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## Adolescent Predictors of Binge Drinking in Adulthood: The Association with Psychiatric Disorders in Emerging Adulthood

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PSYCHIATRIC DISORDERS IN EMERGING ADULTHOOD

by

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A thesis submitted in partial fulfillment of the requirements  
for graduation with Honors in the Psychology

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Spring 2020

All requirements for graduation with Honors in the  
Psychology have been completed.

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## Abstract

<p><b>Purpose:</b> This study investigates harsh parenting, parental drunkenness, deviant peers, adolescent alcohol use, academic performance, and emotional distress as experienced in adolescence on criteria for behavioral, substance use, affective, or anxiety disorders by age 23. This study also sought to understand how psychiatric disorders were associated with later binge drinking in adulthood (n = 501).</p>
<p><b>Methods:</b> Data come from a prospective 28-year longitudinal study of rural Midwestern families. Predictors at Time 1 were assessed in adolescence (15, 16, and 18 years old). Lifetime prevalence of psychiatric disorders was assessed in emerging adulthood (age 23), and binge drinking was self-reported at Time 3 (ages 27, 29, and 31).</p>
<p><b>Results:</b> Results obtained from structure equation modeling and logistic regression using <i>Mplus</i> version 8 indicated deviant peers and low grade point average increased the likelihood of having met criteria for a behavioral disorder by age 23, while deviant peers and adolescent alcohol use increased the likelihood of having met criteria for a substance use disorder. Deviant peers and emotional distress in adolescence increased the likelihood for an affective disorder, while only emotional distress increased the likelihood for an anxiety disorder. Substance use disorder was associated with later binge drinking at ages 27-31.</p>
<p><b>Conclusion:</b> This study offers unique insight into how family, peer, and individual risk factors influence specific psychiatric disorders by age 23. Multiple informants provide a more complex understanding of how these risk factors influence later psychiatric diagnoses, as well as how externalizing disorders are associated with later binge drinking in adulthood.</p>

Key words: harsh parenting, deviant peers, adolescent alcohol use, emotional distress, psychiatric disorders, and binge drinking

## IMPLICATIONS AND CONTRIBUTION

Adolescence is a critical time for youth; it is imperative to determine potential preventative measures in adolescence that can target family, peer, and individual risk factors that relate to psychiatric disorders in emerging adulthood. Addressing these issues in adolescence can prevent long-term consequences that accompany binge drinking later in life.

## **INTRODUCTION**

Substance use is linked to negative outcomes such as poor academic performance, participation in other risky behaviors, problems related to work and family life, as well as long-term health consequences [1,2]. For example, heavy drinking during adolescence is a risk factor for alcohol use disorders in adulthood [3]. Indeed, alcohol use initiated in adolescence can escalate through late adolescence [4], and continue into emerging adulthood [5]. In addition to alcohol use, there are other predictors such as early life stress and parental behavior experienced in the family of origin that associates with alcohol rates in adulthood [6]. It has been suggested that harsh parenting, deviant peers, and parental alcohol use is related to drinking that continues through adulthood [7,8,9]. Additionally, adolescent low academic performance and high emotional distress are linked to drinking over time [10,11]. Moreover, early adulthood is a life stage of increased risk for developing an alcohol-related disorder, along with other emerging psychiatric illness such as conduct disorder, depressive disorder, and generalized anxiety disorder [12]. Thus, it is reasonable that mental health may relate to drinking over time [6].

Binge drinking is considered especially problematic and is described as a pattern of alcohol use that increases blood alcohol concentration (BAC) to 0.08-gram percent or above [13], repeated over multiple, frequent occasions [14]. Indeed, SAMHSA defines it as 4 or more drinks on the same occasion for females and 5 or more drinks on the same occasion for males, usually within two hours, on at least one day in the past month [15]. Rates of binge drinking may peak in young adulthood at ages 18-24 (30.0%) and 25-34 (29.7%) [16]. Moreover, long term binge drinking can cause permanent cognitive deficits, including long-term memory deficits [17], and

compromised emotional competencies [18]. Thus, it is important to examine predictors of binge drinking due to such negative outcomes.

