

What Came First, the Chicken or the Egg?

Michelle Shea, Casey Onder, Felipe Amunategui, Ph.D., Maryellen Davis, M.D., Jihad Jaber, Maria E. Pagano, Ph.D.

BACKGROUND

The prevalence of teens with comorbid substance dependence and psychiatric illnesses has been under recognized by clinicians and researchers alike. Substance-oriented settings may ignore psychopathology, while mental health clinicians may fail to address substance use problems. The National Comorbidity Survey suggests that 50.9% of persons with any lifetime mental disorder also develop a substance use disorder (SUD) (Kessler et al., 1996). Adolescents with comorbid psychiatric and substance use diagnoses are challenging mental health service systems in terms of utilization rates and costs of services (Grilo et al., 1996). Comorbid clients also have more legal problems and more education problems compared to noncomorbid clients (King et al., 2000; NIDA, 2004).

Despite this, there is lack of consensus on the order of onset for substance use disorders and comorbid psychiatric diagnoses. Some contend that psychiatric disorders precede substance use disorders. Studies by Schedler and Tarter both indicate developmental markers occurring long before initiation of substance use (1990; 1999). The National Comorbidity Survey also indicates that mental disorder usually precedes the onset of an SUD in persons with lifetime comorbid psychiatric disturbances. Others argue that substance use disorders are precursors for psychiatric disorders. Some researchers have found increasing symptomatology in conduct disorder, anxiety, and depression with increasing levels of substance abuse (Neighbors et al., 1992).

Not only is the sequence of substance use disorders and psychiatric disorders unclear, but these studies are limited in that they do not investigate the specific legal or educational background of SUD youth and fail to use a standardized psychiatric assessment measurement.

STUDY AIMS

This naturalistic, observational study examines psychosocial problems presented by adolescents with substance use disorders and examines their temporal association to the diagnosis of a substance use disorder. Demographic variables are also examined in relation to early onset of substance use of youth' first use of illegal substances pertaining to their SUD dependency disorder.

METHODS AND SAMPLE

The sample included 29 girls and 34 boys admitted to residential treatment for chemical dependency. Study measures included the MINI-Plus for the assessment of Axis I psychiatric disorders and substance dependence disorders. Demographic variables included gender, race, age, educational attainment, living environment, and learning disorder history.

Supported by a K01 AA015137-02 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) to Dr. Pagano. Data were collected at New Directions, an adolescent treatment facility in Ohio. Analyses and poster preparation were supported by the Department of Psychiatry, Division of Child Psychiatry, Case Western Reserve University, Cleveland, OH.

TABLE 1. SUD Disorders Among Youth

	Frequency (n/63)	Percent	
AUD = Alcohol Dependency	35	56%	
SUD = Substance Dependency	63	100%	
Type			
Stimulants	11	17%	
Cocaine	23	37%	
Narcotics	11	17%	
Hallucinogens	24	38%	
Inhalants	3	5%	
Marijuana	56	89%	
Tranquilizers	8	13%	
Age of First Use ^a	Mean (SD)	Minimum	Maximum
	12.1(2.3)	6.0	16.0

Notes: ^a Age of first use of the substance abused by youth w/ SUD

MEASURES

Age of Onset: School-age versus Adolescence

We examined initiation of substance use of youth with SUD. Recent work suggests that alcohol and drug addiction is best described by 2 subtypes, those who first used in early childhood and those began experimentation in adolescence (NIDA, 2004). In a national study, adolescents who tried marijuana, cigarettes, or alcohol before age 12 were more likely to become heavy drug users in adulthood (NIDA, 2004).

Based upon limited literature available regarding the etiology of substance use, we classified use into 2 groups: first use of SUD before age 12 (school-age) versus first use of substance age 12 or older (adolescence).

Legal Variables

Legal problems were assessed using adapted items from the Teen Treatment Services Review (T-TSR; see McLellan et al., 1992 for original TSR). Items modified from the T-TSR include history of incarceration, court appearances, and/or parole or probation, and the number of charges, arrests, and felonies within the past 24 months. More detailed legal information was also collected, including history of burglary, robbery, assault, and public drunkenness.

MINI-Plus

The M.I.N.I.-Plus is a longer, more comprehensive diagnostic structured version of the Mini International Neuropsychiatric Interview 11. It was designed so it that might be included in clinical research studies and now includes 23 disorders. It features questions on chronology of diagnoses (e.g., age at onset), and disorders such as depressive disorders, anxiety disorders, disruptive behavior disorders, and eating disorders. Age at which psychiatric symptoms first became present was recorded for each diagnostic disorder. For Substance Dependency Disorders, age of first use of the specific substance type was recorded. For the duration of this study, only diagnoses present in at least 2% of the sample are reported.

