non-white (n = 20) participants, the 1b-2 analyses were performed using additional indicators of cultural identity. These included measures of enculturation and second language fluency.

Aim 1c. Attitudes about substance use treatment. Hierarchical regression analyses were performed to test for ethnic differences in attitudes about professional treatment, while controlling for socio-demographic variables such as income and education (hypothesis 1c). As with hypothesis 1b-2 above, this analysis was carried out with three separate indicators of culture: ethnicity, language, and enculturation.

Aim 2: Perceived barriers' associations with substance use, treatment, and mental health. Bivariate correlations were used to examine the association of perceived treatment barriers with (a) help-seeking preferences, (b) attitudes toward professional care, (c) treatment engagement, (d) substance use, and (e) subjective well-being (hypotheses 2a-e). The BACE stigma and non-stigma subscales also were entered into the matrix to characterize their unique associations with help-seeking preferences, attitudes about professional care, treatment engagement, substance use, and subjective well-being.

As the Help-Seeking Preferences measure was severely limited in its variability, Form 90 Treatment Engagement items measuring medication use, therapy use, and days in religious

attendance, were used in its place to facilitate interpretations of a potential relation between treatment barriers and use of specific support services.

Aim 3: Cultural identity as a moderator. Scores on the enculturation and acculturation subscales of the AMAS-ZABB were initially intended to characterize participants as highly acculturated/less enculturated, highly enculturated/less acculturated, high on both scales, or low on both scales. Given the small size of the present sample and the lower variability shown in the acculturation scale, a revised plan sought to test enculturation as a continuous measure of cultural identity and its impact on associations identified in Aim 2. Hierarchical regressions or partial correlations (depending on assumption verification) were expected to test for cultural influence on the association between perceived treatment barriers and (a) help-seeking preferences, (b) attitudes toward professional care, (c) treatment engagement, (d) substance use, and (e) subjective well-being (hypothesis 3a).

Thematic content analysis of qualitative response data. In line with recommendations by Maguire and Delahunt (2017), steps were taken to (a) generate codes based on subsets of the data, (b) discuss unifying themes between coders, (c) code remaining subsets of the data, and (d) modify or add themes to fit the data following each coding session. This was an open coding method, as codes were developed in an iterative process. There is literature to suggest that qualitative studies typically achieve thematic saturation with nine to 12 participants (e.g., Guest, Brunce, & Johnson, 2006; Hennink, Kaiser, & Marconi, 2017), thus this analysis method was expected to suit the present study sample size.

Results

Sample Characteristics

Within the present sample, most participants (55.6%, n = 15) reported subthreshold levels of alcohol use and were admitted to the study solely on the basis of reported substance use behaviors. A substantial portion of the sample (37.0%, n = 10) was admitted to the study on the basis of both illicit substance use and alcohol use. Only two participants (7.4%) reported problematic alcohol use without co-occurring illicit substance use. Collectively, mean AUDIT scores for the sample were 6.81 for the year preceding their study interview and 9.52 for the year preceding pregnancy. Mean DAST scores were 4.93 and 7.74 for the years prior to study participation and their pregnancy, respectively. Among participants reporting illicit substance use, opiates and methamphetamine were most frequently named as primary drugs of choice (see Table 4). In terms of treatment engagement, a small portion of the sample (*n* = 3, 11.1%) reported no experience with treatment for drug or alcohol concerns; they did, however, report past experience with treatment for other emotional or psychological concerns. Most participants reported at least some experience with substance use treatment over the course of their lifetime, ranging between 1 and 730 days in counseling, residential, and/or detox programs. In the 90 days preceding their last use, participants reported an average of 7.37 days (*SD* = 17.66) engaged in substance use treatment. During this same time frame, participants reported an average of 37.00 days (*SD* = 42.45) taking prescribed maintenance medication, and 27.89 days (*SD* = 40.00) taking medication for other psychological concerns. Additional descriptive statistics for the independent and dependent measures are available in Table 3.

Testing Statistical Assumptions

Distribution statistics for all independent and dependent measures can be viewed in Table 3. Distribution assumptions were upheld for the following measures: Barriers to Access to Care Evaluation and its subscales, Attitudes Toward Seeking Professional Help, Satisfaction with

Life, and 90-Day use of medication for mood and psychological concerns. Distributions for 90-Day use of opioid maintenance therapy and the DAST (for the year prior to study participation) were approaching normality. The remaining measures of substance use (AUDIT, DAST for the year preceding pregnancy), treatment engagement (Form 90 items assessing lifetime engagement and 90-day use of non-medication services), Help-Seeking Preferences, and acculturation/enculturation (AMAS-ZABB) failed to meet standard distribution assumptions. Multicollinearity was checked using the bivariate correlation statistics listed in Table 5, which gave no indication of redundancy between variables. Homoscedasticity and linear associations between variables also were ensured prior to carrying out the inferential tests below.

Aim 1: Characterize Help Seeking Preferences, Treatment Barriers, and Attitudes about Treatment.

Aim 1a. Help seeking preferences. Among pregnant and postpartum mothers endorsing a substance use problem, which treatment types or care resources are perceived as more or less desirable? Within this sample, the vast majority of participants endorsed all sources of mental health support, specifically individual therapy (96.3%, n = 26), group therapy (92.6%, n = 25), medication (81.5%, n = 22), family and friends (96.3%, n = 26), religion and spirituality (85.2%, n = 23), and alternative or complementary practices (85.2%, n = 23).

Hypothesis 1a-1: Individual therapy will be endorsed more frequently relative to group therapy, faith-based support, and medication. Overall, the Help Seeking Preferences measure did not allow for enough variance to detect differences in preferences for the different support sources. Items from the Form 90 Treatment Engagement measure indicated a more variable response pattern when asking participants about their actual use of support services in the 90 days prior to their last use. During this time frame, 18 (66.7%) participants took medication to

help with a psychological or substance use issue, 12 (44.4%) participants sought counseling for their substance use, and 11 (40.7%) attended a religious or spiritual gathering. A Wilcoxon Signed Ranks Test indicated no significant difference in participants' use of substance use counseling (M = 3.33 days, SD = 5.64) versus religious or spiritual support (M = 2.11 days, SD = 3.85); Z = -.74, p = .46). The test indicated significantly more frequent use of psychotropic (M = 27.89 days, SD = 40.00) and opioid maintenance medications (M = 37 days, SD = 42.45) relative to days spent in counseling (Z = -2.20, p = .028; Z = -3.24, p < .001, respectively); although given that these medications are often prescribed for daily use, this difference does not necessarily indicate a difference in participants' perception of helpfulness or favorability of medication over counseling services. Thus, although these results do not conclusively support or reject the hypothesis that individual therapy would be favored over other types of support, these results appear to characterize the present sample as generally open to various types of mental health support.

