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Family discord is associated with increased substance use for pregnant substance users

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Abstract

Childhood abuse and partner violence are associated with prenatal substance abuse but the potential impact of current family discord, which reflects broader family relationships and encompasses problems less severe than violence, has had little evaluation in pregnant substance users. Using data from 196 pregnant substance users participating in a NIDA Clinical Trials Network randomized clinical trial, we examined the relationship of baseline family discord to substance use and treatment session attendance. Family discord was assessed using items from the family composite of the Addiction Severity Index. Substance use was assessed by the Substance Use Calendar and urine drug screens. Assessments were weekly for four weeks and at two and four months post-randomization. Women with family discord were more likely to report living with a problematic substance user, reported a higher percentage of substance use days throughout each study phase, had a greater proportion of positive urine drug screens over the four month study period, and attended more weeks of treatment during the first month. Specific treatment interventions targeting pregnant women with family discord may be warranted.

1. Introduction

During pregnancy, an estimated 4% of women use illicit substances and 4% binge drink (SAMHSA, 2005). The associated prenatal, neonatal, and postnatal complications represent a leading preventable cause of mental and physical problems in children (Forrester & Merz, 2007; Minnes et al., 2010; Spohr, Willms, & Steinhausen, 2007; Streissguth et al., 2004). It would be helpful to identify remediable variables associated with drug and alcohol use during pregnancy. There are compelling reasons to consider family discord in pregnancy as evidence points toward a chaotic and dangerous family environment as a risk factor for prenatal substance use (Zucker, 2006; Zucker, Boyd, & Howard, 1994). Pregnant women

with substance use problems, compared to those without, are more likely to have come from families-of-origin with substance use problems (Flynn & Chermack, 2008; Hayes et al., 2002) and to have experienced more physical (Hayes et al., 2002; Haynes, Dunnagan, & Christopher, 2003; Kvigne, Bad Heart Bull, Welty, Leonardson, & Lacina, 1998; Leonardson, Loudenburg, & Struck, 2007) and sexual abuse (Hayes et al., 2002; Leonardson et al., 2007). Partner violence is also associated with prenatal substance abuse (Bakhireva et al., 2011; Flynn & Chermack, 2008; Tuten, Jones, Tran, & Svikis, 2004). While there is evidence that serious conditions such as childhood abuse or present partner violence are a risk factor for substance use during pregnancy, less is known about the impact of present family discord in general. This is problematic in that pregnant substance abusers may be highly involved with members of their family, including residing with them, and discord, which is less severe than violence may, nevertheless, impact substance use.

A related issue is the degree to which family discord may be associated with engagement in substance abuse treatment. Substance abusing pregnant women who engage in substance abuse treatment, relative to those not in treatment, have babies with higher birthweights and less substance exposure for the fetus (Jones, Svikis, & Tran, 2002; McMurtrie, Rosenberg, Kerker, Kan, & Graham, 1999). Retaining pregnant women in treatment, however, can be challenging (Kissin, Svikis, Moylan, Haug, & Stitzer, 2004). Compared to men, women may face lack of family or partner support to enter treatment (Maisto, McKay, & O'Farrell, 1995; O'Farrell, Harrison, & Cutter, 1981). Substance abusing pregnant women are more likely to have a partner who is also a substance abuser (Bendersky, Alessandri, Gilbert, & Lewis, 1996; Bresnahan, Zuckerman, & Cabral, 1992; Hutchins & DiPietro, 1997) and men's rates of substance use do not decrease during their partner's pregnancy (Bailey, Hill, Hawkins, Catalano, & Abbott, 2008). However, the role of family discord in treatment engagement has had little evaluation, which is an important gap given that pregnant substance users may be living with family members (e.g., parents, siblings) other than their partners and their relationship with family members could impact their interest and/or ability to engage in treatment.

The present study is a secondary analysis of data from a randomized clinical trial, the results of which have been previously published (Winhusen et al., 2008). The current study explores the association of family discord, defined as any real or perceived problems with family members, with (a) substance use during pregnancy and (b) engagement in substance abuse treatment by pregnant substance users. Our first hypothesis was that pregnant women with family discord would have a greater amount of substance use during outpatient substance abuse treatment than would women without family discord as assessed by both self-report of substance use and urine drug screens (UDS). Speculating that current family discord would be an impediment to treatment attendance, our second hypothesis was that women with greater levels of family discord would have lower rates of treatment engagement.

