

# Warriors and Worriers: A Longitudinal Study of Gender Differences in Drug Use

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## INTRODUCTION

Within the past two decades, several studies have examined personality attributes associated with drug use (Brook et al. 1983, 1986; Newcomb and Bentler 1986a). Such personality traits as unconventionality, intrapsychic difficulty, and poor emotional control have been identified as risk factors for initiating drug use. No studies have examined the extent to which childhood and adolescent personality risk factors serve to mediate the relationship between gender and adult drug use. Although males tend to score higher than females on drug use (Cohen et al. 1991, pp. 168-171), no attempts have been made to link this finding with gender differences in child and adolescent personality characteristics that predispose the individual to adult drug use.

The authors conducted a prospective study to examine the gender differences in childhood and adolescent personality risk factors for drug use. A second goal involved the study of the mechanisms through which gender operates to affect drug use. This study focused on risk and protective factors for drug use, not on drug abuse and dependence. Risk factors for the progression from drug use to abuse and dependence among women are addressed elsewhere in this volume (e.g., Kandel et al.; Merikangas and Stevens; Collins et al.; and Rosenbaum and Irwin).

Various theories have been proposed to explain the gender differences in personality traits. According to the biological framework, gender differences in personality reflect innate biologically derived differences. Support for the biological model can be found in (1) twin studies involving the heritability of personality traits and (2) research demonstrating the relationship between personality traits such as aggression and gonadal hormones (Zuckerman 1991). According to Nolen-Hoeksema (1987), sex differences in chromosomes may contribute to greater prevalence and severity of depression in women than in men.

Another framework emphasizes the importance of social and cultural factors as contributors to gender differences in personality. Eagly and Wood (1991) propose a social-role model to explain gender differences in personality: More specifically, gender roles determine what is appropriate for males and females. Sex differences also may reflect differences in the way males and females are treated.

According to the biosocial model, biological or evolutionary factors may shape the sociocultural factors that result in personality differences between males and females. A fourth model combines biological and environmental factors that may affect gender differences in personality, without any necessary causal relationship between biological and cultural factors.

Gender differences in personality traits, particularly those associated with drug use, have received some attention in the literature. A classic review of sex differences in personality by Maccoby and Jacklin (1974) reported that males were more aggressive than females. At the same time, females were found to have greater intrapsychic distress. Recent studies have tended to support these findings (Feingold 1994).

Aside from gender differences, several studies have examined childhood and adolescent precursors of adolescent drug use. In a classic study, Block and colleagues (1988) found that childhood personality attributes of less social competence and less control predicted greater adolescent drug use. In another major study of lower class African-American youngsters living in Chicago, Kellam and coworkers (1983, pp. 17-52) reported that aggressive first-graders were more likely to use drugs in adolescence. Several cross-sectional and longitudinal studies have demonstrated that adolescents and young adults who become involved with drugs tend to be more unconventional, experience great intrapsychic distress, have poor control of emotions, and have difficulty relating to others. Studies on adolescents include those by Brook and colleagues (1986), Jessor and Jessor (1977), Johnston and colleagues (1986), Kandel (1982), Kaplan (1980), Kaplan and colleagues (1984), and Newcomb and Bentler (1986a, 1986b); studies on young adults include those by Clayton and Voss (1977), Kandel (1984), Kaplan and colleagues (1986), Newcomb and Bentler (1986a, 1988), and Robins (1966).

To examine the relationship between gender and drug-conducive personality factors and between gender and drug use, the authors

employed two approaches: (1) studying the relationship between gender and drug-conducive personality factors as they affect drug use and (2) studying the relationship between gender and drug use as possibly mediated by personality differences.

## **METHOD**

### **Sample**

In 1975 the authors interviewed a sample of 976 mothers living in two upstate New York counties about their children 1 to 10 years of age. Three subsequent data collections were conducted with both the mothers and children. The last data collection occurred in 1992, when the average age of the children was 22 years. The children were administered questionnaires assessing personality, family, and peer factors. The approximate ages of the children at data collections were as follows: early childhood, 5.5 years (T1); early adolescence, 14 years (T2); middle adolescence, 16 years (T3); and late adolescence/young adulthood, 22 years (T4). Approximately half the child sample was female. Children who remained in the study were compared on the early childhood (T1) measures with those who dropped out. No significant differences between the two groups were identified on the measures included in this chapter.

