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Maternal Self Concept as a Provider and Cessation of Substance Use During Pregnancy

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Abstract

Objective—Maternal substance use during pregnancy is a common modifiable risk factor for poor birth outcomes, and is associated with long term psychological risks to offspring. As self concept is known to affect substance use behaviors in non-pregnant women, we hypothesized that self concept as a provider may be particularly salient to cessation of use during pregnancy. To isolate psychological processes specific to pregnancy from those associated with the transition to parenthood, we examined birth mothers who made adoption placements participating in the Early Growth and Development Study.

Methods—We obtained lifetime and pregnancy substance use history and psychological measures at 3 to 4 months postpartum from 693 women recruited from the Northwest, Southwest, and Mid-Atlantic regions of the United States. Life history calendar and computer-assisted personal interviewing methods were used to minimize reporting bias. Using logistic regression, we assessed the association of self concept as an adequate provider with cessation of substance use during pregnancy, controlling for sociodemographic variables, depressive symptoms experienced

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during pregnancy, past year antisocial behaviors, family history of substance abuse, timing of pregnancy recognition, timing of initiation of prenatal care, and emotional adjustment to the adoption decision.

Results—More positive self-concept as an adequate provider was independently associated with cessation of substance use and earlier initiation of prenatal care during pregnancy [OR = 1.223; 95% C.I. (1.005 - 1.489); B(SE) = .201(.100)]. Familial substance abuse, depressive symptoms, and antisocial behaviors during pregnancy, were also independent predictors, and more strongly associated with cessation [OR = .531; 95% C.I. (.375 - .751); B(SE) = -.634 (.178)], [OR = .940; 95% C.I. (.906 - .975); B(SE) = -.062(.019)], [OR = .961; 95% C.I. (.927 - .996); B(SE) = -.040(.018)].

Conclusions—Enhancing maternal identity as a provider for the fetus during pregnancy, along with treatment of depression, may improve motivation to stop substance use.

Keywords

Smoking; pregnancy; substance abuse; self concept; antisocial behavior; depression

1. Introduction

Despite ample evidence that pregnancy is a unique and salient factor in smoking cessation (Woodby, Windsor, Snyder, Kohler, & DiClemente, 1999; Ruggiero, Tsoh, Everett, Fava, & Guise, 2000), and cessation of other substances of abuse (Crozier, Robinson, Borland, Godfrey, Cooper, & Inskip, 2009), it is unclear why. Women who quit smoking during pregnancy are more confident and successful in abstaining during their pregnancy compared to non-pregnant women over a similar period of time, yet do not seem to utilize the same behavioral processes associated with successful abstinence as utilized by non-pregnant quitters (Stotts, DiClemente, Carbonari, & Mullen, 1996; Buja, Guarnieri, Forza, Tognazzo, Sandonà, & Zampieron, 2011). Understanding the psychological processes that account for greater motivation to stop substance use during pregnancy can inform the design of more effective prenatal interventions, and may also provide insights about motivation to change addictive behaviors more broadly.

It is well known that motivation to change substance use behaviors is complex (DiClemente, 1999); during pregnancy, motivation may involve short term factors related to pregnancy, such as wanting to provide a healthy environment for the fetus, and long term factors associated with anticipated parenthood, such as not wanting to be known by the child as a smoker (Curry, McBride, Grothaus, Lando & Pirie, 2001). In normal pregnancies, these processes are difficult to disentangle since most women anticipate parenting the child resulting from their pregnancy. To isolate the specific psychological effects of pregnancy on substance use behavior, we examined a sample of women who all made postnatal adoption placements following their pregnancies. In these women, motivation for cessation of substance use may have been more directly attributable to pregnancy, specifically, the presence of a fetus inextricably linked to them, and affected by their substance use. We have previously shown, using a subset of this sample, that women who stopped substance use during pregnancy reported greater feelings of self worth, and fewer symptoms of anxiety and depression, suggesting important psychological differences between women who stop using substances during pregnancy and women who continue (Massey, Lieberman, Reiss, Leve, Shaw, & Neiderhiser, 2011). The goal of this study was to elucidate how self concept associated with pregnancy may influence motivation to stop substance use, defined herein, as the use of tobacco, alcohol, illicit drugs or prescription drugs used for non-medical purposes.