2. Materials and Methods

2.1 Sites

The parent study was conducted by the National Institute on Drug Abuse (NIDA) Clinical Trials Network (CTN) (Winhusen et al., 2008) in four community treatment programs (CTPs) that offered treatment for pregnant women.

2.2 Participants

Study participants (N=200) were recruited from pregnant women presenting for treatment. The study was approved by all participating sites' Institutional Review Boards and participants were informed of the study procedures prior to signing the informed consent form. Eligible participants were at least 18 years old, confirmed pregnant, and not planning to terminate the pregnancy. Additional eligibility requirements included being identified as needing substance abuse treatment during the CTP's usual screening procedure and stable living arrangements for outpatient treatment. Participants were excluded if they required residential treatment, were more than 32 weeks pregnant, planned to relocate from the area prior to the study's end, had pending legal charges potentially resulting in incarceration, or were significant suicidal or homicidal risks. Data required for the present analyses were available for 196 of the randomized participants.

2.3 Intervention

The study intervention, Motivational Enhancement Therapy for pregnant substance users (MET-PS), was based on motivational interviewing techniques (Miller & Rollnick, 2002) and modified for pregnant substance users (Winhusen et al., 2008). Three MET-PS sessions replaced the intake and first two individual sessions offered by the CTP. Participants assigned to treatment-as-usual (TAU) were offered the usual treatment provided at the CTP with the constraint that they receive at least three individual sessions with a clinician to be comparable to the MET-PS. All participants were encouraged to participate in usual treatment at the CTP where they were admitted.

2.4 Measures

The Substance Use Calendar, a self-report assessment of substance use, was completed using the Timeline Followback procedure (Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000; Sobell & Sobell, 1992). Substance use was assessed for the 28 days prior to baseline and continuous assessment of use was obtained throughout the study at weeks 1, 2, 3, 4, and at months 2 and 4. Percentage of substance use days from the Substance Use Calendar was used as the primary outcome measure.

The secondary outcome measure of substance use was qualitative urine drug screen (UDS) results. Urine samples were collected and tested for opiates, cocaine, methamphetamines, benzodiazepines, and marijuana at screening, weekly during the active study phase, and at the two follow-up visits (2 and 4 months post-randomization). UDS provides an objective measure of substance use and thus UDS generally is preferred to self-report in studies with patients using illicit substances such as opioids or cocaine. However, for the present sample, alcohol was the primary drug of abuse for 10% of the participants. Alcohol was not assessed

by the UDS and thus UDS did not assess the primary substance of use for 10% of the participants. Moreover, marijuana was the primary drug of choice for 31% of the participants. Marijuana use is difficult to assess with UDS since UDS can continue to be positive for 10 days or more in chronic users who have stopped using (i.e., so produces false positives during early abstinence). Thus, for the present sample, self-reported use is the most appropriate primary outcome.

Family discord was defined as “any real or perceived problems with family members, including partners, within the previous 30 days” as rated by the study participant. Family discord was assessed at baseline assessment using four items from the family/social composite of the Addiction Severity Index (McLellan et al., 1992). These four items comprise the family composite in the European version of the ASI (EuropASI) which divides the family/social composite into separate family and social composites (Koeter & Hartgers, 1997; Kokkevi & Hartgers, 1995). The four items are: “Have you had significant periods in which you have experienced serious problems in the past 30 days with: mother, father, brothers/sisters, sexual partner/spouse, children, other significant family member;” “How many days in the past 30 have you had serious conflicts with your family?;” “How troubled or bothered have you been in the past 30 days by family problems?;” and “How important to you now is treatment or counseling for family problems?” For the purposes of this study, if the respondent endorsed a score of “0” on every item she was classified as experiencing “no family discord.” If the respondent endorsed a score > 0 on any item she was classified as experiencing “family discord.” While the family composite has not been scored in this manner previously, face validity supports the use of this measure as an assessment for the presence or absence of family discord.

Information about participants’ living arrangements was obtained using a semi-structured interview conducted as part of the initial evaluation process. Prospective participants were asked about their living arrangements and if they lived with anyone who: (a) used alcohol and/or drugs so much that it made the living situation unsafe and/or (b) physically hurt them or forced unwanted sexual activity on them. They were also asked if there was anything in the foreseeable future that threatened to keep them from having a safe place to live.

2.5 Procedures

See Winhusen et al. (2008) for a full description of study procedure. Briefly, pregnant women identified by CTP clinical staff as requiring substance abuse treatment and expressing an interest in the study were referred to the research assistant. After providing informed consent, screening and baseline assessments were completed. Eligible participants were randomized to receive three individual TAU or MET-PS sessions. Assessments were conducted weekly for the first four weeks and then again at 2 and 4 months post-randomization.