Hypothesis 1a-2: Differences between ethnic groups will be seen such that mothers of minority background will report more favorable attitudes toward faith-based services, relative to white counterparts. The Mann-Whitney Tests did not detect significant differences between minority and non-minority participants, nor between bilingual and mono-lingual participants, in their use of different types of support (see Table 6). These results are inconsistent with the 1a-2 hypothesis that mothers of minority background would report more favorable attitudes regarding faith-based services, relative to white participants. Nevertheless, it should be noted that these analyses were based on participants' actual use of sources of support versus their expressed attitudes about the source of support.

Aim 1b. Perceived barriers. Among pregnant and postpartum mothers endorsing a substance use problem, what are their perceived barriers to substance use treatment? Overall, this sample indicated a broad range of experience with treatment barriers, with total raw scores ranging from 11 to 94 (M = 57.93, SD = 25.04).

Hypothesis 1b-1: Participant reports will reflect higher scores on stigma-related relative to non-stigma-related barriers to treatment. To account for the unequal number of items in the stigma and non-stigma subscales, mean subscale scores were computed for each participant (potentially ranging 0 to 3), and comparisons between the subscales were made using these scores in lieu of raw total scores. Results from a t-test analysis supported the above hypothesis, such that participants reported significantly greater impact from stigma-related barriers (M = 1.70, SD = .81) than non-stigma barriers (M = 1.28, SD = .58) in terms of their access to treatment; t (26) = 3.95, $p < .001$. Furthermore, limiting the non-stigma scale to instrumental barriers alone also continued significant differences, such that participants reported greater impact from stigma barriers (M = 1.70, SD = .81) than instrumental barriers (M = 1.35, SD = .69); t (26) = 2.74, p = .011).

Hypothesis 1b-2: Participants of ethnic minority background will report more stigma-related barriers, relative to white participants. On average, both White and non-White participants rated stigma-related barriers as interfering "quite a lot" with their treatment engagement on a 0 to 3 scale (M = 1.89, SD = .84; M = 1.64, SD = .81, respectively). Inspection of both average and raw stigma scores suggested a potential difference between White (raw M = 24.57, SD = 10.88) and non-White participants (raw M = 21.30, SD = 10.57) in a direction opposite of the one hypothesized, such that White participants appeared to report greater experience of stigma barriers. However, this observed difference was not significant when tested

with a hierarchical regression, $\Delta R^2 = .019$, ΔF (1, 25) = .490, $p = .491$. Additional analyses were conducted to explore potential differences based on enculturation and second language fluency, but significant effects were not detected ($\Delta R^2 = .017$, ΔF (1, 25) = .441, $p = .513$; $\Delta R^2 = .002$, ΔF (1, 25) = .057, $p = .813$, respectively).

Aim 1c. Attitudes about substance use treatment. How do pregnant and postpartum mothers with substance use concerns perceive professional treatment services? The sample mean score of 30.88 (*SD* = 4.91) on the Attitudes Toward Seeking Professional Psychological Help scale indicated that, on average, participants rated themselves as being in probable agreement with positive statements about professional treatment. However, scores ranged from 20 to 39, indicating a spread of both negative and positive views on professional care.

Hypothesis 1c: Women of ethnic minority background will report less positive attitudes about professional substance use treatment than non-minority participants. Mean total scores were similar between White (*M* = 31.00, *SD* = 6.25) and non-White participants (*M* = 30.60, *SD* = 4.54). Hierarchical regression analyses were used to assess for potential cultural differences in attitudes about professional care, while controlling for socio-demographic variables such as income and education. As with aim 1b above, this analysis was carried out with three separate indicators of culture. However, significant effects were not detected on the basis of ethnicity ($\Delta R^2 = .009$, ΔF (1, 23) = .226, $p = .639$), enculturation ($\Delta R^2 = .061$, ΔF (1, 23) = 1.544, p = .227), or second language fluency ($\Delta R^2 = .007$, ΔF (1, 23) = .168, $p = .685$).

Aim 2: Barriers' Associations with Substance Use, Treatment, and Life Satisfaction.

Based on the analyses performed, treatment barriers were not significantly associated with participants' substance use behavior, attitudes toward professional care, treatment

preferences, time spent in treatment, or general life satisfaction. The results from these bivariate correlations are listed in Table 5.

Hypothesis 2a. It was hypothesized that endorsement of more treatment barriers would be related to fewer help seeking preferences. Given the limited variability and psychometric properties of the Help-Seeking Preferences measure, subscales from the Form-90 Treatment Engagement measure were entered into the analysis to account for actual support services used. These included days spent in religious attendance, attending therapy, and taking medication. Nevertheless, a significant association was not demonstrated (see Table 5).

Hypothesis 2b. It was hypothesized that endorsement of more treatment barriers would be related to more negative attitudes about professional treatment. This was not supported by the analysis results (see Table 5).

Hypothesis 2c. It was hypothesized that endorsement of more treatment barriers would be associated with lower levels of treatment engagement. Days spent engaged in various treatment types, during the participant's lifetime and 90 days since last use, were entered as separate variables in the analysis. However, treatment engagement during neither time frame demonstrated a significant association with barriers (see Table 5).

Hypothesis 2d. It was hypothesized that endorsement of more treatment barriers would be related to greater severity of substance use. This was not supported by the analyses. Given the distribution limitations of the DAST and AUDIT measures, days since last use (from the date of interview) was entered as an additional substance-use indicator in the analysis. Nevertheless, this too was not shown to be significantly associated (see Table 5).

Hypothesis 2e. It was hypothesized that endorsement of more treatment barriers would be associated with lower levels of subjective well-being. Based on participant's reports of overall life satisfaction, this was not supported by the analysis (see Table 5).

Aim 3: Cultural Identity as a Moderator.

Does high endorsement of both enculturation and acculturation moderate the associations specified in Aim 2? It was hypothesized that high endorsement of both enculturation and acculturation would serve as a moderating protective factor, such that participants identifying as high on both scales would demonstrate weaker associations specified in Aim 2. The planned analyses to detect moderating effects were not conducted given that significant associations were not detected for the hypothesized variables. Nevertheless, an overarching aim of the original planned analyses was to characterize cultural influences on independent and dependent variables. Thus steps were taken to examine direct associations between enculturation and acculturation and the independent and dependent variables in this study, as well as to further characterize the sample based on these constructs.