Self concept is an important source of motivation for abstinence in non-pregnant substance abusing women (Donovan & Rosengren, 2000; Avants, Margolin & Singer, 1994). During pregnancy, self concept may be particularly salient since women begin to provide for the nutritional needs of the developing fetus, and substance use, once an individual behavior, becomes a maternal behavior (Bailey & Hailey, 1986; Smith, 1999). As such, acknowledgement of the new role as a provider during pregnancy (or lack thereof) may influence motivation for stopping substance abuse. Furthermore, as self-efficacy to quit smoking is predictive of successful quitting during pregnancy (Manfredi, Crittenden, & Dolecek, 2007), women's perceived efficacy as providers may be similarly predictive of successful cessation of substance use during pregnancy. The goal of this study was to test the hypothesis that self concept as a provider would be independently related to cessation of substance use during pregnancy, taking into account the timing of recognition of the pregnancy, and the timing of prenatal care initiation, both of which would be expected to affect provider self concept. Additionally, we controlled for known correlates of prenatal substance use including age, race, income, educational attainment (Cnattingius, 2004), familial substance abuse (Agrawal et al., 2008), maternal antisocial behavior (Weaver, Campbell R, Mermelstein R., & Wakschlag, 2008), and depressive symptoms experienced during the pregnancy (Zhu & Valbo, 2002, Prusakowski, Shofer, Rhodes, & Mills, 2010).

2. Methods

2.1. Sample

Participants were birth mothers participating in the Early Growth and Development Study (EGDS), a prospective study of birth parents and adoptive families, linked through the adopted child aimed at examining the interplay of genes and environment on offspring development (Leve, Neiderhiser, Ge, Scaramella, Conger, Reid, Shaw & Reiss, 2007; Leve, Neiderhiser, Scaramella, & Reiss, 2010). The EGDS drew its sample from 33 adoption agencies in 10 states across three regions in the United States: Northwest, Southwest, and Mid-Atlantic. These agencies reflect the full range of U.S. adoption agencies: public, private, religious, secular, those favoring open adoptions, and those favoring closed adoptions. So as not to influence their decision to place versus raise their children, we needed to approach and recruit potential participants after adoption processes were legally concluded, at 3 to 4 months postpartum. Demographic information for the total EGDS birth mother sample is as follows: Mean age was 25.1 years (standard deviation (SD) = 6.2 years), mean annual household income was \$25,000 (SD = \$16,000), and mean educational attainment was a high school degree. Racial/ethnic distribution was: 69.2% Caucasian, 13.7% African American, 6.5% Hispanic, 4.3% more than one race, 2.3% American Indian or Alaskan Native, 1.8% Asian, 2.2% unknown or not reported. Marital status was: 55.5% single, never married; 18.9% living with a partner in a committed relationship; 11.1% married; 10.5 % divorced, not remarried; 3.7% separated; 0.5% remarried; 0.3% single, widowed.

2.2. Study Design

The current study is a cross-sectional secondary data analysis aimed at understanding psychological processes involved in the cessation of addictive substance use (defined as the use of tobacco, alcohol, illicit drugs, or prescription drugs used for non-medical purposes) specifically due to pregnancy. Factors which may have contributed to the development of substance use prior to pregnancy can confound differences observed between pregnancy users and pregnancy nonusers. Thus, we excluded women who never used these substances prior to pregnancy and examined only the 693 birth mothers in the EGDS sample (out of a total of 913) who reported any lifetime use of tobacco, alcohol, illicit drugs, or prescription drugs used for non-medical purposes. There were no statistically significant differences in

demographic information between the total EGDS birth mother sample and the study sample. Participants completed in-person assessments with a trained interviewer at 3 to 4 months postpartum. The specific method used for each measure, within the context of these in-person assessments, is described below.

2.3 Measures

2.3.1. Substance Use—Utilizing computer-assisted personal interviews (CAPI) conducted in a private setting, known to reduce social desirability bias in reporting sensitive information (Duffy & Waterton, 1984; Gallant, 1985; Turner, Ku, Rogers, Lindberg, Pleck, & Sonenstein, 1998; Newman, Des Jarlais, Turner, Gribble, Cooley, & Paone, 2002; Perlis, Des Jarlais, Friedman, Arasteh, & Turner, 2004), we assessed lifetime substance use using a modified Composite International Diagnostic Interview-Short Form (CIDI-SF) (Kessler, Andrews, Mroczek, Ustun & Wittchen, 1998). Questions were modified to pertain to lifetime rather than 12-month use, and to include tobacco, in addition to alcohol, marijuana (marijuana or hashish), painkillers (prescription opiates), sedatives (barbiturates and non-benzodiazepine hypnotics), hallucinogens (LSD, MDMA, mescaline), inhalants, amphetamines (included methamphetamine and prescription stimulants), cocaine, heroin, and tranquilizers (benzodiazepines). Cronbach's α was between .94 and 1 for subscales pertaining to different substances of abuse.

