

Washington University School of Medicine

Digital Commons@Becker

Posters

2010: Disentangling the Genetics of Alcoholism:
Understanding Pathophysiology and Improving
Treatment

2010

The association of early risky behaviors and substance dependence and depression in an ethnically diverse sample

Brett S. Decker

Washington University School of Medicine in St. Louis

Julia D. Grant

Washington University School of Medicine in St. Louis

Christina N. Lessov-Schlaggar

Washington University School of Medicine in St. Louis

Kathleen K. Bucholz

Washington University School of Medicine in St. Louis

Follow this and additional works at: <https://digitalcommons.wustl.edu/guzeposter2010>



Part of the [Medicine and Health Sciences Commons](#)

Recommended Citation

Decker, Brett S.; Grant, Julia D.; Lessov-Schlaggar, Christina N.; and Bucholz, Kathleen K., "The association of early risky behaviors and substance dependence and depression in an ethnically diverse sample" (2010). *Posters*. Paper 22 Samuel B. Guze Symposium on Alcoholism.
<https://digitalcommons.wustl.edu/guzeposter2010/22>

This Poster is brought to you for free and open access by the 2010: Disentangling the Genetics of Alcoholism: Understanding Pathophysiology and Improving Treatment at Digital Commons@Becker. It has been accepted for inclusion in Posters by an authorized administrator of Digital Commons@Becker. For more information, please contact vanam@wustl.edu.

The Association of Early Risky Behaviors and Substance Dependence and Depression in an Ethnically Diverse Sample

Brett S. Decker^{1,2}

Julia D. Grant, Ph.D.^{1,2}

Christina N. Lessov-Schlaggar, Ph.D.^{1,2}

Kathleen K. Bucholz, Ph.D.^{1,2}



¹Washington University School of Medicine, St. Louis MO

²Midwest Alcoholism Research Center at WUSM

Background

- Early involvement with substances and other risky behaviors is associated with negative outcomes
 - Early substance use is correlated with substance dependence
 - Early manifestations of deviant behavior is also associated with substance abuse and dependence
- This study
 - Investigated the effects of risky behavior (substance use as well as other risk-taking behaviors) on outcomes of depression and substance abuse and dependence
 - Uses latent class analysis to group six variables to reflect traits of risky behaviors
 - Uses a diverse sample of African Americans and European Americans to test the differences between African Americans and European Americans in outcome due to early risky behavior
- Questions Asked
 - Is there a correlation between general early risky behavior and substance abuse/dependence and depression?
 - Is there a difference between African Americans and European Americans in such correlations?

Missouri Family Study (MOFAM)

- General population sample of families, ascertained using Missouri birth records
- Designed to be comparable to twin-family studies conducted in our research group
- Index children selected from birth years to be aged 13,15,17,or 19 at first interview
- Prospective design, with offspring interviewed every 2 years
- Oversample of African American families

- High risk design using telephone screening interviews with mothers to collect high risk families
 - Mothers of index child interviewed about family structure and her own health behaviors and those of the child's father
 - Families are designated high risk (HR) if mother reports child's father as an excessive drinker; otherwise low risk (LR)
- Second type of high risk family – families of men with 2 or more DUI's on driving record – "Recurrent Drunk Driving" or RDD families

Sample Characteristics

	<u>EA</u>	(%)	<u>AA</u>	(%)	<u>Total</u>
<u>Total</u>	n=444		487		931
<u>Female</u>	224	(50.5)	249	(51.1)	473
<u>Low Risk</u>	134	(30.2)	244	(50.1)	378
<u>High Risk</u>	105	(23.6)	140	(28.7)	245
<u>RDD</u>	205	(46.2)	103	(21.1)	308
<u>Mean Age</u>	18.54		18.87		18.71

- **Baseline Data** from MOFAM was used for the analysis
- Sexual Intercourse was used as a variable in a Latent Class Analysis. Respondents younger than age 15 were not asked questions about sexual intercourse and, therefore, were left out of the analysis.
- This results in a **931 Sample Total of Age 15 or older**

Note: RDD-Recurrent Drunk Driving Families, AA-African American, EA-European American

Latent Class Analysis

Variables included

Substance Use

- **Alcohol use**
- **Tobacco use**
- **Marijuana use**

Behavioral Variables

- **Oppositional Defiant Disorder**
- **Conduct Disorder**
- **Sexual Intercourse**

▪ Substance Use and Sexual Intercourse were categorized based on age onset:

- 0 = None
- 1 = Late
- 2 = Early (Youngest 25% of Users)