2.6 Data Analysis

Analyses evaluating the relationships between family discord (Yes/No) and the living situation variables all involved relating one categorical variable to another. For the variables reported here, this was accomplished using the Fisher Exact test.

Analyses evaluating the effect of family discord on substance use included treatment (MET-PS vs. TAU) and the family discord by treatment interaction effect. Substance use outcomes were analyzed using Generalized Estimating Equations (GEE) initially including family discord, treatment, week, and all related two-way interaction effects as covariates, but dropping time-related interaction effects where they failed to demonstrate significance ($p > .10$). In addition, for the substance use outcomes, two sets of analyses were conducted: the first included data from the first month of treatment only while the second included the data from randomization through 4 month follow-up.

Analyses evaluating the effect of family discord (Yes/No) on treatment utilization included treatment (MET-PS vs. TAU) and the family discord by treatment interaction effect. The treatment and family discord by treatment interaction effects were evaluated for significance and dropped from the model if non-significant ($p > .10$). The effect of family discord on the ratio of attended to scheduled treatment hours was analyzed using a Cox proportional hazards regression with the log of the number of scheduled hours as a covariate. The survival analysis of time to drop out while pregnant was completed with a Cox proportional hazards model in which data points with a value of 106 or more days were censored, as were the data from participants who withdrew consent. The number of weeks of treatment attended was analyzed with logistic regression using a quasi-likelihood approach to accommodate possible over-dispersion. For all regressions, the significance of specific covariates was evaluated using Type III Wald Chi Square tests.

3. Results

3.1 Sample Characteristics

The sample characteristics by family discord status are provided in Table 1. The participants were, on average, 26 years of age and 20 weeks pregnant at the time of randomization. The majority of study participants were unmarried, unemployed and had, on average, a high school education. As can be seen in Table 1, the sample was diverse in terms of race and ethnicity. There were no statistically significant demographic differences between the two groups for the variables listed in Table 1.

3.2 Living arrangements

Living arrangements, including their safety, as a function of discord status are described in Table 2. Participant living arrangements did not differ significantly as a function of discord status. However, participants with family discord were significantly more likely to report living with someone who used alcohol and/or drugs to the extent that it made the living situation unsafe when compared to participants not reporting family discord ($n=7$, 8.3% versus $n=2$, 1.8% respectively; $p < .05$, Fisher's exact test). There were no other statistically significant differences between the two groups on the safety of living arrangements.

3.3 Substance Use

Higher baseline family discord scores were associated with greater drug use, as assessed by self-report, during both the first month of treatment ($X^2=7.78$, $df=1$, $p<.01$) and over the entire four-month study period ($X^2=7.78$, $df=1$, $p<.01$). Women with family discord reported

greater substance use, relative to those without family discord, regardless of study phase (i.e. baseline through follow-up) [Figure 1(A)]. UDS findings were similar, with a trend noted during the first month of treatment ($X^2=3.24$, $df=1$, $p=.07$) and a significant effect over the 4 month study period ($X^2=4.08$, $df=1$, $p<.05$). Women with family discord had a greater proportion of positive UDSs, relative to women without family discord, regardless of study phase [Figure 1(B)]. There was not a significant treatment x discord interaction effect for the substance use measures.

3.4 Treatment Utilization

Number of weeks in which treatment was attended revealed a significant family discord effect during the first four weeks ($X^2=5.99$, $df=1$, $p<.05$). Women with family discord attended significantly more weeks of treatment during this time, 2.9 (SD=1.0) weeks on average, relative to women without family discord who attended 2.4 (SD=1.4) weeks on average. This difference did not continue after the first four weeks. Analysis of the ratio of attended to scheduled hours revealed no significant discord or discord by treatment effects. The number of days until drop out while pregnant also revealed no significant discord or discord by treatment effects.

4. Discussion

As hypothesized, women with family discord reported more days of substance use relative to women without family discord during each study phase. This result was largely confirmed by the urine toxicology results. To our knowledge, this is the first demonstration that family discord is associated with greater substance use for women who are both pregnant and have a substance use disorder. This is potentially important as there are empirically supported treatments for couples and families where one member has a substance use disorder (Fals-Stewart, Birchler, & O'Farrell, 2003; McCrady, Epstein, Cook, Jensen, & Hildebrandt, 2009; O'Farrell, Murphy, Alter, & Fals-Stewart, 2007). Whether these interventions would be as effective with pregnant substance users is an untested question. It is important to note that these data are not able to address the directionality of the findings. That is, it could be: (a) that family discord led to increased substance use, (b) that higher substance use led to increased family discord, or (c) that there is a reciprocal cause-effect relationship between family discord and substance use.