We assessed substance use during pregnancy using the Pregnancy History Calendar (PHC) developed for this study, based on the Life History Calendar method of retrospective reporting (Caspi, Moffitt, Thornton, Freedman, Amell, Harrington, Smeijers, & Silva, 1996). The interviewer helped each participant create a timeline of memorable events during the past year including, but not limited to, pregnancy-related events. Then, participants were asked to refer to this timeline to assist in the recall of substance use. We then created a dichotomous variable to reflect cessation of substance use during pregnancy, versus continued use of any substance, derived from information about the presence of lifetime substance use (CIDI-SF), and the absence of any use during pregnancy (PHC).

2.3.2. Self Concept as a Provider—We assessed self concept as a provider using the 4-item Adequacy as a Provider subscale from a CAPI version of the Adult Self-Perception Profile, a 50-item measure of domain-specific self-concept (Messner & Harter, 2007). An example of one item is, “Some adults feel they are not adequately supporting themselves and those who are important to them BUT other adults feel they are providing adequate support for themselves and others.” Participants were asked to select which statement was most like them and rate whether the statement was “really true for me” or “sort of true for me”. Each item is scored from 1 to 4, with 1 indicating lowest self concept and 4 indicating the highest ($\alpha = .80$). The adequacy as a provider subscale has shown moderate rank-order stability ($r = .50$) over a one year period in young adults (Donnellan, Trzesniewski, Conger KJ, & Conger RD, 2007); for this study, in which assessment occurred 3 to 4 months postpartum, we expected that the scale provided a reasonable reflection of self concept during pregnancy.

2.3.3. Known Correlates of Prenatal Substance Use—Depressive symptoms experienced during the pregnancy were assessed using items from the Beck Depression Inventory (Beck, Steer, & Garbin, 1988), utilizing the PHC described in section 2.3.1 to assist in recall ($\alpha = .83$). Antisocial behavior was assessed using the 38-item Elliot Social Behavior Questionnaire (Elliot & Huizinga, 1983), a self-report questionnaire that was mailed to participants to be completed prior to the in-person assessment. Participants rated the frequency with which they engaged in behaviors that violated the rights of others in the past year, including lying, stealing, purposely damaging or destroying property, purposely setting a fire, and carrying a concealed weapon ($\alpha = .88$). Family history of substance use

disorders was obtained using the Family History Research Diagnostic Criteria, which assesses familial presence of twelve common psychiatric disorders utilizing diagnostic criteria (Andreasen, Endicott, Spitzer, & Winkour, 1977). Endorsing one or more first-degree family members with a drug or alcohol problem was coded as a positive family history of substance use disorders.

2.3.4. Demographic and Pregnancy Variables—Age, race, ethnicity, marital status, educational attainment, household income, date of recognition of the pregnancy, date of initiation of prenatal care, and estimated due date were collected from participants. Gestational age in weeks at which participants knew they were pregnant, and when they initiated prenatal care, respectively, were then calculated using the estimated due date as 40 weeks gestation (Mittendorf, Williams, Berkey, & Cotter, 1990).

2.3.5. Emotional Adjustment to Adoption Decision—Emotions associated with the adoption planning process could have affected overall adjustment, self concept, and, indirectly, substance use behaviors. Thus, we included emotional adjustment specifically attributable to the adoption decision as covariate. During the in-person interview, participants were asked how the process of making an adoption plan affected eleven different factors in their lives (quality of their romantic relationship, financial well-being, physical health, mental health, friendships, relationship with the birth father, general satisfaction with life, satisfaction with their physical appearance, relationship with their parents, sense of control over life, and ability to plan for the future). They were then asked to rate whether the adoption placement made each factor “improved a lot, improved slightly, unchanged, slightly worse, or a lot worse.” The sum of responses was reverse-scored to create a variable reflecting emotional adjustment to the adoption process.