As a sample, all participants scored within the top half of the range on the acculturation scale. More variability was demonstrated in the enculturation scale such that six participants (22.2%) scored in the lower half of the scale. Given that acculturation and enculturation are frequently demonstrated to have an inverse association, it was interesting to find that acculturation and enculturation were strongly and positively correlated within the present sample ($r = .73$, $p < .001$)). This was thought to have occurred in part due to the inclusion of scores from White, non-minority participants. A *t*-test confirmed that participants' scores on the enculturation scale were significantly related to their ethnic identity, such that participants identifying as White endorsed a higher mean Enculturation score ($M = 78.57$, $SD = 4.50$), than

participants identifying as non-White (M = 63.20, SD = 17.68); t (25) = -2.25, p = .034. Consistent with descriptive data suggesting overall high scores on the acculturation measure, significant differences in acculturation were not detected between minority (M = 74.58, SD = 7.59) and non-minority participants (M = 79.36, SD = 5.28); t (25) = -1.53, p = .138.

Bivariate correlational analyses detected moderate associations for both acculturation and enculturation with past year substance use behavior, such that participants who expressed stronger acculturation and enculturation identities were likely to report less substance use behavior in the past year (r = -.48, p = .011; r = -.48, p = .011, respectively). Results also indicated a significant negative relation between the acculturation and enculturation scales and a subset of items from the BACE indicating family-related barriers to treatment (r = -.40, p = .042; r = -.42, p = .029, respectively). Thus participants who scored lower on scales of Acculturation and Enculturation tended to report greater influence from family-related barriers on their engagement with treatment.

Given that acculturation and enculturation are hypothesized to represent pulls between one's culture of heritage and the majority culture, it is possible that including measurement data from White non-minority participants may have artificially inflated average scores, increased cohesion between the scales, and truncated variance. For this reason, bivariate correlations were run separately within each subsample to explore potential associations between acculturation and enculturation with the measures of substance use, treatment engagement, and barriers to treatment. The results of these analyses are reported in Table 7. Of note, associations of enculturation and acculturation with family-related treatment barriers were strengthened within the subsample of non-White participants (r = -.66, p < .001, r = -.56, p = .010, respectively). Within the subsample of White participants, reports of fewer treatment barriers, especially

instrumental and family-related barriers, were strongly associated with participants' lifetime substance use treatment engagement (r = -.84, p = .019, r = -.85, p = .016, respectively).

Thematic Content Analysis of Qualitative Interview Responses

Based on participants' responses to open-ended questions, thematic content analysis was used to further characterize the sample and supplement gaps in the quantitative data. Broad themes included participants' household make-up, positive and negative experiences as mothers, factors that encouraged treatment engagement, perceived treatment effects, and barriers they have experienced. All codes and their frequencies are listed in Table 8.

Household. A small majority of participants (51.8%, n = 14) were single mothers, defined here as living without in-home support from a spouse or romantic partner. Of this subset, five women (18.5% of the total sample) lived with other adults, usually parents, step-parents, or grand-parents; and nine (33.3% of the total sample) lived alone with their children. Thirteen (48.1%) of the participants lived with a spouse or romantic partner, and a small subset of this group (n = 2, 7.4% of the total sample) had parents or in-laws living in the home as well. Of the entire sample, most mothers (n = 15, 55.5%) lived with one child, although the number of children in the home ranged from 0 (due to custody removal, n = 4) to 7.

Experiences as mothers. When asked about their favorite parts of motherhood, participants most frequently (n = 14, 51.9%) alluded to the affection between them and their children or the unique bond that they shared. An additional salient theme emerged as participants often described a sense of purpose they felt after becoming mothers (n = 6, 22.2%). For instance, one mother stated, "It gives my life more meaning."

When asked about the more difficult aspects of motherhood, participants most frequently indicated a lack of support as the most challenging aspect (n = 8, 29.6%). One mother explained,

"I feel like I'm doing it all alone most of the time." Several participants also cited an emotional toll and the amount of patience that is required (n = 6, 22.2%).

Treatment engagement. The majority of participants (n = 24, 88.9%) reported past experience with alcohol or substance use treatment. Of the subset, most (n = 13, 54.2%) cited their pregnancy or their child's health as the primary impetus to their seeking treatment. Participants' responses regarding what encouraged their treatment engagement varied widely, such that more themes with lower frequencies were identified for this broad theme. Nevertheless, participants also cited self-determination (n = 3, 12.5%), something to occupy time (n = 3, 12.5%), and a lack of choice (e.g., court-mandated; n = 3, 12.5%), as factors motivating their treatment engagement.

Perceived treatment effects. When asked about what they gained from treatment, most participants (n = 9, 37.5%) alluded to coping skills for managing urges and emotions. A second cluster of responses (n = 5, 20.8%) reflected growth in self-compassion. One participant shared, "I'm learning it's okay. I'm a work in progress." A range of experiences were represented in this sample, as some (n = 4, 16.7%) expressed a lack of treatment gains (e.g., "It's all talk.").

Treatment barriers. When asked about the difficult or undesirable aspects of treatment, most participant responses fit within over-arching themes of instrumental (n = 9, 33.3%) and emotional (n = 10, 37.0%) barriers. Of the individual sub-themes identified participants most frequently mentioned their discomfort with sharing their personal, sometimes traumatic, histories with multiple providers (n = 6, 22.2%). As one participant shared, "Opening up about my past, repeating myself over and over again to different counselors and psychologists, reopening the wound, that was the worst." Another participant similarly stated, "Explaining my situation to the doctors and counselors over and over. This discourages me from wanting to go there."

Additional barrier categories included limited program availability (n = 4, 14.8%), and anticipation of withdrawal symptoms (n = 4, 14.8%).

Lastly, given the limitations of some of the planned quantitative analyses, efforts were made to identify information related to the original study variables. In particular, there was variability in participants' appraisal of their treatment experiences, such that four participants expressed negative attitudes. Thus, these four cases were examined for potential response patterns, particularly in their reports of treatment barriers. No patterns were detected. The rest of the participants' raw response data were examined for themes related to the independent and dependent variables specified in Aims 1-3. Although treatment barriers and attitudes were elicited by the questions, there did not appear to be enough variance in attitude valence to identify a pattern of association; the remaining data did not appear comparable to the variables specified in Aims 1-3.

Discussion

The present study was initiated with three overarching aims in mind. Aim 1 sought to examine support preferences, treatment barriers, and attitudes toward treatment within a diverse sample of pregnant and postpartum mothers who have endorsed substance use concerns. Aim 2 sought to examine associations of reported treatment barriers with help seeking preferences, attitudes about treatment, treatment engagement, substance use, and life satisfaction. Aim 3 was intended to assess cultural influences on the associations tested in aim 2. Additional efforts were made to analyze qualitative interview responses in order to provide additional data to address study and to detect unique information that may have been undetected by quantitative measures and analyses.