### **Procedures and Instruments**

When the children were at T1, the mothers were given a structured interview in their own homes by trained interviewers. The interviews contained questions about the children's personality/behavior, parental childrearing techniques, family structure, family health, and demographics. The mothers were given a parallel version of this instrument when the children were at T2, T3, and T4. In each of the three adolescent waves, the adolescents were given a questionnaire assessing their own personality/behavior and drug use.

Several scales were developed from the adolescent questionnaires, which measured four aspects of the child's personality: (1) conventionality, (2) control of emotions, (3) intrapsychic functioning, and (4) interpersonal relatedness. The conventionality measures included noncompliance, predelinquency, intolerance of deviance, school

achievement, rebelliousness, responsibility, sensation-seeking, self-deviance, and church attendance. The measures designed to assess control of emotions included temper tantrums, anger, and impulsivity. The measures of intrapsychic functioning included ego integration, depression, anxiety, obsessiveness, and guilt. The interpersonal relatedness measures included fearlessness, aggression against siblings, aggression against peers, and interpersonal aggression. In addition, several childhood scales that were parallel to the adolescent measures were included, for example, noncompliance, predelinquency, temper tantrums, anger, fearlessness, aggression against siblings, and aggression against peers. For a complete description of these scales, their sources, and their Cronbach alphas, see Brook and coworkers (1986).

The dependent variable was a weighted measure of drug stage at late adolescence/young adulthood (T4). The T4 drug index consisted of the weighted frequency of consumption of beer, wine, and other alcohol and use of tobacco, marijuana, and other illicit drugs from middle to late adolescence/young adulthood, placing greater weight on the illicit drugs ( $M=41.1$ , standard deviation  $[SD]=24.3$ ). A further description of the weighting procedure appears in Brook and coworkers (1990).

## RESULTS

Males scored higher on measures of unconventionality, whereas females scored higher on measures of intrapersonal distress, such as depression, anxiety, and obsessiveness. Gender was related to personality risk factors during late adolescence/young adulthood, which in turn were related to adult drug use.

As shown in table 1, during childhood males scored higher on several risk factors for drug use. Males tended to score higher than females in acting-out behaviors such as aggression against peers and predelinquency. In contrast, females scored higher on crying and temper tantrums, variables related to emotional control. Gender differences were found in both early and late adolescence/young adulthood on the various risk factors for drug use. Although only the early adolescent gender differences on the T2 measures are presented, a similar pattern emerged at late adolescence/young adulthood.

As shown in table 1, significant differences appear in the adolescent variables listed under the three domains of conventionality, emotional

**TABLE 1.** *Gender differences in early childhood (T1) and early adolescence (T2) measures*

Characteristic	Male	Female
Childhood (T1)		
Aggression against peers	10.07	9.93*
Temper tantrums	10.12	9.89†
Predelinquency	10.19	9.80†
Anger	10.03	9.96
Crying	9.92	10.08‡
Noncompliance	10.10	9.89‡
Aggression toward siblings	10.04	9.95
Fear	0.95	1.03
Adolescence (T2)		
Conventionalality		
Rebelliousness	16.61	15.85*
Responsibility	17.23	17.90‡
Sensation-seeking	9.84	9.59‡
Self-deviancy	9.18	7.98†
Compliance	5.59	5.86†
Perception of school achievement	17.20	17.60*
Emotional control		
Impulsivity	13.30	13.75*
Interpersonal aggression	6.50	5.97†
Intrapsychic distress		
Ego integration	19.70	19.21*
Depression	10.09	10.78‡
Anxiety	8.54	9.34†
Obsessiveness	9.75	10.27*

\* $p < 0.05$

† $p < 0.001$

‡ $p < 0.01$

control, and intrapsychic distress. Males reported greater unconventionality, such as greater rebelliousness, less responsibility, and greater sensation-seeking. Females, in contrast to males, scored higher on internalizing factors, such as depression, anxiety, obsessiveness, and low ego integration. However, these intrapsychic factors—note that these do not represent clinical diagnoses—were not related to drug use.

Two-way analyses of variance were done to examine the interaction of sex and personality as it affected drug stage. Less than 5 percent of

the interactions were significant, which probably results from chance. Because there were few personality-by-gender interactions when personality by drug use (table 2) and gender by personality by drug use (table 3) were studied, the analyses were done for the combined sample.