2.4. Theory/Calculation

First, we performed two-tailed t-tests for continuous variables and chi-square tests for categorical variables to evaluate differences between participants who stopped substance use during pregnancy (pregnancy abstainers) and those who did not stop substance use during pregnancy (pregnancy users). We then assessed for multicollinearity among independent variables, defined as $r > .60$, using bivariate correlation analyses. Since we hypothesized that recognition of the pregnancy would influence substance use, we controlled for the timing of pregnancy recognition. Furthermore, as initiation of prenatal care might be expected to influence motivation for changing health-related behaviors, we also controlled for the timing of the first prenatal care visit. Independent variables demonstrating a significant correlation to the dependent variable, cessation of substance use versus continued use of any substance during pregnancy, were entered with self concept as a provider into a logistic regression model to determine the relationship between self concept as a provider and cessation of substance use during pregnancy, independent of control variables. As most women do not undergo an adoption planning process during pregnancy, we also entered emotional adjustment to the adoption process into the regression analysis. All analyses were performed using PASW Statistics 18 (SPSS, Inc., 2009).

3. Results

Thirty-seven percent of participants discontinued use of all substances during the pregnancy. Among the pregnancy users, 44% smoked cigarettes, 22.9% drank alcohol, and 26.5% used an illicit drug; 77% used more than one substance. We found no significant differences between pregnancy abstainers and pregnancy users with respect to age, race, ethnicity, marital status, household income, gestational age when the pregnancy was recognized, gestational age when prenatal care was initiated, and emotional adjustment to the adoption

process (Tables 1 and 2). Women who abstained from substance use during pregnancy exhibited greater educational attainment, were less likely to have a family history of substance use disorders, endorsed fewer antisocial behaviors, had a more positive self-concept as a provider, and endorsed fewer depressive symptoms during pregnancy (Table 2). In the correlational analysis, family history, antisocial behavior, self concept as a provider, and depressive symptoms were all associated with cessation of substance use during pregnancy in the hypothesized directions, without evidence of multicollinearity. Emotional adjustment to the adoption process was inversely related to family history of substance use disorders, antisocial behavior, and depressive symptoms. Self concept as a provider was positively correlated with earlier initiation of prenatal care (Table 3). In the regression analysis, self concept as a provider was independently associated with cessation of substance use during pregnancy. Familial substance abuse, antisocial behavior, and depressive symptoms were also independently related to cessation of substance use during pregnancy, whereas emotional adjustment to the adoption process was not (Table 4).

4. Discussion

This study was aimed at understanding how a provider self-concept specific to pregnancy may be a powerful motivator for stopping substance use, even when raising the resulting child is not anticipated. As hypothesized, women's self-concept as an adequate provider was independently related to cessation of substance use during pregnancy. Based on common reasons for adoption placement including unintended pregnancy, financial stress, and unreadiness for parenthood (Edwards & Williams, 2000), and the association of unintended pregnancy with continued cigarette smoking during pregnancy, (Cheng, Schwartz, Douglas, & Horon, 2009), it is particularly notable, that how participants viewed themselves in regard to providing for others still distinguished between pregnancy abstainers and pregnancy substance users. We considered that low scores on self-concept as a provider could also reflect the perceived inability to earn money. However, pregnancy substance users and pregnancy abstainers did not differ with respect to income. Furthermore, perceived adequacy as a provider was also significantly correlated with initiating prenatal care earlier in pregnancy, though not to earlier recognition of pregnancy.

Similar to our results regarding cessation of all substances, other investigators have shown that women who continue cigarette smoking during pregnancy face greater challenges in psychosocial and adaptive functioning, compared to those who quit (Wakschlag, Pickett, Middlecamp, Walton, Tenzer, & Leventhal, 2003). The relationship between self concept as a provider and cessation of substance use during pregnancy could be mediated by greater self-efficacy, not measured in this study (Mullen, Pollak, & Kok, 1999). Also consistent with previous studies, we found a strong relationships between depression and continued substance use during pregnancy (Prusakowski, Shofer, Rhodes, & Mills, 2010, Lewis, et al., 2011), antisocial behavior and continued substance use during pregnancy (Weaver, Campbell R, Mermelstein R., & Wakschlag, 2008), and familial substance abuse and continued substance use during pregnancy (Agrawal et al., 2008). Since depression may be the most malleable to intervention, screening and treatment for prenatal depression may be crucial to helping pregnancy substance abusers achieve abstinence. Understanding how maternal antisocial behaviors may represent barriers to cessation or treatment engagement is also important to reducing prenatal substance exposures.