Although concerted efforts were made to recruit participants who had not had substance use treatment experience, most participants responded to advertisements posted in substance use treatment centers, potentially contributing to distributional concerns observed in some of the measures (e.g., treatment engagement, help-seeking preferences). Nevertheless, although most participants were treatment-experienced, the extent of their experience varied widely. Furthermore, they reported substantial impact from a wide range of treatment barriers. A strength of the study sample was that it was diverse in terms of ethnocultural and sociodemographic representation.

Although this study was prepared to accommodate mono-lingual Spanish-speaking participants, recruitment efforts did not yield participants from this population. Given that mono-lingual Spanish-speaking pregnant and postpartum women likely represent a small subset of the overall population of pregnant and postpartum women, expecting that a smaller subset of this population would endorse a substance use concern and elect to discuss it may have been overambitious in hindsight. Nevertheless, approximately half of the recruited sample spoke a second language (mostly Spanish). Furthermore, given the sample's minority-majority socioeconomic and ethnocultural characteristics, the majority of participants in this sample represent perspectives that are underrepresented in the literature, particularly for this special population.

The sample expressed generally positive attitudes toward all forms of mental health support listed in The Help Seeking Preferences measure. This measure was intended to gauge both treatment preferences and flexibility in support utilization. It is possible that the binary response options placed undue limitations on the variance in participants responses. Nevertheless, given that most participants had experience with substance use treatment, it is

possible that the sample truly held such open and generally optimistic views of the utility of different support sources. Qualitative data from participant interviews supported this possibility in that most participants were able to generate positive statements about something they gained from treatment. If results from this assessment are generalizable, it provides evidence in support of other findings indicating that, rather than representing opposing approaches, the treatment and support sources listed in this measure may frequently be endorsed together, such that people may demonstrate somewhat bimodal distributions in their willingness to seek out support (Rüdell et al., 2008)

The Attitudes Toward Professional Care measure yielded a more balanced distribution. Participants indicated, on average, generally positive attitudes toward professional treatment. Nevertheless, participants expressed a range of attitudes toward treatment, which included both more negative and more positive views on either side of that mean score. Additional analyses assessed for differences in attitudes on the basis of cultural variables, including ethnic identity, second language fluency, and enculturation; yet cultural effects were not detected. It is possible that the small sample size limited the power of these analyses. However, the literature has reported highly variable response patters in terms of treatment attitudes and treatment preferences on the basis of ethnicity, immigration status, and country location (e.g., Alvidrez & Azocar, 1999; Nadeem et al., 2008). Thus while the field would benefit from more definitive evidence on this topic, the results reported here are not necessarily in conflict with the extant literature. Furthermore, it is possible that between-group differences in treatment attitudes and preferences may be highly influenced by availability of and access to treatment. Of note, 96.2% of this sample was insured, which is a larger percentage compared to reports from past U.S. studies with comparable sample demographics and research aims (Nadeem et al., 2008). It is

likely that changes in political climate and public policy impacts on treatment access will continue to have noticeable impacts on the dynamics of treatment access, treatment utilization, and attitudes toward professional treatment.

Despite the fact that most participants had experience with substance use treatment, the sample still reported being highly impacted by stigma-related barriers in terms of treatment engagement. In fact, participants rated stigma barriers as significantly more impactful compared to instrumental barriers and all non-stigma barriers, collectively. Given that 81.5% of participants met state and federal poverty guidelines and reported a number of instrumental challenges in their qualitative interviews, the outcome that felt-stigma was rated as more influential than instrumental barriers has strong implications for improving treatment engagement in the community. For instance, ensuring that a clinic waiting room and administrative staff are perceived as non-judgmental and inviting may be equally important to ensuring other aspects of accessibility, such as transportation and insurance coverage. The substantial impact of stigma demonstrated here supports other researchers' assertions that societal stigma directed toward mothers with substance use concerns is largely felt and internalized by this specific population (Jacobs, 2014). Moreover, as expressed through participants reports of these barriers, societal stigma directed toward this particular population is counter-productive to their efforts toward treatment engagement and change.

Subsequent correlational analyses were intended to assess the strength of associations of perceived treatment barriers with measures of help-seeking preferences, attitudes about treatment, treatment engagement, substance use and life satisfaction. The analyses did not detect significant effects for the hypothesized associations between these variables. It is possible that the small sample size limited the power of these analyses to detect potential effects.

Nevertheless, when acculturation and enculturation were entered into the analysis, significant negative associations with past year drug use and family-related barriers to treatment emerged. Although the substance use association was not further supported by the other substance use measures assessed, the result supports the substantial literature indicating a protective impact of enculturation on substance use behavior, particularly when acculturation is strongly endorsed as well (e.g., Lopez-Tamayo et al., 2016; Yoon et al., 2013).

A final set of correlational analyses was conducted separately for White and non-White participants to more thoroughly assess potential associations with the enculturation and acculturation measures cultural, as well as detect potential unique effects based on ethnic identity. Within the subsample of non-White participants, associations between enculturation and acculturation with family-related treatment barriers were substantially strengthened, whereas the same effects had diminished within the subsample of White participants. This seemed to indicate that enculturation and acculturation scores from non-White participants were driving the association when analyses were conducted for the sample as a whole. Within the subsample of White participants, reports of fewer treatment barriers, especially instrumental and family-related barriers, were strongly associated with participants' lifetime substance use treatment engagement. Although interpretations were made with caution for this subsample given its small size, examination of a scatter plot seemed to indicate a strong linear relationship and the associations were consistently significant across all barrier subscales. It was interesting, and somewhat perplexing, that this association emerged for White participants alone. Nevertheless, aside from ethnic differences, this finding fits with a substantial body of literature indicating that women, and particularly mothers, are highly prone to be influenced by family when making treatment decisions (e.g., Jessup et al., 2003; Mayer & Timms, 1970).

Qualitative analyses allowed for additional supportive data as well as unique information that was not detected through quantitative measures. It was a surprise to observe so few stigma-related treatment barriers in response to a question that elicited many other treatment barriers. This was somewhat inconsistent with participants' reports on the BACE, which indicated a larger effect from stigma relative to other treatment barriers. Given the observed inconsistency, it is possible that instrumental variables were readily salient and easily generated in number, whereas perhaps stigmatic barriers are more likely to demonstrate a strong effect when rated in terms of their felt impact.