Unexpectedly, women with family discord attended more weeks of treatment during the first month than did women without family discord. The women with family discord received about 20% more treatment during this time than did the women without family discord. While women, in general, receive less family support to enter treatment than do men (Maisto et al., 1995; O'Farrell et al., 1981) these studies did not focus specifically on women who were pregnant. To evaluate this finding further, we examined available data on the safety of the living situation of the participants. The women reporting family discord were more likely to report living with someone who abused alcohol and/or drugs so much that it made the living situation unsafe. While it has been demonstrated that partners of pregnant substance abusing women are often substance users themselves (Bendersky et al., 1996; Bresnahan et al., 1992; Hutchins & DiPietro, 1997), these studies did not assess family discord. As above, however, it is not possible to evaluate the directionality of this

association. Another caveat is that the number of women reporting living with someone abusing alcohol and/or drugs such that it made the living situation unsafe was small (7 in the family discord group and 2 in the no-family discord group), making the result potentially unstable. It is likely that other women were living with someone abusing alcohol and/or drugs but did not feel this made the living situation unsafe.

It is of interest that the women with family discord were both using more substances as well as attending more treatment sessions during the first month. It could be that families of the women using greater amounts of substances were more encouraging of the women to participate in treatment than the families of women using lesser amounts. Another possibility is that the women with both family discord and greater substance use correctly perceived they had a greater need for treatment but the motivation to obtain this treatment waned over time.

There are limitations to the present study which warrant consideration. The psychometric properties of the measure of family discord, while having face validity, are not established and this measure has not previously been used to assess family discord in this population. Participants with low levels of family discord were grouped with those experiencing higher levels. If anything, this could have muted the positive results. A formula for deriving a continuous family composite score that ranges between 0.00 and 1.00 has been proposed (Koeter & Hartgers, 1997) but there is little knowledge of the psychometric properties of the continuous measure (Karow, Verthein, Krausz, & Schafer, 2008). With little psychometric support for either use of the family composite, we chose the more conservative, dichotomous scoring approach. Use of established family assessment instruments such as the Family Assessment Device (Epstein, Baldwin, & Bishop, 1983) would be desirable in future research.

Another limitation is that there remain unanswered questions regarding the women's relationships, particularly with the father of their child. For example, it is unknown whether the fathers remained active in the lives of the women or whether they were a source of support or stress. This is an area for future research. The present results point toward an association between family discord and both substance use and treatment engagement. Further research is needed to increase our understanding of the dynamics and directionality of this relationship as a precursor to the design and testing of family interventions for women who are pregnant and substance users.