Despite this evidence, less is known about how adolescent risk factors relate to adult binge drinking. One possibility is mental health disorders link early risk to later heavy drinking. Indeed, controlling for parental alcoholism and other adolescent pre-trauma, research found that externalizing in early adulthood mediated associations between adolescent post-traumatic stress disorder (PTSD) symptoms and adult alcohol problems in a community-based sample [6]. This study was the first to examine early risk mechanisms, PTSD, and later substance use [6]. We extend this work by investigating adolescent risk on a multitude of mental health disorders to predict binge drinking. Many studies investigating parenting and adolescent substance use often do not include parental use [19], or only examine one psychiatric disorder [6]. Thus, it is important to disentangle unique influences on specific mental health disorders. The present study addresses this gap by prospectively evaluating how parenting behavior, deviant peers, as well as academic performance and depressive symptoms in adolescence, relate to psychiatric disorders in emerging adulthood and binge drinking in adulthood. The sample includes rural adolescents which is important, as those from rural areas may be at greater risk for substance use disorders than adolescents from more urban settings [20]. Indeed, rural living increases risk of using alcohol, weekly drinking and drunkenness, and use of other substances [21]. To our knowledge, no study has examined such early rural adolescent influences on a multitude of mental health disorders to predict binge drinking behavior. We now turn to a review of the literature on associations between parenting, peer, and individual influences on later alcohol use, as well as the relation of psychiatric disorders in such associations.

## **Parenting, Peer, and Individual Influences on Alcohol Use**

Parenting and deviant peers influence the likelihood of engaging in binge drinking. For example, harsh parenting is associated with adolescent drinking that extends into adulthood [7]. In addition, parents who are authoritarian or neglectful are more likely to have children who engage in binge drinking [14]. Authoritative parents are less likely to have children who drink heavily, and those children are less likely to have friends who drink [22]. Friend alcohol use in high school predicts concurrent binge drinking, as well as future trajectories [8]. Moreover, adolescents select friends who have similar drinking habits as themselves, and utilize drinking as a way to accumulate friends and higher social status [23]. Finally, adolescent and parental drinking influence heavy drinking into adulthood [1, 19], and individual factors such as low grade point average (GPA) and increased emotional distress influence alcohol use over time. Indeed, GPA can be a strong predictor of alcohol use in adolescence [10] and adulthood [24], and emotional distress such as depressive symptoms predicts alcohol use [11].

## **The Role of Psychiatric Disorders**

The 12-month prevalence rate of adult psychiatric disorders is considerably high around 30% [25], while lifetime prevalence of psychiatric disorder is 47.4% for adults in the U.S. [26]. In addition, a significant portion of this prevalence includes smaller clusters of individuals displaying comorbid disorders, with anxiety and mood disorders having the highest odds ratio [25]. Lifetime prevalence of alcohol use disorder is also comorbid with numerous other psychiatric disorders, including major depressive disorder, generalized anxiety disorder, and panic disorder [12]. Similar comorbidity of mental disorders is observed in adolescence and emerging adulthood [27].

The etiology of adult psychiatric disorders includes factors such as geographic location and family dynamics. For example, externalizing disorders such as conduct and substance use have higher prevalence in rural settings [25]. Moreover, externalizing disorders may be associated with alcohol use in emerging and later adulthood, while internalizing disorders, such as major depressive disorder, are not [6, 28]. However, others found that internalizing disorders relates to later alcohol use [29]. Thus, more research is needed to examine associations between internalizing and externalizing psychiatric disorders and drinking in adulthood. Harsh parenting is another contributor to developing or exacerbating psychiatric disorders. Those with externalizing disorders such as conduct disorder are more likely to experience increased hostility and overt aggression from parents [30]. Furthermore, affiliation with deviant peers influences later conduct problems [31]. Emotional distress, like catastrophizing and negative thinking, are associated with higher levels of depression and anxiety [32]. Finally, parental alcoholism influences externalizing disorders [33], and alcohol can increase depressive symptomatology [34].