In general, responses to a question asking, "What about seeking treatment was difficult or undesirable?" were consistent with many of the treatment barrier items assessed in the BACE. However, two unique additional perspectives emerged through the interviews. In particular, "fear" of withdrawal symptoms was indicated by several participants as an obstacle to their treatment involvement. Second, a substantial number of participants described a common experience of needing to retell their personal, sometimes trauma-related, histories to multiple providers. Based on examination of the raw data, these experiences seemed to occur due to high rates of clinician turnover, interdisciplinary patient care, or the structure of services offered by the clinic. Given the frequency of such a specific and consistent response theme, it is reasonable to expect that this experience may not be limited to the women in this study.

Limitations

Limitations in analysis options, power, and interpretations stemmed from the small sample size. Additionally, the study would have benefited from a sample that was balanced with participants uninvolved with treatment, as well as mono-lingual Spanish speaking participants as originally intended. It is possible that similar barriers to those reported in this study are

comparably impactful on this population's ability or willingness to engage with research, including anticipated perceptions of stigma and instrumental barriers including transportation, childcare, and the monetary costs of these resources. In hindsight, some of these limitations may have the potential to be addressed more effectively in future, similar studies given the lessons learned through this one.

Strengths

Despite limitations, this study succeeded in recruiting a sample that was diverse in terms of socio-economic factors and ethnic identity, thereby addressing a prominent gap in the literature. Furthermore, despite the small sample, moderate to large effects were detected that have meaningful implications for the treatment and emotional support needs of this population. For instance, despite the small sample, a significant and stable effect of perceived stigma on treatment engagement was detected. Lastly, qualitative analyses were unhindered by the small sample and revealed additional treatment barriers that are likely unique to this special population.

Future Directions and Conclusions

The literature and healthcare community would benefit from further investigation into ethnocultural impacts on stigma treatment barriers. Given records of disparities and discrimination in healthcare (e.g., Thornicroft, 2008), it seems plausible that stigma may impact different and overlapping populations at comparably high levels, but in qualitatively different ways. Thus continued examination of both joint and discrete experiences of stigma is needed in order to intervene.

Given that this was a challenging sample to recruit for in-person interviews, future studies may benefit from cross-location collaboration using joint or comparable measures. Alternatively, qualitative study designs and analytic approaches may be ideal solutions for

studying the target population. Ideally research and treatment communities will continue to collaborate on efforts to identify and reduce barriers to mental health and substance use treatment.

Although this study sample was limited in size, it gave voice to a collective experience of stigma and its subjective impact on treatment engagement. Given that many to most participants in this sample were single mothers below poverty cutoffs, the overall rating of stigma as more impactful than instrumental barriers was noteworthy. Sadly, these findings support an understanding that women with substance use issues are prone to experience heightened stigma during a time of greater need and vulnerability. Nevertheless, the fact that participants most frequently cited their children as primary motivations for seeking treatment indicates that this may simultaneously be a time of prime opportunity for intervention.

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Figure 1. Hypothesized Model