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References

- Bailey JA, Hill KG, Hawkins JD, Catalano RF, Abbott RD. Men's and women's patterns of substance use around pregnancy. *Birth*. 2008; 35:50–59. [PubMed: 18307488]
- Bakhireva LN, Wilsnack SC, Kristjanson A, Yevtushok L, Onishenko S, Wertenlecker W, Chambers CD. Paternal drinking, intimate relationship quality, and alcohol consumption in pregnant Ukrainian women. *Journal of Studies on Alcohol and Drugs*. 2011; 72:536–544. [PubMed: 21683035]
- Bendersky M, Alessandri S, Gilbert P, Lewis M. Characteristics of pregnant substance abusers in two cities in the northeast. *The American Journal of Drug and Alcohol Abuse*. 1996; 22:349–362. [PubMed: 8841684]
- Bresnahan K, Zuckerman B, Cabral H. Psychosocial correlates of drug and heavy alcohol use among pregnant women at risk for drug use. *Obstetrics and Gynecology*. 1992; 80:976–980. [PubMed: 1448267]
- Epstein NB, Baldwin LM, Bishop DS. The McMaster family assessment device. *Journal of Marital and Family Therapy*. 1983; 9:171–180.
- Fals-Stewart, W.; Birchler, GR.; O'Farrell, TJ. Alcohol and other substance abuse. In: Snyder, DK.; Whisman, MA., editors. *Treating difficult couples*. New York: Guilford; 2003. p. 159–180.
- Fals-Stewart W, O'Farrell TJ, Freitas TT, McFarlin SK, Rutigliano P. The timeline followback reports of psychoactive substance use by drug-abusing patients: Psychometric properties. *Journal of Consulting and Clinical Psychology*. 2000; 68:134–44. [PubMed: 10710848]
- Flynn HA, Chermack ST. Prenatal alcohol use: The role of lifetime problems with alcohol, drugs, depression, and violence. *Journal of Studies on Alcohol and Drugs*. 2008; 69:500–509. [PubMed: 18612565]
- Forrester MB, Merz RD. Risk of selected birth defects with prenatal illicit drug use, Hawaii, 1986–2002. *Journal of Toxicology and Environmental Health Part A*. 2007; 70:7–18. [PubMed: 17162495]
- Hayes MJM, Brown EE, Hofmaster PAP, Davare AAA, Parker KGK, Raczek JAJ. Prenatal alcohol intake in a rural, Caucasian clinic. *Family Medicine*. 2002; 34:120–125. [PubMed: 11874021]
- Haynes G, Dunnagan T, Christopher S. Determinants of alcohol use in pregnant women at risk for alcohol consumption. *Neurotoxicology and Teratology*. 2003; 25:659–666. [PubMed: 14624964]
- Hutchins E, DiPietro J. Psychosocial risk factors associated with cocaine use during pregnancy: A case-control study. *Obstetrics and Gynecology*. 1997; 90:142–147. [PubMed: 9207829]
- Jones HE, Svikis DS, Tran G. Patient compliance and maternal/infant outcomes in pregnant drug-using women. *Substance Use and Misuse*. 2002; 37:1411–1422. [PubMed: 12371578]
- Karow A, Verthein U, Krausz M, Schafer I. Association of personality disorders, family conflicts and treatment with quality of life in opiate addiction. *European Addiction Research*. 2008; 14:38–46. [PubMed: 18182771]
- Kissin WB, Svikis DS, Moylan P, Haug NA, Stitzer ML. Identifying pregnant women at risk for early attrition from substance abuse treatment. *Journal of Substance Abuse Treatment*. 2004; 27:31–38. [PubMed: 15223091]
- Koeter, MWJ.; Hartgers, C. Preliminary procedure for the computation of EuropASI composite scores. Amsterdam: The Amsterdam Institute for Addiction Research; 1997.
- Kokkevi A, Hartgers C. Europe ASI: European adaptation of a multidimensional assessment instrument for drug and alcohol dependence. *European Addiction Research*. 1995; 1:208–210.
- Kvigne VL, Bad Heart Bull L, Welty TK, Leonardson GR, Lacina L. Relationship of prenatal alcohol use with maternal and prenatal factors in American Indian women. *Social Biology*. 1998; 45:214–222. [PubMed: 10085735]
- Leonardson GR, Loudenburg R, Struck J. Factors predictive of alcohol use during pregnancy in three rural states. *Behavioral and Brain Functions*. 2007; 3:8. [PubMed: 17291346]
- Maisto SA, McKay JR, O'Farrell TJ. Relapse precipitants and behavioral marital therapy. *Addictive Behaviors*. 1995; 20:383–93. [PubMed: 7653319]