Taken together, parents, peers, and individual behavior influence psychiatric disorders and drinking into adulthood. Thus, the present investigation examined how harsh parenting, deviant peers, parent and adolescent alcohol use, as well as adolescent academic performance and emotional distress relate to meeting criteria for psychiatric disorders in emerging adulthood. We also examined how meeting criteria for psychiatric disorders was associated with binge drinking in adulthood. Data come from a prospective two-decade longitudinal study rural Midwestern adolescents and their families whom were followed from adolescence through adulthood.

## **METHODS**

### **Participants**

Data come from the Family Transitions Project (FTP), a longitudinal study of 559 youth and their families. FTP represents an extension of two earlier studies: The Iowa Youth and Families Project (IYFP) and the Iowa Single Parent Project (ISPP). In IYFP, data ( $N = 451$ ) were collected annually from 1989 through 1992. Participants included the adolescent and their parents. When interviewed in 1989, the adolescent was in seventh grade ( $M$  age = 12.7 years). Families were recruited from schools in eight rural counties. Due to the rural nature of the midwestern sample, all participants were Caucasian. Families were lower middle- or middle-class with 34% residing on farms, 12% living in nonfarm rural areas, and 54% living in towns with fewer than 6,500 residents. In 1989, parents averaged 13 years of schooling and had a median family income of \$33,700. Fathers' average age was 40 years, while mothers' age was 38. ISPP began in 1991 when the adolescent was in 9<sup>th</sup> grade ( $M$  age = 14.8 years), the same year as IYFP youth. Participants included the adolescents and their single-parent mothers ( $N = 108$ ). Participants were Caucasian, primarily lower middle- or middle-class, and lived in the same geographic area as IYFP families. In 1994, families from ISPP combined with IYFP to create the FTP. Measures and procedures were identical. At that time, adolescents from both studies were in 12<sup>th</sup> grade. The FTP has followed the target with a 90% retention rate, from 1989 through 2007 ( $M$  target age = 31 years).

The present study included targets who participated from adolescence into adulthood ( $n = 501$ ). Data were analyzed at three developmental time periods. Time 1 assessed adolescent predictors at ages 15, 16, and 18 years (1991, 1992, 1994). Psychiatric disorders were assessed at Time 2 at

age 23 (1999). Adult binge drinking was assessed at Time 3 at 27, 29, and 31 years (2003, 2005, 2007). This project has been approved by the Institutional Review Board at xxxxxx.

## **Procedure**

Families were visited in their homes by a trained interviewer. Monetary incentives were provided. During the visit, each family member completed questionnaires pertaining to individual characteristics and family relationships. Family members also participated in structured discussion tasks that were videotaped. In the current study, observer ratings from a family interaction task were used. This task lasted 25 minutes and involved parents and their adolescent discussing questions about family life. The Iowa Family Interaction Rating Scale, which demonstrates sufficient reliability and validity [35], was used by trained observers to code quality of interactions between the adolescent and parents. When the target was an adult, they were visited by a trained interviewer. During these visits, questionnaires were completed, and at age 23, diagnostic interviews for psychiatric disorders were administered. The interview was a structured diagnostic interview based on the University of Michigan Composite International Diagnostic Interview (UM-CIDI), assessing Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R) criteria [36]. The descriptive statistics for all study variables are provided in Table 1.

## **Measures**

***Harsh Parenting (Time 1).*** Mother and father hostility, antisocial behavior, and angry coercion toward the adolescent during the family discussion task were assessed using observer ratings. Each rating was scored on a 9-point scale, ranging from 1 (no evidence of the behavior) to 9 (the

behavior is highly characteristic of the parent). Hostility was defined as hostile, critical, and disapproving behavior toward the adolescent ( $r = .47, p < .001$  for mothers and fathers). Antisocial behavior involved immature, rebellious, and indifferent behavior toward the adolescent ( $r = .42, p < .001$  for mothers and fathers). Angry coercion was an attempt to control or change the other person's behavior in a hostile manner ( $r = .40, p < .001$  for mothers and fathers). Mother and father scores were averaged for each of the three behaviors and used as separate indicators of parental harsh parenting in the model ( $\alpha = .94$ ).

***Parental Drunkenness (Time 1).*** Mothers and fathers reported on frequency of being drunk in the past year on a scale from 0 (never) to 3 (often). Mother and father scores were averaged to create the manifest variable in the model ( $r = .33, p < .001$ ).