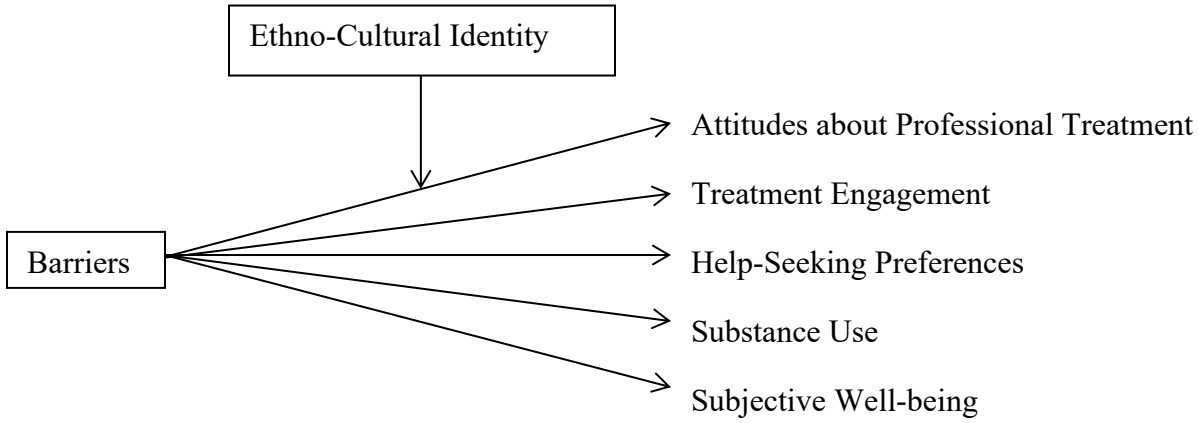

Figure 2. Participant Recruitment Process

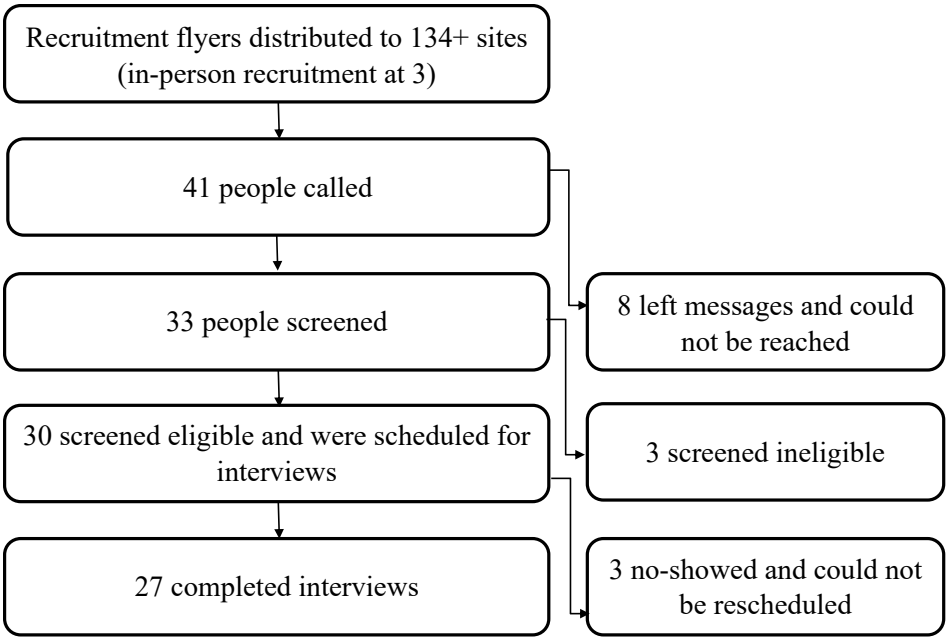

Table 1. Recruitment Outreach and Participant Response by Source

Recruitment Source	Participant Return (n)
1. WIC #1 Broadway	
2. WIC #2 Candelaria	1
3. WIC #3 South Valley	
4. WIC #4 Alamosa	1
5. ASAP	21
6. El Mesquite	
7. Carneceria	
8. Casa de Salud | Isleta & Arenal	
9. 1st Choice Centro Familiar | Avenida & Bridge	
10. Pro's Ranch Market | Atrisco & Central	
11. Clinica la Esperanza | Atrisco & Central	1
12. Downtown bus stops	
13. Offices at 625 Silver Street	
14. Heights park light poles	
15. Downtown park light poles	
16. South Valley park light poles	
17. UNM Posting Board | SUB	
18. UNM Posting Board | Duck Pond/ G-lot & Q-lot shuttle stop	
19. UNM Posting Board | Woodward	
20. UNM Posting Board | The Center of the Universe	
21. UNM Posting Board | Regener Hall	
22. Corner near Walmart San Mateo and Carlisle	
23. SW bus stop San Mateo and Carlisle	
24. Given to man at bus stop for his contacts	
25. SE bust stop San Mateo and Carlisle	
26. Bow and Arrow Lodge motel (Central)	
27. Econo Lodge (Central)	
28. Holiday Inn (Central)	
29. Motel 6 (Central)	
30. Rodeway Inn (Central)	
31. Pinon motel (Central)	
32. Unnamed motel San Mateo and Central	
33. EZ Wash Laundromat (Central)	
34. Red Door coffee shop/bar downtown	
35. Train Station downtown	
36. Under bridge near downtown train station	
37. Ppl Plasma downtown	
38. Emailed to Dr. Erika Johnson-Jimenez for doula contacts	
39. Country Club Market | Coal Avenue & 10th street.	
40. Barela's Community Center | Rio Grande Zoo	
41. Bus Stop | 8th St. & Stover	
42. Wash Tub Laundromat |11th St. and Central	
43. Mary Fox Park | Roma and 13th St.	
44. Light Pole | Gold St. & 1st St.	
45. Bus Stop | Gold St. and 6th St.	
46. El Centro de Igualdad y Derechos | 4th St. & Hazeldine Ave.	
47. NMILC building |Silver St. & 7th St.	
48. Light Pole | Near First United Methodist Church	
49. Hazeldine Park | Hazeldine Ave. & 3rd St.	
50. Bus Stop | Broadway & Central Blvd.	
51. Spin Cycle Laundromat |Atrisco and Central	
52. West Mesa Market | Blue Water & 57th St.	
53. YB Laundromat | Old Coors Dr. & Carlos Rey Circle	
54. All Washed Up Laundromat | Old Coors Dr. & Sage Road	
55. Laundromat | Paisano Center on Coors Blvd.	
56. Wash Tub Laundromat | Rio Bravo & Isleta Blvd.	
57. Division of Vocational Rehabilitation | Isleta Blvd. and Rio Bravo	
58. Adobe Acres Laundromat | Isleta Blvd. & Camino Del Valle	
59. Wash Brite Laundromat | Kathryn Ave. & San Pedro Dr.	
60. The French Quarter Apartments | Paloma Dr. & Ross Ave.	

61. Jack and Jill Park |San Pedro & Bell Ave.
62. Jeanne Bellamah Park | Tomasita St & Constitution Ave.
63. La Michoacana | Zuni & Arizona St.
64. Wilson Park | Anderson Ave. & Cardenas Dr.
65. CASAA waiting area
66. Coop Central and Carlisle
67. Brenda Frink, Brian Kimber, and Jackie West at Turquoise Lodge
68. Craigslist Albuquerque 1
69. Alibi online and print
70. Thai Vegan restauraunt
71. Milagro clinic SE Central
72. Milagro up north
73. Lovelace Grace Program
74. Milagro Tucker Ave
75. emailed to Ali, UNM medical student
76. El Centro Salvila
77. S. Valley Farmer's Market Isleta
78. Expo NM Flea Market
79. Barrett House | Constitution & Eubank
80. Los Altos Park | Lomas & Eubank
81. Goodwill | Menaul & Juan Tabo
82. Spin Cycle Laundromat | Juan Tabo & Prospect Ave.
83. Sunrise Laundromat | Indian School and Tramway
84. Dollar Tree | Lomas & Morris Ave.
85. Rudy's BBQ | Carlisle & I-40
86. Women's Resource Center | UNM
87. UNM Posting Board | Old Education Building
88. Winning Coffee Café | Harvard & Central
89. Robinson Park | Central and 8th St.
90. Rudy's BBQ | Coors & Alameda
91. Sudz Laundromat | 4th & Ranchitos Rd
92. Catholic Charities | Bridge & Pear Rd.
93. Spin Cycle Laundromat | 4th St & Guadalupe Trail
94. EZ Wash Laundromat | Griegos Rd & 4th St
95. Enlace Communitario | Yale & Alamo
96. Royal Car Wash | Central & Shirley St.
97. Bus Stop | Central & Wyoming
98. Tony Hillerman Public Library
99. Mesa Verde Community Center
100. Grace Thrift Store | Central & Utah
101. Mike's Car Wash | Zuni and Rhode Island
102. Carniceria Chihuahua | Zuni and Charleston
103. Phil Chacon Park | Southern & Grove St.
104. Trumbull Park | Pennsylvania & Trumbull Ave.
105. Bus Stop | Front of Warren Sandia Apartments
106. Aspen Ridge Apartments | Louisiana & Continental Loop
107. Cesar E. Chavez Community Center | Kathryn Ave & Louisiana
108. Spin Cycle Laundromat | Louisiana & Central
109. Light pole | Lomas and Carlisle
110. Copy Center | Harvard and Silver Ave.
111. Bookcase Used Books | Cornell and Central
112. Highland Park | Elm & Silver Ave.
113. Light Pole | 4th and Central near alley
114. Light Pole | Central and High St.
115. UNM Posting Board | Outside Zimmerman Library
116. Women's Specialists New Mexico | 1001 Coal Ave. Se.
117. Planned Parenthood | Eubank & Candeleria
118. Planned Parenthood | Lomas & Louisiana
119. Care Net Pregnancy Center | Eubank and Candeleria
120. Domestic Violence Resource Center | Silver & 7th
121. Goodwill | Juan Tabo & Constitution
122. 5 Points Indoor Market | Sunset and Bridge