- McCrady BS, Epstein EE, Cook S, Jensen N, Hildebrandt T. A randomized trial of individual and couple behavioral alcohol treatment for women. *Journal of Consulting and Clinical Psychology*. 2009; 77:243–256. [PubMed: 19309184]
- McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, Argeriou M. The 5th edition of the addiction severity index. *Journal of Substance Abuse Treatment*. 1992; 9:199–213. [PubMed: 1334156]
- McMurtrie C, Rosenberg KD, Kerker BD, Kan J, Graham EH. A unique drug treatment program for pregnant and postpartum substance-using women in new york city: Results of a pilot project, 1990–1995. *The American Journal of Drug and Alcohol Abuse*. 1999; 25:701–713. [PubMed: 10548443]
- Miller, WR.; Rollnick, S. *Motivational interviewing: Preparing people for change*. 2. New York: Guilford Press; 2002.
- Minnes S, Singer LT, Kirchner HL, Short E, Lewis B, Satayathum S, Queh D. The effects of prenatal cocaine exposure on problem behavior in children 4–10 years. *Neurotoxicology and Teratology*. 2010; 32:443–451. [PubMed: 20227491]
- O'Farrell TJ, Murphy M, Alter J, Fals-Stewart W. Brief family treatment intervention to promote continuing care among alcohol-dependent patients in inpatient detoxification: A randomized pilot study. *Journal of Substance Abuse Treatment*. 2007; 32:363–369. [PubMed: 17614242]
- O'Farrell TJ, Harrison RH, Cutter HS. Marital stability among wives of alcoholics: An evaluation of three explanations. *British Journal of Addiction*. 1981; 76:175–89. [PubMed: 6944085]
- SAMHSA Office of Applied Studies. Substance use during pregnancy: 2002 and 2003 update. The NSHDU Report. 2005 Jun 2.
- Sobell, LC.; Sobell, MB. Timeline follow-back: A technique for self-reported alcohol consumption. In: Litten, RZ.; Allen, JP., editors. *Measuring alcohol consumption*. Totowa, NJ: Humana Press; 1992. p. 41-72.
- Spohr HL, Willms J, Steinhausen HC. Fetal alcohol spectrum disorders in young adulthood. *The Journal of Pediatrics*. 2007; 150:175–179. [PubMed: 17236896]
- Streissguth AP, Bookstein FL, Barr HM, Sampson PD, O'Malley K, Young JK. Risk factors for adverse life outcomes in fetal alcohol syndrome and fetal alcohol effects. *Journal of Developmental and Behavioral Pediatrics*. 2004; 25:228–238. [PubMed: 15308923]
- Tuten M, Jones HE, Tran G, Svikis DS. Partner violence impacts the psychosocial and psychiatric status of pregnant, drug-dependent women. *Addictive Behaviors*. 2004; 29:1029–1034. [PubMed: 15219353]
- Winhusen T, Kropp F, Babcock D, Hague D, Erickson SJ, Renz C, Somoza E. Motivational enhancement therapy to improve treatment utilization and outcome in pregnant substance users. *Journal of Substance Abuse Treatment*. 2008; 35:161–173. [PubMed: 18083322]
- Zucker, RA. Alcohol use and the alcohol use disorders: A developmental-biopsychosocial systems formulation covering the life course. In: Cicchetti, D.; Cohen, DJ., editors. *Developmental psychopathology*, vol. 3: Risk, disorder, and adaptation. 2. Hoboken, NJ: John Wiley & Sons; 2006. p. 620-656.
- Zucker, R.; Boyd, G.; Howard, J. *The development of alcohol problems: Exploring the biopsychosocial matrix of risk*. NIAAA research monograph no. 26, NIH publication no. 94-3495. Rockville, MD: National Institute; 1994.

(A)

(B)

Figure 1.

Mean proportion of self reported substance use days (A) and positive urine screens (B) as a function of family discord status and time

Table 1

Participant demographic and baseline characteristics

	<u>Family Discord</u>	<u>No Family Discord</u>
Sample size	84	112
Age (Years)	25.2 (5.3)	26.4 (5.4)
Race/ethnicity (%) ^a		
African American	26.2	37.5
Caucasian	40.5	36.6
Hispanic	23.8	14.3
Other	9.5	10.7
Marital status (%)		
married	14.3	11.6
separated/divorced	9.5	6.3
not married	7.1	8.9
never married	69	73.2
Education (years)	11.5 (1.7)	11.5 (1.7)
Employed full/part-time (%) (past 30 days)	25.0	24.10%
Weeks pregnant	20.1 (11.6)	21.1 (7.9)
Primary drug used (%)		
Alcohol	10.7	9.8
Cocaine	20.2	27.7
Marijuana	38.1	26.8
Opiates	15.5	9.8
Methamphetamine	8.3	6.3
Benzodiazepines	1.2	0.9
Other	6	18.8
Days of Use (past 28)	10.6 (11.9)	8.7 (10.6)

^a Percentages do not add up to 100 in the non-discord sample due to one participant choosing not to identify her ethnicity

Table 2

Living arrangement as a function of family discord status

	Family Discord N=84	No Family Discord N=112	Fisher's Exact *
Current living arrangement:			0.00
Own residence	46.4%	39.3%	
With parents	22.6%	29.5%	
With other family	16.7%	13.4%	
With friends	6.0%	4.5%	
Controlled environment	8.3%	10.7%	
No stable residence	0.0%	2.7%	
The participant lives with someone who:			
Uses alcohol or drugs to the point that the living situation is unsafe	8.3%	1.8%	0.028 **
Physically or sexually abuses the participant	1.2%	0.0%	0.429
The participant has an issue in the foreseeable future that threatens having a safe place to live	3.6%	0.9%	0.179

* Fisher's Exact P statistic;

**
p < 0.05