Pearson's correlation coefficients (Snedecor and Cochran 1980, pp. 175-193) were computed between the personality variables at different childhood through middle adolescent developmental stages (T1 through T3) and the late adolescence/young adulthood stage of drug use (T4). As expected, drug stage in middle adolescence (T3) was significantly related to stage of drug use at young adulthood ( $r$  [correlation]=0.41).

**TABLE 2.** *Correlations: Personality and drug use*

Personality Measures	T1 Personality by T4 Stage of Drug Use	T2 Personality by T4 Stage of Drug Use	T3 Personality by T4 Stage of Drug Use
Aggression against peers	0.02	0.10*	0.09†
Aggression against siblings	0.02	NS	NS
Anger	0.07†	0.10*	0.08†
Fearlessness	0.07†	0.10*	0.11*
Noncompliance	0.06	0.12*	0.12*
Predelinquency	0.07†	0.17*	0.22*
Temper tantrums	0.09†	NS	NS
School achievement		-0.10*	NS
Cheating		0.17‡	0.17‡
Church attendance		-0.10*	-0.19‡
Ego integration		-0.14*	-0.13*
Guilt		-0.13*	-0.20‡
Impulsivity		0.10*	0.13*
Interpersonal aggression		0.10*	0.08†
Intolerance of deviance		-0.23‡	-0.32‡
Rebelliousness		0.25‡	0.27‡
Responsibility		-0.13*	-0.17‡
Sensation-seeking		0.30‡	0.35‡
Self-deviancy		0.24‡	0.27‡
Depression		0.03	0.06
Anxiety		-0.02	0.05
Obsessiveness		0.01	0.01

\* $p < 0.01$

† $p < 0.05$

‡ $p < 0.001$

NOTE: Blanks denote no measure administered.

KEY: NS=not significant

**TABLE 3.** *r*<sup>2</sup>s for T1, T2, and T3 personality sets and T3 stage of drug use with T4 stage of drug use

Domain	No Control	With Control on Other Domains			
		T1 Personality	T2 Personality	T3 Personality	T3 Stage of Drug Use
<b>Gender</b>					
<i>r</i> <sup>2</sup>	0.02*	0.01	0.01	0.00	0.01
F	13.49*	9.93†	4.52†	NS	14.46*
df	1,732	1,723	1,715	1,715	1,743
<b>T1 personality</b>					
<i>r</i> <sup>2</sup>	0.02	—	0.00	0.01	0.01
F	2.13†	—	0.58	1.10	1.23
df	6,727	—	6,710	6,710	6,726
<b>T2 personality</b>					
<i>r</i> <sup>2</sup>	0.14	0.13	—	0.03	0.04
F	6.86*	6.20*	—	1.62	2.48*
df	17,716	17,710	—	17,699	17,715
<b>T3 personality</b>					
<i>r</i> <sup>2</sup>	0.19	0.18	0.08	—	0.07
F	10.25*	9.74*	4.58*	—	3.86*
df	17,716	17,710	17,699	—	17,715
<b>T3 stage of drug use</b>					
<i>r</i> <sup>2</sup>	0.18	0.16	0.08	0.07	—
F	154.52*	146.82*	73.55*	64.19*	—
df	1,732	1,726	1,715	1,715	—

\**p*<0.01

†*p*<0.05

KEY: *r*<sup>2</sup>=multiple correlation square; F=F test; NS=not significant; df=degrees of freedom

The findings indicated that children (both boys and girls) who were fearless had difficulty in controlling their emotions (e.g., temper tantrums and anger), and those who demonstrated behavior problems were at higher stages of drug use during late adolescence/young adulthood. In contrast to the childhood factors, the early and late adolescent factors were more highly related to subsequent drug use.

Table 3 explores the possible role of the childhood and adolescent personality sets as mediators between gender and adult drug use and whether gender differences are still significant with control on the personality factors.

The hierarchical regression findings support a hypothesized mediational model (table 3). Gender differences lost significance with

control on middle adolescent personality factors (T3) but not earlier personality factors (T1 and T2). Table 3 points to the importance of adolescent personality as a mediating factor. Thus, gender was associated with middle adolescent personality factors that, in turn, were related to higher stages of drug use. Middle adolescent personality attributes (T3) served as mediators not only for gender but also for earlier personality factors at early childhood and early adolescence (T1 and T2). The early personality factors were not related to adult drug use with control on middle adolescent personality factors (T3).