123. Light Pole | Near Pinon Motel & Apartments	
124. Katie Avery (former contact), Maternal Health Program, DOH	
125. emailed to Maureen Burns, Families First, DOH, 505-476-8911	
126. emailed to Jessi Sanchez, Maternal Health Program, DOH	
127. Zia Apartments	
128. Other Mothers Thrift Store Montgomery	
129. S Broadway Public Library	
130. Planned Parenthood San Mateo & Marquette	
131. Mental Health Fair	
132. Medical Student Estefania Montanez	
133. El Super S. Valley	
134. Zia Family Focus Center	
135. Word of mouth (Participant heard about study from friend, family, or other)	2

Table 2. Demographic Characteristics

	n (%)	*M* (*SD*)
Female	27 (100.0)	
Age		31.15 (4.89)
Ethnicity		
Am. Indian/Al. Native	4 (14.8)	
Black/African Am.	1 (03.7)	
White	7 (25.9)	
Hispanic	12 (44.4)	
Multi-ethnic	3 (11.1)	
Employment		
Full time	1 (03.7)	
Part time.	2 (07.4)	
Homemaker	3 (11.1)	
Unemployed	21 (77.8)	
Language		
English	14 (51.9)	
English and Spanish	10 (37.0)	
English and other	3 (11.1)	
Education Years		13.67 (3.80)

Table 3. Independent and Dependent Variables

	Mean	*SD*	Skewness	Kurtosis
Substance Use				
DAST[1] Past Year	4.93	4.23	-.138	-1.832
DAST[1] Prior to Pregnancy	7.74	3.32	-1.588	1.306
AUDIT[2] Past Year	6.81	10.42	1.687	2.022
AUDIT[2] Prior to Pregnancy	9.52	12.22	1.236	.187
Days Since Last Use	191.52	248.17	1.298	.843
Barriers to Treatment				
Barriers Total	57.93	25.04	-.493	-1.047
Barriers Stigma (raw)	22.15	10.54	-.380	-1.256
Barriers Non-Stigma (raw)	35.78	16.34	-.279	-1.191
Barriers Instrumental (raw)	8.11	4.11	-.683	-.573
Barriers Stigma (average)	1.70	.81	-.380	-1.256
Barriers Non-Stigma (average)	1.28	.58	-.279	-1.191
Barriers Instrumental (average)	1.35	.69	-.683	-.573
Cultural Identity				
Acculturation	75.81	7.29	-1.246	1.749
Enculturation	67.19	16.74	-1.368	.994
Life Satisfaction	11.81	4.26	-.297	-.734
Attitudes toward Treatment	30.70	4.91	-.050	-.580
Help-Seeking Preferences	5.37	1.01	-2.066	4.522
Treatment Engagement (over 90 Days)				
Outpatient Counseling for AUD/SUD	3.33	5.64	2.357	6.259
Outpatient Counseling for Other Concerns	1.00	3.15	3.269	10.106
Total In/Outpatient Treatment AUD/SUD	7.37	17.66	4.265	19.935
Total In/Outpatient Treatment Other	1.00	3.15	3.269	10.106
Opioid Maintenance Medication	37.00	42.45	.382	-1.885
Other Psychotropic Medication	27.89	40.00	.880	-1.181
Religious Attendance	2.11	3.85	2.041	3.074
Treatment Engagement (Lifetime)				
Outpatient Counseling for AUD/SUD	115.48	187.37	2.729	7.199
Outpatient Counseling for Other Concerns	66.96	162.03	3.374	11.483
Total In/Outpatient Treatment AUD/SUD	132.59	196.31	2.311	4.981
Total In/Outpatient Treatment Other	67.11	162.48	3.380	11.537
Opioid Maintenance Medication	572.04	705.65	1.499	1.524
Other Psychotropic Medication	1558.22	2171.45	1.824	3.513

Note: $N = 27$, Skewness $SE = .448$, Kurtosis $SE = .872$. [1]Drug Abuse Screening Test. [2]Alcohol Use Disorder Screening Test.

Table 4. Primary Drugs of Choice among Participants Endorsing Illicit Substance Use

	n (%)
Endorsement of Past Year Use	17 (100.0)
Opiates, Opioids	11 (64.7)
Methamphetamine, Speed	4 (23.5)
Cocaine, Crack	2 (11.8)
Cannabis	0 (00.0)
Sedatives, Tranquilizers, Barbiturates	1 (17.6)
Endorsement of Year Prior to Pregnancy Use	24 (100.0)
Opiates, Opioids	21 (87.5)
Methamphetamine, Speed	9 (37.5)
Cocaine, Crack	0 (00.0)
Cannabis	4 (16.7)
Sedatives, Tranquilizers, Barbiturates	2 (08.3)

Note: Participants provided the above information following each DAST administration assessing two time frames. Drug categories are not mutually exclusive as participants were able to report more than one substance.

Table 5. Correlations between Independent and Dependent Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Barriers Total	-																		
2 B. Stigma	***.89**	-																	
3 B. Non-Stig.	***.96**	***.72**	-																
4 B. Inst.	***.82**	***.61**	***.85**	-															
5 B. Family	***.78**	***.82**	***.65**	***.59**	-														
6 SUD Tx Total	-.32	-.34	-.27	-.21	-.27	-													
7 SUD Therapy	.18	.05	.23	.23	-.08	.22	-												
8 Other Therapy	.15	.22	.09	.16	.17	-.02	.17	-											
9 SUD Meds	.02	-.15	.13	.16	-.10	*.41	*.48	.05	-										
10 Other Meds	.33	.31	.31	.33	.11	-.12	.05	-.05	.15	-									
11 Religion	.23	.27	.18	.04	.14	-.07	.11	.31	.08	-.08	-								
12 Attitudes	-.12	-.05	-.16	-.25	-.26	.13	-.03	.09	.12	-.01	.33	-							
13 Life Satisf.	.28	.19	.31	.35	.20	.15	-.02	.14	-.03	-.26	.26	.06	-						
14 DAST	-.21	-.23	-.18	-.19	-.11	-.08	.36	.00	.16	-.05	-.13	.05	*-.40	-					
15 DAST	-.06	-.20	.04	-.21	-.14	.16	.07	-.14	*.44	-.15	-.04	*.43	.08	.24	-				
16 AUDIT	.15	.13	.14	.13	.13	-.02	*.39	-.08	.02	.19	-.08	-.17	-.29	.33	-.20	-			
17 AUDIT	.06	.14	.00	.06	.12	-.12	.19	.15	.13	.32	.05	.02	-.32	*.38	-.07	***.78**	-		
18 Last Use	.05	.07	.03	-.00	.03	.14	-.22	-.25	-.11	-.16	-.07	.09	*.47	***-.61**	.23	*-.42	*-.44	-	
19 Acculturation	-.24	-.19	-.24	-.19	*-.40	-.00	-.20	-.09	-.07	.07	-.04	-.02	.11	*-.48	-.23	-.19	-.22	.36	-
20 Enculturation	-.18	-.13	-.20	-.18	*-.42	.05	-.18	.17	-.13	.04	.20	.18	.23	*-.48	-.14	-.27	-.20	.30	***.73**