***Deviant Peers (Time 1).*** Adolescents reported on the number of close friends that engaged in 17 delinquent behaviors on a scale from 1 (none of them) to 4 (all of them) [37]. Items included stealing, getting into fights, and using alcohol and drugs. Responses were averaged across the items and used in the model ( $\alpha = .89$ ).

***Adolescent Alcohol Use (Time 1).*** Adolescents reported on frequency of drinking beer, wine, and liquor in the past 30 days. Since alcohol use was assessed over three different ages, the scale of measurement varied slightly. Thus, scores on each of the three types of alcohol use were standardized and then averaged to be used in the model ( $\alpha = .86$ ).

***Adolescent Academic Performance (Time 1).*** Adolescents reported their high school grade point average (GPA) assessed on a scale from 0 (F) to 11 (A).

***Adolescent Emotional Distress (Time 1).*** Emotional distress was assessed via self-report using 49 items from the Symptom Checklist-90-Revised (SCL-90-R) [38]. Response categories assessed how distressed the adolescent felt during the past week, ranging from 1 (not at all) to 5 (extremely). Scores were summed ( $\alpha = .96$ ) within each age and then averaged across three adolescent years (15, 16, and 18) to create the global severity index (GSI), which is a well-known measure using the SCL-90-R of overall distress.

***Psychiatric Disorders (Time 2).*** Lifetime prevalence of behavioral, substance use, affective, and anxiety disorders using the UM-CIDI [36] was assessed with 0 indicating the target had never met criteria for the disorder and 1 indicating they had met criteria for the disorder at some point in their life. Behavioral disorders included meeting criteria for conduct disorder, adult antisocial behavior, or both. Substance use disorders included meeting criteria for alcohol abuse without hierarchy, alcohol dependence, substance abuse without hierarchy, substance dependence, or a combination thereof. Substances could include alcohol, sedatives, tranquilizers, stimulants, analgesics, inhalants, marijuana, cocaine, hallucinogens, heroin, sedative, hypnotic, and anxiolytics, opioids, amphetamines and cocaine. Affective disorders included meeting criteria for manic episode without hierarchy, hypomanic episode without hierarchy, major depressive episode, dysthymia without hierarchy, or a combination thereof. Finally, anxiety disorders included meeting criteria for panic disorder, agoraphobia, social phobia, simple phobia, generalized anxiety disorder without hierarchy, or a combination thereof.

**Binge Drinking (Time 3).** Targets responded to two independent questions regarding their frequency of drinking alcohol in the past 30 days, specifically how often they had 3 or 4 drinks in a row and how often they had 5 or more drinks in a row. These questions were assessed on a scale from 1 (never) to 5 (every day) and averaged to create binge drinking in the model ( $r = .88$ ,  $p < .001$ ).

**Covariates.** In adolescence, total annual household income from the past 12 months (parent reported) was divided by number of people in the household, which represented the financial resources available for each family member, creating the per capita income variable. Mother and father age was reported during Time 1. Finally, adolescent gender was used as a covariate in the model (0 = female, 1 = male).

## **RESULTS**

Correlations among study variables were obtained in *Mplus* Version 8, as well as factor loadings on the harsh parenting latent variable in the model. Table 2 shows correlations among all study variables and the control variables. The model fit the data well  $\chi^2 = 72.71$ ,  $df = 29$ ,  $p < .001$ , CFI = .97, RMSEA = .06. Standardized factor loadings on the latent harsh parenting construct ranged from .85 to 1.0. All constructs at Time 1 were associated with each other. Correlations were positive, except for academic performance, which were negative, such that higher GPA was associated with lower harsh parenting, parent drunkenness, deviant peers, adolescent alcohol use, and emotional distress.

