Do Personality Characteristics and Risk Taking Mediate the Relationship Between Paternal Substance Dependence and Adolescent Substance Use?

Christine McCauley Ohannessian

and

Victor Hesselbrock

University of Connecticut School of Medicine

Abstract

This longitudinal study examined whether personality characteristics and risk taking mediate the relationship between paternal substance dependence (alcohol and drug dependence) and adolescent substance use. The sample included 249 15-19 year-old adolescents and their fathers. Results indicated that paternal substance dependence directly and indirectly (via personality and risk taking) predicted adolescent substance use. Paternal substance dependence had significant direct effects on age when first used marijuana and significant indirect effects on age when regular drinking began, age when first used marijuana, and frequency of drinking to get "high"/"drunk". All of the indirect effects were via adolescent disinhibition. In addition, adolescent risk taking further mediated personality and adolescent substance use. More specifically, lower levels of agreeableness and higher levels of disinhibition and boredom susceptibility were associated with higher levels of risk taking. Risk taking, in turn, significantly predicted younger age at first marijuana use and regular drinking. Results from this study are consistent with epigenetic models of human development.

Research Questions

- Do personality characteristics significantly mediate the relationship between paternal substance dependence and adolescent substance use?

- Does adolescent risk taking further mediate this relationship?

RISK Project

- A longitudinal study designed to follow offspring of alcohol and drug dependent fathers over time as they progress from adolescence into adulthood

- Primary goal is to examine the usefulness of the deviance prone model of vulnerability in predicting alcohol use behaviors and problems

- RISK began in 1993 and is currently ongoing (the present study is based on Phase 1 data collected between 1993-1998 and Phase 2 data collected between 1998-2003)

- Adolescents for the RISK project are recruited directly through the community (e.g., YMCA/YWCA, high schools) and indirectly via their parents (e.g., newspaper advertisements, presentations at alcohol/drug treatment programs)

Sample

- 249 adolescent girls and boys (60% girls) and their fathers

- Age range = 15-19 years old; mean age = 16.70 (SD = 1.36)

- 62% Caucasian; 25% African-American; 10% Hispanic; 3% other

- Participants were from working class families from inner-city Hartford

Measures

Paternal Substance Dependence

The Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) was administered to obtain lifetime diagnoses of alcohol dependence and drug dependence. The SSAGA is a clinical, diagnostic psychiatric interview with good psychometric properties (kappas range from .74-1.00). Based on the SSAGA, fathers were classified as having no history of alcohol or drug dependence (44%), alcohol dependence only (27%), or alcohol dependence and drug dependence (29%).

Adolescent Personality

Agreeableness was assessed with the *NEO-FFI* (Costa & McCrae, 1986). Disinhibition and Boredom Susceptibility were measured with the *Sensation Seeking Scale* (Zuckerman et al., 1984).

Adolescent Risk Taking

Adolescent risk taking was assessed with the *Risk Taking Questionnaire* (Busen, 1991).

Adolescent Substance Use

The Alcohol and Drug Use Survey was used to assess frequency of drinking to get "high"/"drunk". Participants were asked how often in the past 6 months they drank enough to get high and drunk, respectively. Since these two variables were skewed, they were linearly transformed and then summed.

Participants also were asked how old they were when they began drinking regularly and when they first used marijuana (these variables were obtained from the adolescent version of the SSAGA). Based on their responses to these questions, participants were classified as follows

Age Began Regular Drinking	Age 1st Used Marijuana
0=have not begun to drink regularly	0=never used
1=19-22 years of age	1=19-22 years of age
2=17-18 years of age	2=17-18 years of age
3=15-16 years of age	3=15-16 years of age
4=14 years of age or younger	4=13-14 years of age
	5=11-12 years of age
	6=10 years of age or younger

Analyses

- Structural equation modeling was used to examine whether personality characteristics and risk taking mediate the relationship between paternal substance dependence and adolescent substance use.

- Personality and risk taking were assessed at Phase 1 and adolescent substance use was assessed at Phase 2.

- All direct and indirect paths were simultaneously included.

- The errors within the personality measures and within the adolescent substance use measures were allowed to correlate with one another.

- Non-significant paths were set to 0.

Results

- The SEM model fit the data extremely well {$X^2(9)$=8.91, p=.45; NFI=.98; CFI=1.00, RMSEA=.00}.

- Paternal substance dependence only had significant direct effects on age 1st used marijuana (β=.16, p<.01), with adolescents who had substance dependent fathers using marijuana earlier than those who had non-substance dependent fathers.

- In contrast, paternal substance dependence had significant indirect effects on all of the adolescent substance use measures. More specifically, adolescents who had substance dependent fathers had significantly higher levels of disinhibition than those who had non-substance dependent fathers (β=.13, p<.05). In turn, adolescents with higher levels of disinhibition drank regularly earlier (β=.32, p<.001), used marijuana earlier (β=.21, p<.01), and drank more frequently to get "high"/ "drunk" (β=.30, p<.001) than those with lower disinhibition levels.