We considered that a more positive self-concept could be related to a lesser degree of substance dependence, or certain personality characteristics previously associated with less severe substance use (Babor, Hofmann, DelBoca, Hesselbrock, Meyer, Dolinsky, et al., 1992), yielding a greater capacity to moderate substance use in response to pregnancy. Specifically, this capacity for regulation of substance use may be related to lower novelty

seeking and harm avoidance, and greater self-directedness (Ball, Kranzler, Tennen, Poling, & Rounsaville, 1998). However, in an ad hoc analysis, we did not find any relationship between self concept as a provider and novelty seeking, harm avoidance, or self-directedness from the Temperament and Character Inventory, available from our dataset (Cloninger, Svrakic, & Przybeck, 1993). This provides evidence that self concept as a provider is, in fact, a unique contributor to motivation to stop substance use in the context of pregnancy. Nonetheless, future studies that control for the degree of substance dependence would be important to confirm the independent relationship between self-concept as provider and cessation of substance use during pregnancy.

In this study, we propose a novel approach to use an adoption sample of pregnant women to isolate motivation to stop substance use in response to pregnancy from motivation related to anticipation of parenting a potentially exposed child. This approach raises an important question about the generalizability of findings to the broader population of pregnant women who do not place their children for adoption. For example, emotional difficulties specific to the adoption planning process could have influenced motivation to stop substance use. We attempted to account for this possibility by entering participants' self-reported emotional adjustment to the adoption process into the regression model; in doing so, the main effect of self concept on substance cessation remained essentially unchanged lending some support to the generalizability of our findings to women who do not pursue adoption placement. Nonetheless, future efforts should be made to determine the importance of self-concept in motivation for stopping substance use during pregnancy using a more representative sample of pregnant women.

Next, the assessment of participants several months after the pregnancy makes some findings more reliable than others. For example, the relationship between family history of substance use disorders and cessation of substance use during pregnancy is the strongest finding from a methodological standpoint because of the temporal relationship between variables. Other relationships should be interpreted with some caution; future prospective studies would be important to confirm the role of self concept as a provider in motivation to stop substance use during pregnancy. Finally, to address the possibility of social desirability bias in reporting about substance use during pregnancy, we utilized computer-assisted personal interviewing to improve the accuracy of reports. We also attempted to minimize reliance on self reported substance use by exploring multiple measures of psychosocial adjustment likely to be related to prenatal substance use, including depression, antisocial behavior and socioeconomic factors. Even after accounting for these factors, we found an independent, albeit modest, relationship between self concept as a provider and cessation of substance use during pregnancy. In fact, error due to self report of substance use may have actually attenuated measured associations between self concept and cessation of substance use, and possibly inflated those found between antisocial behavior and continued substance use.

5. Conclusions

In this initial exploration of psychological mechanisms that may underlie increased motivation to stop substance use during pregnancy, we found a significant association between a woman's perceived adequacy as a provider and cessation of substance use during pregnancy, independent of socioeconomic and psychosocial factors. Addressing and supporting maternal identity as a provider during pregnancy, along with treatment of prenatal depression, may be necessary for pregnant substance abusers to achieve and sustain abstinence.

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Highlights

- It is unclear why pregnancy is a salient motivator for changing substance use.
- Substance cessation during pregnancy may involve both altruism and self interest.
- We examined substance cessation in women who made postnatal adoption placements.
- Prenatal substance cessation was independently related to self concept as a provider.
- Depression, antisocial behaviors, and genetic factors may have inhibited cessation.

Table 1
Demographic characteristics by prenatal substance use status (*n* = 693)

	Total	Quit	Did not quit	p
Age in years, mean (standard deviation (SD))	25.1 (6.1)	25.5 (6.0)	24.6 (6.1)	.086
Non-Hispanic Caucasian (%)	72.8	71.7	73.4	.647
Percentage unmarried [†]	74.8	72.9	75.4	.485
Mean household income ^{\$} (SD)	2.5 (1.7)	2.5 (1.7)	2.4 (1.6)	.309
Mean educational attainment [∞] (SD)	2.9 (1.4)	3.1 (1.5)	2.9 (1.4)	.032*

[†]Includes single, never married; single, widowed; and divorced, not remarried.