Next, a structural equation model was employed using logistic regression, as each psychiatric disorder was dichotomous. Any missing data were handled by Maximum Likelihood procedures in *Mplus*. In terms of externalizing disorders, 19.5% had met criteria for a behavioral disorder and 40.4% had met criteria for a substance use disorder. For the internalizing disorders, 17.4% had met criteria for an affective disorder, and 23.5% had met criteria for an anxiety disorder. The model included all control variables. The first model included all four psychiatric disorders, and coefficients that reached statistical significance are presented in Figure 2. Although the zero-order correlations between harsh parenting and behavioral, substance use, and anxiety disorders were significant, harsh parenting was not associated with any of the four disorders in the model. The zero-order associations between parental drunkenness and behavioral and substance use disorders were significant, but were not related when taking all other associations into account.

*Behavioral Disorders.* For a one-unit increase in deviant peers, the log odds of having a behavioral disorder increased by 2.04 ( $OR = 7.68, SE = .55, p < .001$ ). For a one-unit increase in GPA, the log odds of meeting criteria for a behavioral disorder decreased by .28 ( $OR = .76, SE = .08, p < .001$ ). Parental drunkenness, adolescent alcohol use, and emotional distress were not significantly associated with meeting criteria for a behavioral disorder.

*Substance Use Disorders.* For a one-unit increase in deviant peers, the log odds of meeting criteria for a substance disorder increased by 1.34 ( $OR = 3.81, SE = .49, p < .01$ ). For a one-unit increase in adolescent alcohol use, the log odds of having a substance disorder increased by .47 ( $OR = 1.59, SE = .19, p < .05$ ). Parental drunkenness, GPA, and emotional distress were not significantly associated with meeting criteria for a substance disorder.

*Affective Disorders.* For a one-unit increase in deviant peers, the log odds of meeting criteria for an affective disorder increased by 1.01 ( $OR = 2.73, SE = .51, p < .05$ ). For a one-unit increase in emotional distress, the log odds of meeting criteria for an affective disorder increased by 1.55 ( $OR = 4.73, SE = .32, p < .001$ ). Parental drunkenness, adolescent alcohol use, and GPA were not significantly associated with meeting criteria for an affective disorder.

*Anxiety Disorders.* Only emotional distress was associated with anxiety disorders, such that a one-unit increase in emotional distress was associated with an increase of the log odds of meeting criteria for anxiety of 1.08 ( $OR = 2.94, SE = .29, p < .001$ ). Furthermore, the only disorder that was associated with binge drinking in adulthood was substance use disorder ( $b = .56, SE = .06, p < .001$ ). However, when substance use disorder was removed from the model, having a behavioral disorder was associated with binge drinking in adulthood.

## **DISCUSSION**

This investigation evaluated associations between harsh parenting, parent drunkenness, deviant peers, alcohol use, academic performance, and emotional distress during adolescence and the influence on meeting criteria for psychiatric disorders by age 23. We also examined associations between psychiatric disorders and binge drinking in adulthood. This study adds to the sparse literature examining early adolescent risk within the context of psychiatric disorders on later binge drinking behavior [6]. We found deviant peers and low GPA were associated with meeting criteria for behavioral disorders, while deviant peers and adolescent alcohol use were associated with meeting criteria for substance use disorders. Deviant peers were also associated with affective disorders. Additionally, emotional distress was associated with both affective and

anxiety disorders. Although the zero-order correlation between harsh parenting and most psychiatric disorders was significant, once all predictors were taken into account, these associations were no longer significant. Thus, while harsh parenting plays a role, deviant peers and one's own drinking behavior may be stronger predictors of externalizing disorders into adulthood. Finally, the zero-order correlation between parental drunkenness and behavioral, substance use, and affective disorders were significant, but when accounting for all other variables in the model, these associations were not significant.

Substance use disorder was the only psychiatric illness associated with adult binge drinking. However, when substance use disorder was not included in the model, behavioral disorders were associated with later binge drinking. This suggests substance use from adolescence into emerging adulthood is an important factor in determining later drinking [3], but could also be due to the rural nature of the sample. Indeed, trends regarding geographic location show that Midwesterners report a higher rate of drinking compared to Southern and Northeastern counterparts [39].