- Risk taking also consistently mediated the adolescent personality and substance use variables. Adolescents who had substance dependent fathers had significantly lower levels of agreeableness (β=-.18, p<.01) and higher levels of disinhibition (β=.13, p<.05) and boredom susceptibility (β=.15, p<.05) than adolescents who had non-substance dependent fathers. These variables significantly predicted higher levels of risk taking (β=-.23, p<.001; β=.47, p<.001; β=.12, p<.05, respectively), which in turn, significantly predicted earlier regular drinking (β=.20, p<.01) and marijuana use (β=.31, p<.001) (see Figure 1).
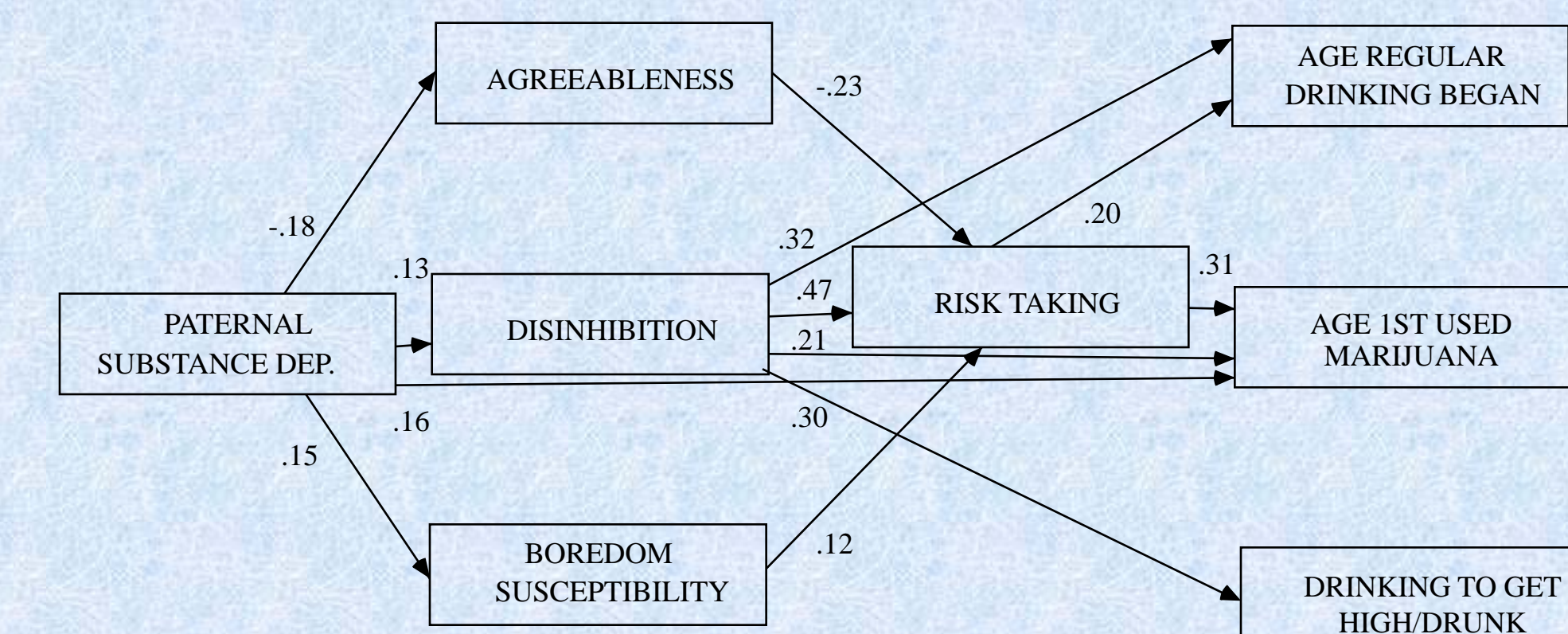
Table 1
Correlations, Means, and Standard Deviations Between the Study Variables

Measure	1	2	3	4	5	6	7	8
1. Paternal Substance Dependence								
2. Agreeableness	-.18**							
3. Disinhibition	.13	-.29*						
4. Boredom Susceptibility	.15*	-.33**	.34**					
5. Risk Taking	.18**	-.40**	.61**	.34**				
6. Age Regular Drinking Began	.14	-.10	.43**	.15*	.43**			
7. Age 1st Used Marijuana	.26**	-.17**	.41**	.20**	.49**	.47**		
8. Drinking to Get "High"/"Drunk"	.13	.03	.28**	.11	.22**	.42**	-.22**	
Mean	.85	29.44	4.66	3.36	15.75	1.69	2.24	2.89
SD	.84	6.50	2.54	2.01	10.18	1.33	1.54	1.68

*p<.05; **p<.01; ***p<.001.

Figure 1
Direct and Indirect Paths Between Paternal Substance Dependence and Adolescent Substance Use

Notes. Standardized regression coefficients are presented. Only significant paths (p<.05) are shown. For presentation purposes, correlations between errors are not included.

Conclusions

Results from this study are consistent with epigenetic theory, which suggests that the effects of dispositional characteristics (such as temperament) on problem behaviors are mediated through behavioral/developmental manifestations of these characteristics (e.g., risk taking). In the present study, paternal substance dependence both directly and indirectly predicted adolescent substance use. However, the majority of significant effects were indirect via adolescent personality, particularly disinhibition. Moreover, adolescent risk taking further mediated these relations. Lower levels of agreeableness and higher levels of disinhibition and boredom susceptibility significantly predicted higher levels of risk taking. Higher levels of risk taking, in turn, significantly predicted earlier regular drinking and marijuana use. These results point to the usefulness of using an epigenetic approach when examining the relations between parental substance dependence and adolescent problem behaviors.