TABLE 2. Demographics of Sample

	Total (N, %)	Age of First Drug Use of Intake SUD	
		School Age (<12 yrs) N=20 (32%)	Adolescence (12+ years) N=43 (68%)
Socioeconomic Factors			
Gender			
M	34 (54%)	11 (55%)	23 (53%)
F	29 (46%)	9 (45%)	20 (47%)
Age at ND intake M (SD) ^a	16.2 (1.0)	16.4 (1.1)	16.2 (1.0)
Race			
White	42 (67%)	16 (80%)	26 (61%)
Black	14 (22%)	2 (10%)	12 (28%)
Multiracial	5 (8%)	1 (5%)	4 (9%)
Asian	1 (2%)	0 (0%)	1 (2%)
Middle-Eastern	1 (2%)	1 (5%)	0 (0%)
Living Situation			
Parent (s)			
Both	35 (56%)	11 (55%)	24 (56%)
One	18 (29%)	4 (20%)	14 (33%)
Friend/relative	10 (16%)	5 (25%)	5 (12%)
Educational Factors			
Youth Educational Attainment			
* 8 years	2 (3%)	1 (5%)	1 (2%)
Middle School	10 (16%)	3 (15%)	7 (16%)
Partial High School	47 (75%)	14 (70%)	33 (77%)
High School	4 (6%)	2 (10%)	2 (5%)
Learning Disability			
YES	7 (11%)	2 (10%)	5 (12%)
NO	63 (89%)	18 (90%)	38 (88%)

Notes: ^a Age at ND Intake = age upon admittance to New Directions Adolescent Treatment Facility

RESULTS

A total of 63 youth entered residential treatment meeting full DSM-IV criteria for at least one SUD. Drug dependency disorders characterized all youths. The most common type of SUD was marijuana dependency. Half of the SUD youth also displayed comorbid alcohol dependency.

The demographic factors did not distinguish the SUD age of onset groups. However, data indicated that youth who first tried their drug of dependency during school-age years were more likely to present at intake with comorbid PTSD and ADHD-Combined. The onset of a psychiatric disorder before the first use of illegal substances was observed for ADHD (100%), Panic Disorder (67%), and PTSD (50%). A reverse pattern was found for Bulimia (67%). No clear pattern was found for Conduct Disorder or Major Depressive Disorder. Overall, the number of comorbid Axis I disorders were higher for youth who began using before 12 compared to youth who began using in adolescence.

Youth who began using during school-age years entered treatment with a higher involvement with the juvenile justice system. They were significantly more likely to have been in jail, with a trend toward burglary, arrests, and more charges.

TABLE 3. Psychosocial problems associated with early-age substance use among youth in treatment for substance dependency disorders

Psychosocial Variable ^a	Response Category	Total (N, %)	Age of First Drug Use of Intake SUD	
			School Age (<12 yrs) N=20 (32%)	Adolescence (12+ years) N=43 (68%)
Depression History ^a				
Major Depressive Disorder	Yes	16 (25%)	5 (25%)	11 (26%)
Anxiety History ^a				
Posttraumatic Stress Disorder	Yes	12 (19%)	7 (35%)*	5 (12%)*
Social Anxiety Disorder	Yes	10 (16%)	3 (15%)	7 (16%)
Panic Disorder	Yes	3 (5%)	1 (5%)	2 (5%)
Disruptive Behavior History ^a				
ADHD - Combined ^c	Yes	17 (27%)	10 (50%)**	7 (16%)**
Conduct Disorder	Yes	46 (73%)	16 (80%)	30 (70%)
Eating Disorder History ^a				
Bulimia	Yes	9 (14%)	2 (10%)	7 (16%)
Number of comorbid axis I disorders ^b	M (SD)	2.0 (1.4)	2.4 (1.6) [†]	1.8 (1.2) [†]
Legal Problem History ^d				
Number of Arrests	M (SD)	2.5 (2.6)	3.3 (3.7) [†]	2.2 (1.9) [†]
Number of Charges	M (SD)	3.4 (3.0)	4.4 (4.0) [†]	3.0 (2.3) [†]
Number of Felonies	M (SD)	0.5 (1.2)	0.8 (1.9)	0.3 (0.6)
Public Drunkenness/Disorder	Yes	6 (10%)	4 (20%)*	2 (5%)*
Assault	Yes	26 (41%)	8 (40%)	18 (42%)
Burglary	Yes	14 (22%)	7 (35%) [†]	7 (16%) [†]
Robbery	Yes	13 (21%)	4 (20%)	9 (21%)
Parole/Probation	Yes	56 (89%)	19 (95%)	37 (86%)
Incarceration	Yes	41 (65%)	18 (90%)**	23 (53%)**

Notes: ^a History includes past and/or current disorder status; ^b Total number of Axis I dx: Depression, Anxiety, DBP, Eating; ^c 2% prevalence rate for psychiatric comorbidity problems; ^d Legal problems accrued in two years prior to treatment; ^e Attention Deficit Hyperactivity Disorder refers only to Combined: both Hyperactivity and Inattentiveness; [†] .10; *p < .05; **p < .01

IMPLICATIONS

Findings are noteworthy for reaffirming preadolescence as a pivotal time period during which psychiatric and substance use status are salient predictors of subsequent substance use and legal problems (NIDA, 2004).

The findings from this study suggest that psychiatric disorder symptoms precede initial drug use among substance dependent youth. Results also suggest higher risk of juvenile delinquency for youth who experiment with drugs before the age of 12. These results imply that frequent screening is needed for the emergence of specific developmental risk markers of SUD, such as ADHD and PTSD. Furthermore, the findings suggest the need for interventions that are designed to delay age of first use of illegal substances.

The fact that most psychiatric problems were not significant predictors of SUD for youth who began using after age 12 suggests that the causes underlying substance use for this group may be more external than internal in origin and thus may require a different treatment approach. The higher illegal acts committed by youth exposed early in life to illegal substances suggests differential treatment approaches that depend upon age of first use.