Note: *$p < .05$, ***$p < .01$**. 1) Treatment barriers total. 2) Stigma barriers. 3) Non-stigma barriers. 4) Instrumental barriers. 5) Family-related barriers. 6) All substance use treatment including counseling. 7) Substance use counseling. 8) Counseling for other psychological issues. 9) Opioid maintenance medication. 10) Other psychotropic medication. 11) Religious attendance. 12) Attitudes toward Professional Help score. 13) Satisfaction with Life score. 14) Drug Abuse Screening Test, past year use. 15) Drug Abuse Screening Test, year prior to pregnancy use. 16) Alcohol Use Disorders Screening Test, past year use. 17) Alcohol Use Disorders Screening Test, year prior to pregnancy use. 18) Days since last use at date of interview. All treatment engagement variables were within the 90-day time frame.

Table 6. Cultural Differences in Support Utilization: Mann-Whitney Test Results

	Mann-Whitney U	*Z*	Sig.
Between White and Non-White Participants			
Opioid Maintenance Medication	55.5	-.884	.431
Other Psychotropic Medication	66.0	-.258	.850
Religious Attendance	44.5	-1.588	.162
Substance Use Counseling	60.5	-.578	.607
Between Monolingual and Bilingual Participants			
Opioid Maintenance Medication	90.5	-.027	.981
Other Psychotropic Medication	75.0	-.906	.458
Religious Attendance	75.5	-.847	.458
Substance Use Counseling	84.5	-.347	.756

Table 7. Correlations between Acculturation, Enculturation, Treatment Barriers, Treatment Engagement, and Substance Use

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Enculturation	-	**.73	-.27	-.25	-.15	**-.66	.13	-.18	-.13	.07	-.41	-.19	-.17	-.15
2 Acculturation	.64	-	-.27	-.23	-.08	*-.56	.08	-.11	.04	.21	-.40	-.32	-.09	-.09
3 Barriers Total	.20	-.25	-	**.88	**.81	**.74	-.37	.18	.21	.24	-.13	.02	.15	.01
4 Barriers Stigma	.09	-.32	**.97	-	**.58	**.79	-.39	.05	.10	.14	-.11	-.11	.15	.09
5 Barriers Instrumental	-.06	-.54	**.91	**.88	-	*.56	-.29	.20	.15	.18	-.25	-.20	.07	-.05
6 Barriers Family-related	.08	-.17	**.88	**.90	*.84	-	-.30	.16	.25	.18	.07	.06	.18	.12
7 SUD Tx Total (90 days)	-.02	-.54	.24	.12	.31	-.09	-	.16	-.11	-.08	-.19	.13	-.07	-.17
8 SUD Therapy (90 days)	-.10	-.63	.20	.10	.30	-.13	**.99	-	.08	.13	.33	-.07	.41	.10
9 SUD Tx Total (Lifetime)	.02	.42	*-.79	*-.76	*-.84	*-.85	-.20	-.17	-	**.93	-.02	.20	.24	.18
10 SUD Therapy (Lifetime)	.31	.41	*-.78	-.75	*-.83	*-.83	-.22	-.18	**.99	-	-.13	.14	.22	.19
11 DAST past year	-.58	-.54	-.54	-.53	-.28	-.49	.44	.51	.14	.12	-	.25	.30	.37
12 DAST prior to pregnancy	.62	.18	-.27	-.40	-.30	-.53	.49	.47	.61	.60	.15	-	-.21	-.04
13 AUDIT past year	-.68	-.65	.43	.51	.50	.30	.26	.30	-.58	-.58	.06	-.61	-	**.79
14 AUDIT prior to pregnancy	-.64	**-.95	.35	.43	.55	.20	.55	.62	-.46	-.45	.40	-.27	*.82	-

Note: *$p < .05$, **$p < .01$. Statistics for White participants are located below the diagonal; statistics for non-White participants are located above the diagonal. 7,9) All substance use treatment including counseling. 8,10) Substance use counseling. 11,12) Drug Abuse Screening Test. 13,14) Alcohol Use Disorders Screening Test.

Table 8. Coded Interview Responses

	Frequency	(%)
Favorable Aspects of Motherhood		
Love special bond	14	51.9
Purpose	6	22.2
Child's development/watching them grow	3	11.1
Mom's development	3	11.1
Watching them be happy	2	7.4
All/general statement	1	3.7
Difficult Aspects of Motherhood		
Lack of support	8	30.8
The attention/patience required	7	25.9
Financial cost	3	11.1
Self-doubt re mom skills	3	11.1
Sleep	3	11.1
Co-parenting	2	7.4
Communicating with child	2	7.7
Worrying about child safety	2	7.4
Learning how to be a mom	1	3.7
Watching them change	1	3.7
Factors Encouraging Treatment Engagement		
Pregnancy/child's health	13	48.1
Self-determination	3	11.1
Something to occupy time	3	11.1
Mandated	3	11.1
Personal health	2	7.4
Family pressure/support	2	7.4
"Tired of it"	2	7.4
Religion spirituality	1	3.7
Housing security	1	3.7
	Frequency	(%)

Group therapy	1	3.7
Everything else didn't work	1	3.7
Rapport w providers	1	3.7
Regain custody	1	3.7
Self-improvement	1	3.7
N/A no treatment experience	3	11.1
Perceived Treatment Benefits		
Emotional fortitude/coping skills	9	33.3
Self-compassion	5	18.5
Nothing/don't know	4	14.8
Empowerment/self-efficacy	3	11.1
Normalization of challenges reduced sense of isolation	2	7.4
Help available	2	7.4
Social skills/healthy relationships	2	7.4
Regained functionality	1	3.7
Personal growth	1	3.7
Effects on child	1	3.7
Difficult Aspects of Treatment		
Emotional Barriers		
Retelling of personal experiences to providers	6	22.2
Experiencing difficult emotion or stigma	3	11.1
Being told uncomfortable troths	1	3.7
Instrumental Barriers		
Financial costs	3	11.1
Transportation/distance from clinic	2	7.4
Time cost	2	7.4
Insurance	2	7.4
Substance Use-Related		
Withdrawal symptoms	4	14.8
Living without substance use	3	11.1
	Frequency	(%)

Program-Related		
Limited treatment availability	4	14.8
Perceived ineffectiveness of program	2	7.4
Family	2	7.4