Maternal Childhood Adversity and Smoking During Pregnancy: The Mediating Role of Protective and Compensatory Experiences (PACEs)

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Abstract
Recent evidence suggests that maternal adverse childhood experiences (ACEs) increase the odds of smoking during pregnancy. Protective experiences may buffer those effects. Using Poisson regression analysis in a sample of pregnant women, we found that higher ACEs were associated with more smoking during pregnancy, and PACEs were associated with less smoking. Further, PACEs mediate the association between ACEs and maternal prenatal smoking. Our results suggest that protective and compensatory experiences during childhood may be more salient for smoking behaviors during pregnancy than adverse childhood experiences.

Background

What are ACEs? ACEs stands for adverse childhood experiences and includes abuse, neglect, and household dysfunction experienced before the age of 18. There is a dose-response association between ACEs and wide-ranging physical and mental health outcomes.

What are PACEs? PACEs are protective and compensatory childhood experiences. Drawing on Attachment Theory, PACEs include experiences or circumstances during childhood that are associated with positive developmental outcomes.

Methods

Sample
- Data for the current study come from a study of 341 pregnant women (aged 16-38) recruited from two obstetrics clinics and health social media in Oklahoma between 2015-2018.
- The sample for the current study was restricted to the participants (N=309) with no missing data on study variables.

Measures
- Smoking during pregnancy is a continuous variable ranging from never (0) to daily (6).
- Adverse Childhood Experience (ACE) score was coded as a sum of 10 items of childhood adversity, ranging from 0 (no ACEs) to 10 (every type of ACE).
- Protective and Compensatory Experience (PACE) score was coded as a sum of 10 items reflecting types of protective experiences during childhood.
- Sociodemographic variables included age, race/ethnicity, and educational status.

Data Analysis
- Poisson regression analysis was used to examine the association between ACEs, PACEs, and smoking during pregnancy, while controlling for sociodemographic variables.
- Poisson is a regression method used when the dependent variable is based on zero-inflated data and a low arithmetic mean (<=10) and it is therefore appropriate for many studies of substance use, including smoking during pregnancy.

Results

Summary of Results: Notably, more than 1 in 15 women in the U.S. reported smoking during pregnancy in 2016. Despite significant declines in the rates of smoking during pregnancy over the past 50 years, nicotine is still the most common substance exposure during pregnancy. Smoking is highly correlated with preterm birth, stillbirth, infant mortality – including sudden infant death syndrome (SIDS) – and more.

- **Descriptive** results indicate significant differences on having ever smoked during pregnancy by ACEs and PACEs (r= -1 SD)
- **Model 1** results indicate a significant positive association between ACE score and smoking during pregnancy (B=-11, p<0.05).
- In **Model 2**, when PACE score is included, ACE score is no longer significant, but PACE score has a significant and negative association with smoking during pregnancy (B=-12, p<0.05). This indicates that women with more positive and compensatory experiences during childhood reported lower smoking rates during pregnancy, in spite of adverse childhood experiences.

Table 1. Poisson Coefficients and Standard Errors of Self-Reported Smoking During Pregnancy (N=309).

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* p<.05.

Conclusions

The current study identified a high rate of combustible and electronic cigarette use among pregnant women, which when combined with other literature, suggests a trend of increased nicotine exposure from electronic cigarettes in pregnancy. Moreover, the current study supports prior research indicating that women who experienced more adversity during childhood tend to have higher rates of smoking during pregnancy. Finally, when PACEs were added to the model, the association of ACEs for smoking during pregnancy was no longer significant.

Implications:
- PACEs may be valuable interventions for children who experience childhood adversity. Universal prevention programs that incorporate PACEs may have higher capacity to affect health behaviors later in life.

References