Ultimately, results of the current study highlight the importance of deviant peers and alcohol use in adolescence, as they are associated with meeting criteria for substance use disorders by emerging adulthood that continues into adulthood. This is consistent with research showing adolescent alcohol use is a strong predictor of later drinking [4, 5]. Given the likelihood of continued drinking patterns over time [1], it is imperative that research continues to examine unique predictors in the family of origin that contribute to mental health and binge drinking behavior in adulthood, in order for prevention efforts to help reduce such behavior. Thus, this

study sought to examine adolescent predictors of psychiatric disorders, and show that heavy alcohol use at a transitional age can set the stage for continued problem drinking.

There are several limitations to address. First, due to the first time point beginning in adolescence, other risk mechanisms may exist prior to this time that influence pathways, as well as the possibility of reverse causation. Second, the sample is limited in terms of racial and ethnic diversity, though in late adolescence, Whites' use of alcohol is significantly higher than African-American or Hispanic use [40]. Furthermore, data were mainly collected in the 1990s, and research suggests there has been a decrease in adolescent alcohol use since then, but underage drinking among Midwestern, non-urbanized, adolescents are still of high concern and continues to have adverse consequences [1].

In sum, the current study uses a prospective, longitudinal community-based design to examine adolescent predictors of psychiatric disorders in emerging adulthood, and how these psychiatric disorders further associate with binge drinking in adulthood. Results suggest that deviant peers and alcohol use in adolescence have a strong influence on drinking over time. Moreover, substance use disorders may help link this association. More broadly, results argue for potential preventative measures in adolescence that can target these family, peer, and individual risk factors. Addressing these issues in adolescence can prevent the long-term consequences that accompany binge drinking later in life.

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Table 1.  
Descriptive Statistics

	Mean	SD	Minimum	Maximum	N
Harsh Parenting					
Hostility	3.66	1.64	1	9	481
Angry Coercion	2.27	1.35	1	9	481
Antisocial Behavior	4.05	1.44	1	9	481
Deviant Peers	1.42	0.33	1	3.19	493
Adolescent Alcohol Use	-0.01	0.75	-0.87	3.39	493
Parent Drunk	0.53	0.58	0	3	425
Academic Performance	7.96	1.99	1.50	11	493
Emotional Distress	1.50	0.40	1	3.53	493
Behavioral Disorders	0.19	0.40	0	1	493
Substance Use Disorders	0.40	0.49	0	1	455
Affective Disorders	0.17	0.38	0	1	493
Anxiety Disorders	0.24	0.43	0	1	493
Binge Drinking	1.67	0.71	1	5	501
G1 Per Capita Income	0.87	0.72	-5.85	4.85	480
G1 Mother Age	40.29	4.02	31.17	55.37	466
G1 Father Age	42.47	4.97	33.13	70.75	437
Gender	0.45	0.50	0	1	501

Table 2.  
Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. Harsh Parenting	-										
2. Parent Drunkenness	.22***	-									
3. Deviant Peers	.29***	.14***	-								
4. Adolescent Alcohol Use	.25***	.18***	.66***	-							
5. Academic Performance	-.35***	-.22***	-.34***	-.26***	-						
6. Emotional Distress	.21***	.12*	.31***	.20***	-.17***	-					
7. Behavioral Disorders	.25***	.20**	.50***	.38***	-.46***	.18**	-				
8. Substance Use Disorders	.20**	.15*	.42***	.37***	-.24***	.05	.49***	-			
9. Affective Disorders	.08	.10	.20***	.14*	-.05	.39***	.21*	.07	-		
10. Anxiety Disorders	.18**	.11	.15*	.10	-.17**	.31***	.37***	.05	.55***	-	
11. Binge Drinking	.08	.15**	.25***	.27***	-.18***	-.01	.25***	.55***	-.05	-.05	-
12. Per Capita Income	-.14**	-.04	-.08	-.09*	.18***	-.08	-.20**	.01	-.15*	.24**	-.04
13. Mother Age	-.27***	-.22***	-.11*	-.13**	.15**	-.13**	.27***	-.05	-.03	.16*	.02
14. Father Age	-.21***	-.22***	-.04	-.10	.08	-.05	-.24**	-.05	.14*	-.03	-.04
15. Gender	-.03	.01	.14**	.03	-.16***	-.17***	.32***	.30***	-.29***	.12*	.38***