Middle adolescent (T3) personality factors were related to adult drug use even with control on adolescent drug use (T3). Although the domains of gender in early childhood and personality at early adolescence lost significance with control on the middle adolescent personality domain, these domains are of importance because these more distal factors lay the foundation for the more proximal personality factors implicated in drug use. Middle adolescent (T3) drug use had an important effect on late adolescence/young adulthood drug use, independent of the personality factors. The influence of gender differences on adult drug use also was mediated by adolescent drug use.

## DISCUSSION

Overall, the findings with regard to gender differences in personality traits are consistent with those of Maccoby and Jacklin (1974) and Hall (1984).

Males scored higher than females on childhood aggression, and adolescent males scored higher than adolescent females on externalizing behavior as assessed by their measures of unconventionality (e.g., rebelliousness, tolerance of deviance, delinquency). The greater importance of drug-prone personality traits relating to externalizing behavior on drug use most likely explains the fact that males scored higher than females on illegal drug use (with the exceptions of tobacco and alcohol).

On the other hand, females scored higher than males on internalizing behavior, such as anxiety, depression, obsessiveness, and low ego integration. Although females scored higher on internalizing behavior, this domain was not related to drug use.

Results were consistent with a mediational model in which gender and childhood risk factors lay the foundation for the development of

drug-conducive personality traits during early and late adolescence/young adulthood. The mediational model has two explanatory advantages. First, it points to a mechanism by which gender and childhood factors relate to adult drug use by emphasizing the significance of the mediating personality conditions that are proximal to later drug use. Second, the mediational model stresses the importance of the early and late adolescent/young adulthood variables in attenuating the power of the gender and childhood variables as precursors, because the early childhood factors are no longer significant with control on the more proximal variables. The authors' childhood personality research results were consistent with their earlier findings (Brook et al. 1986, 1990) and with research conducted by Block and coworkers (1988); these studies all point to the relationship between early childhood factors and later drug use.

Specific childhood variables associated with adult drug behavior included a measure denoting lack of emotional control (e.g., short temper). Fearlessness and predelinquency were associated with higher stages of drug use. Block (1971) and Block and colleagues (1988) reported that lack of emotional control and noncompliance during childhood were associated with greater drug use during adolescence.

Personality traits during early and late adolescence/young adulthood as well as childhood were associated with young adult drug use. The personality traits that were of importance during early adolescence were similar to those during late adolescence/young adulthood and were also similar for males and females. These included traits of unconventionality (e.g., tolerance of deviance), poor emotional control (e.g., impulsivity), intrapsychic distress (e.g., low ego integration), and interpersonal relatedness (e.g., aggression against peers). It is interesting to note that the personality dimensions that are drug related can be located in four of the five factors deemed as fundamental psychological structures (Costa and Widiger 1994). The broad dimensions include neuroticism (e.g., the authors' measure of low ego integration), openness to experience (e.g., as assessed by sensation-seeking), lack of agreeableness (e.g., anger and aggression variables), and lack of conscientiousness (e.g., low achievement, low responsibility). Similar correlates of adolescent drug use have been identified in the authors' earlier work and in the work of others (Brook et al. 1986, 1989a, 1989b, 1990, 1992, pp. 359-388; Kaplan and Johnson 1992, pp. 299-358; Newcomb and

Bentler 1986a, 1988; Petraitis et al. 1995). The importance of the adolescent personality risk factors was highlighted by the authors' findings that such factors were associated with adult drug use despite control on late adolescent/young adulthood drug use. The gender findings add to the literature by demonstrating a pathway through which gender affects personality, which then affects drug use.

Interpreting the importance of gender differences in drug-conducive personality traits can invoke two processes discussed by Caspi and coworkers (1989). One refers to cumulative continuity, which is the individual selecting environments that reinforce the individual's personality style. Thus, unconventional males may select friends who display similar characteristics and who may use drugs. Another possibility, also suggested by Caspi and coworkers (1989), is interactional continuity that arises when the individual's style evokes reciprocal responses from others in ongoing interactions that can be described as social in nature. For example, an unconventional child may evoke parental rejection directed at the child that then maintains the child's original unconventional behaviors.

## CONCLUSIONS

Personality factors in late adolescence/young adulthood serve to mediate the relationship between gender and adult drug use. Future research will need to clarify how early gender differences are related to the emergence of drug-prone personality differences. Attention also must be directed toward better understanding of the nature of other factors and processes that mediate the relationship between gender and adult drug use.

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