^{\$}Income: 1 (< \$15,000), 2 (\$15,001 - 25,000), 3 (\$25,001 - 40,000), 4 (\$40,001 - 55,000), 5 (\$55,001 - 70,000), 6 (\$70,001 - 100,000), 7 (\$100,001 - 125,000), 8 (\$125,001 - 150,000), 9 (\$150,001 - 200,000), 10 (\$200,001 - 300,000), 11 (>\$300,000).

[∞]1 (< HS degree), 2 (GED), 3 (HS degree), 4 (Trade school), 5 (2yr college), 6 (4yr college), 7 (Graduate program).

Table 2
Psychosocial and pregnancy characteristics, by pregnancy substance use status

	Pregnancy quitters	Pregnancy users	Test statistic
Family history substance use disorder ^a (%)	53.9	70.4	$\chi^2 = 18.982^{**}$
Antisocial behavior, ^b mean (SD)	41.2 (5.1)	42.9 (6.6)	$t = -3.747^{**}$
Self concept as a provider, ^c mean (SD)	2.66 (0.8)	2.47 (0.9)	$t = 2.885^{**}$
Depression symptoms, ^d mean (SD)	4.76 (4.6)	6.51 (5.2)	$t = -4.573^{**}$
Gestational age in weeks when pregnancy was recognized, mean (SD)	10.0 (8.4)	10.4 (8.5)	$t = -.575$
Gestational age in weeks when prenatal care was initiated, mean (SD)	17.2 (9.7)	18.3 (10.1)	$t = -1.289$
Emotional adjustment to adoption (SD)	33.1 (6.2)	32.5 (6.5)	$t = 1.147$

^aFamily History Research Diagnostic Criteria

^bElliot Social Behavior Questionnaire

^cHarter Adult Self Perception Profile, Adequacy as a Provider Subscale

^dBeck Depression Inventory, Pregnancy History Calendar

^{**}
 $p < .01$

^{*}
 $p < .05$ (two-tailed)

Table 3
Bivariate correlation analysis of psychosocial and pregnancy characteristics and cessation of substance use during pregnancy

	Cessation	1	2	3	4	5	6	7
1 Family history ^a		-.166**						
2 Antisocial behavior ^b		-.136**	.154**					
3 Provider self concept ^c		.107**	-.049	.006				
4 Depression ^d		-.168**	.146**	.176**	-.080*			
5 Pregnancy recognized		-.027	-.033	.032	.055	.030		
6 Prenatal care initiated		-.053	-.059	-.004	-.145**	.021	.574**	
7 Education ^e		.084*	-.092**	-.145**	.018	.060	.039	-.033
8 Adjustment to adoption		.044	-.099**	-.111**	.028	-.212**	-.015	.004
.043								

^aFamily History Research Diagnostic Criteria

^bElliot Social Behavior Questionnaire

^cHarter Adult Self Perception Profile, Adequacy as a Provider Subscale

^dBeck Depression Inventory, Pregnancy History Calendar

^e1 (< HS degree), 2 (GED), 3 (HS degree), 4 (Trade school), 5 (2yr college), 6 (4yr college), 7 (Graduate program).

** p < .01

* p < .05 (two-tailed)

Table 4
Multivariate analysis of psychosocial factors associated with cessation of substance use during pregnancy

	B	SE	Wald χ^2	OR	95% CI
Family history of substance use disorder ^a	-.634	.178	12.745	.531 **	.375 - .751
Antisocial behavior ^b	-.040	.018	4.793	.961 **	.927 - .996
Self concept as a provider ^c	.201	.100	4.022	1.223 *	1.005 - 1.489
Depressive symptoms during pregnancy ^d	-.062	.019	11.066	.940 *	.906 - .975
Educational attainment ^e	.097	.061	2.512	1.101	.977 - 1.241
Emotional adjustment to adoption	-.005	.014	.149	.995	.967 - 1.023

^aFamily History Research Diagnostic Criteria

^bElliot Social Behavior Questionnaire

^cHarter Adult Self Perception Profile, Adequacy as a Provider Subscale

^dBeck Depression Inventory, Pregnancy History Calendar

^e1 (< HS degree), 2 (GED), 3 (HS degree), 4 (Trade school), 5 (2yr college), 6 (4yr college), 7 (Graduate program).

** p < .01

* p < .05 (two-tailed)