\*p < .05, \*\*p < .01, \*\*\*p < .001

Figure 1. Conceptual Model

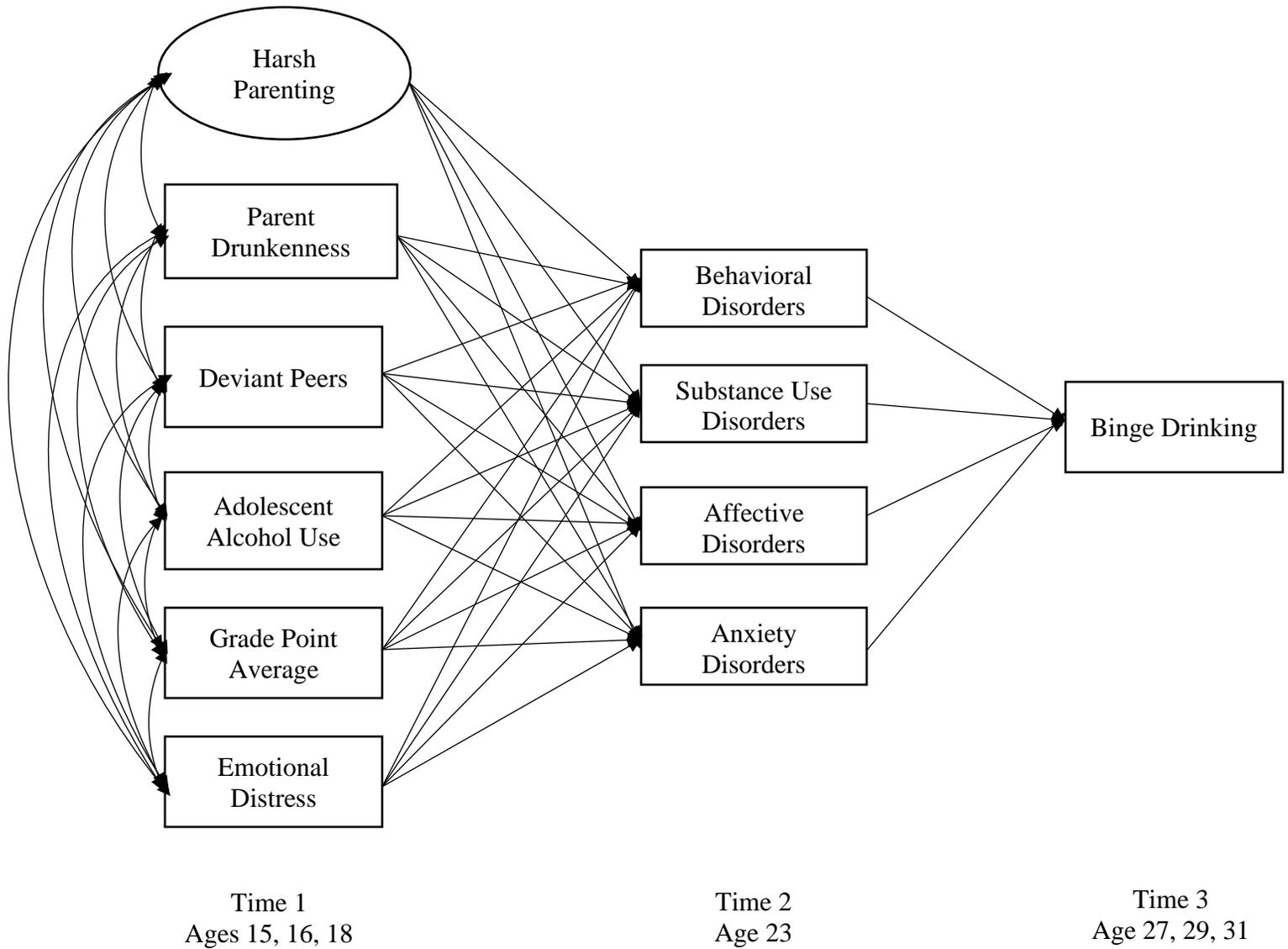
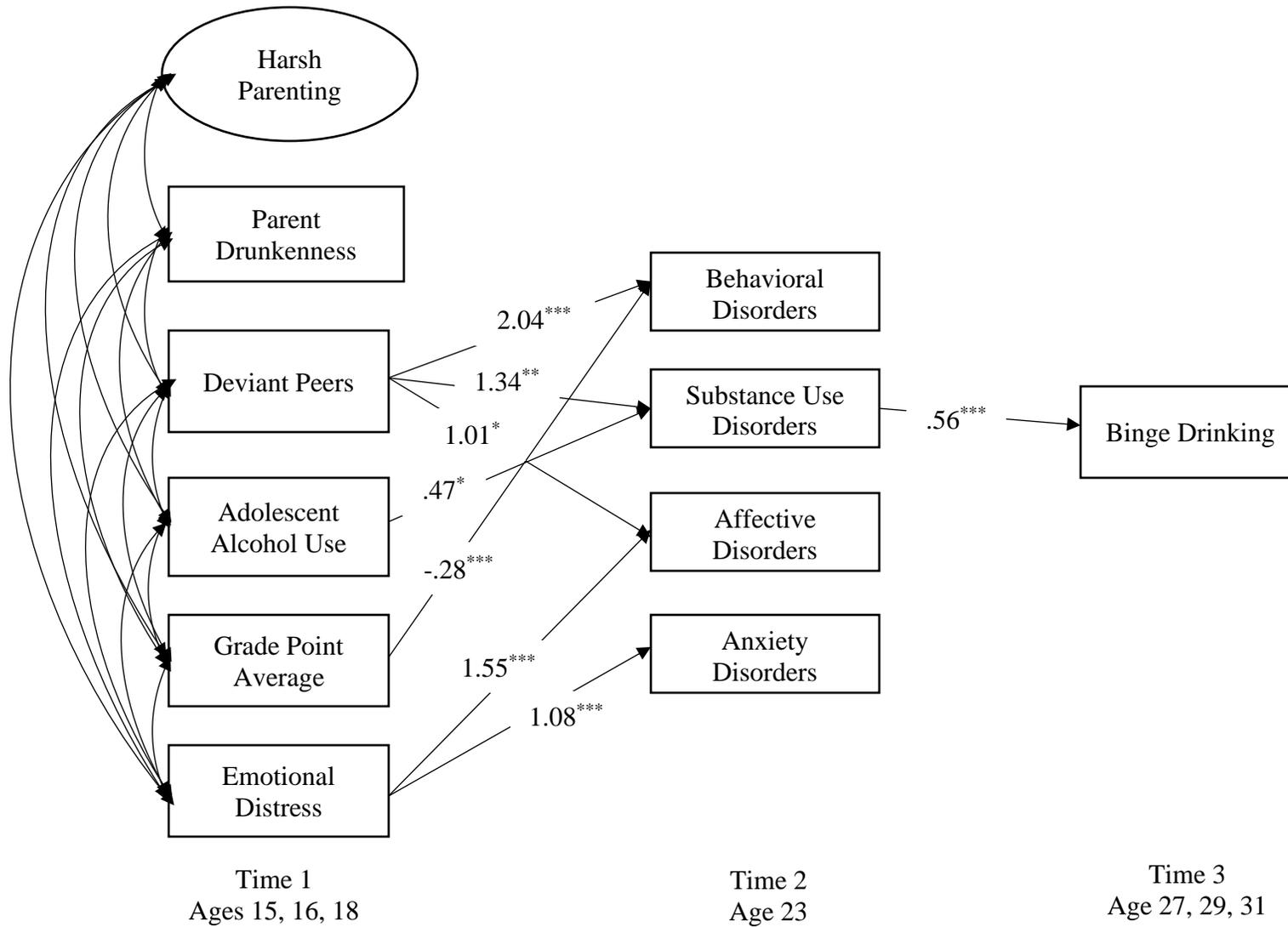


Figure 2. Statistical Model



\*p < .05, \*\*p < .01, \*\*\*p < .001. Model fit: Loglikelihood = -8596.86, AIC = 17443.71, BIC = 17970, Adjusted BIC = 17574.03  
*Notes.* This model controls for family per capita income, mother age, father age, and gender. Significant unstandardized logistic and linear coefficients are shown in the model.