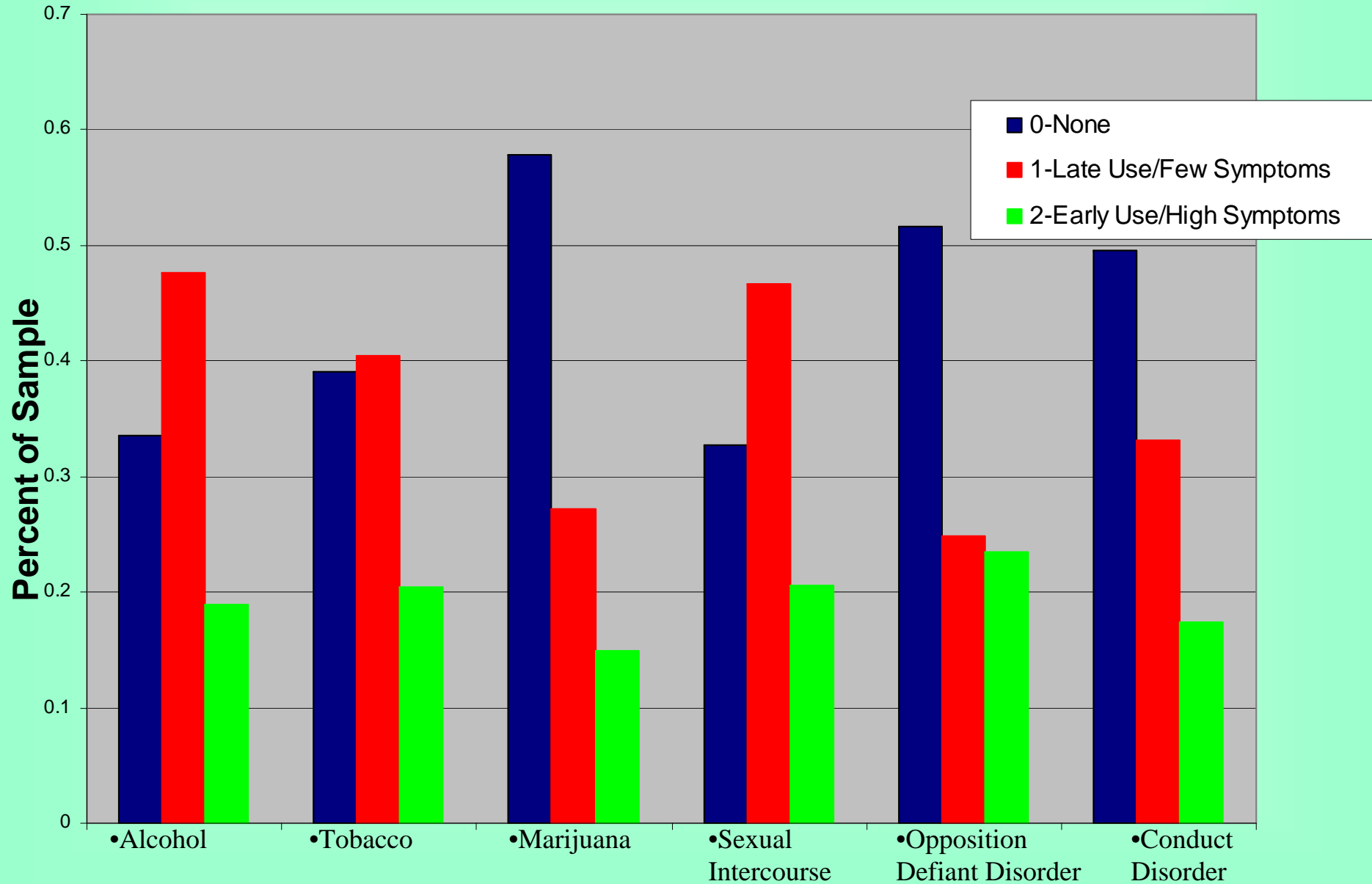
Early Use Criteria

Alcohol Use	14 or younger
Tobacco Use	12 or younger
Marijuana Use	15 or younger
Sexual Intercourse	14 or younger

- For Oppositional and Conduct variables, a symptom count was used instead of onset age
 - 0 = No Symptoms
 - 1 = At least one symptom and fewer than diagnostic criteria
 - 2 = Symptom count reached diagnostic criteria for the associated disorder

Prevalence of Behaviors

Total Sample Population Results (n=931)



Latent Class Determination

Number of Latent Classes	BIC	Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (VLMR-LRT)
2	10611.182	--
3	10357.018	0.0000
4	10378.327	0.2292
5	10416.66	0.0464

- 3 Class solution results in lowest BIC
- 3 Class solution is a better fit vs. 2 Class Solution in VLMR-LRT
- 4 Class solution is not a better fit vs. 3 Class Solution in VLMR-LRT

Latent Class Outcome

Endorsement Probabilities

	None	Late/Few	Early/High
Alcohol Use	0.798	0.161	0.041
Tobacco Use	0.9	0.056	0.044
Marijuana Use	0.996	0.004	0
Intercourse	0.721	0.233	0.047
Oppositional	0.597	0.215	0.188
Conduct	0.661	0.289	0.05

	None	Late/Few	Early/High
Alcohol Use	0.073	0.826	0.1
Tobacco Use	0.152	0.733	0.115
Marijuana Use	0.454	0.52	0.027
Intercourse	0.144	0.781	0.076
Oppositional	0.586	0.246	0.168
Conduct	0.566	0.364	0.069

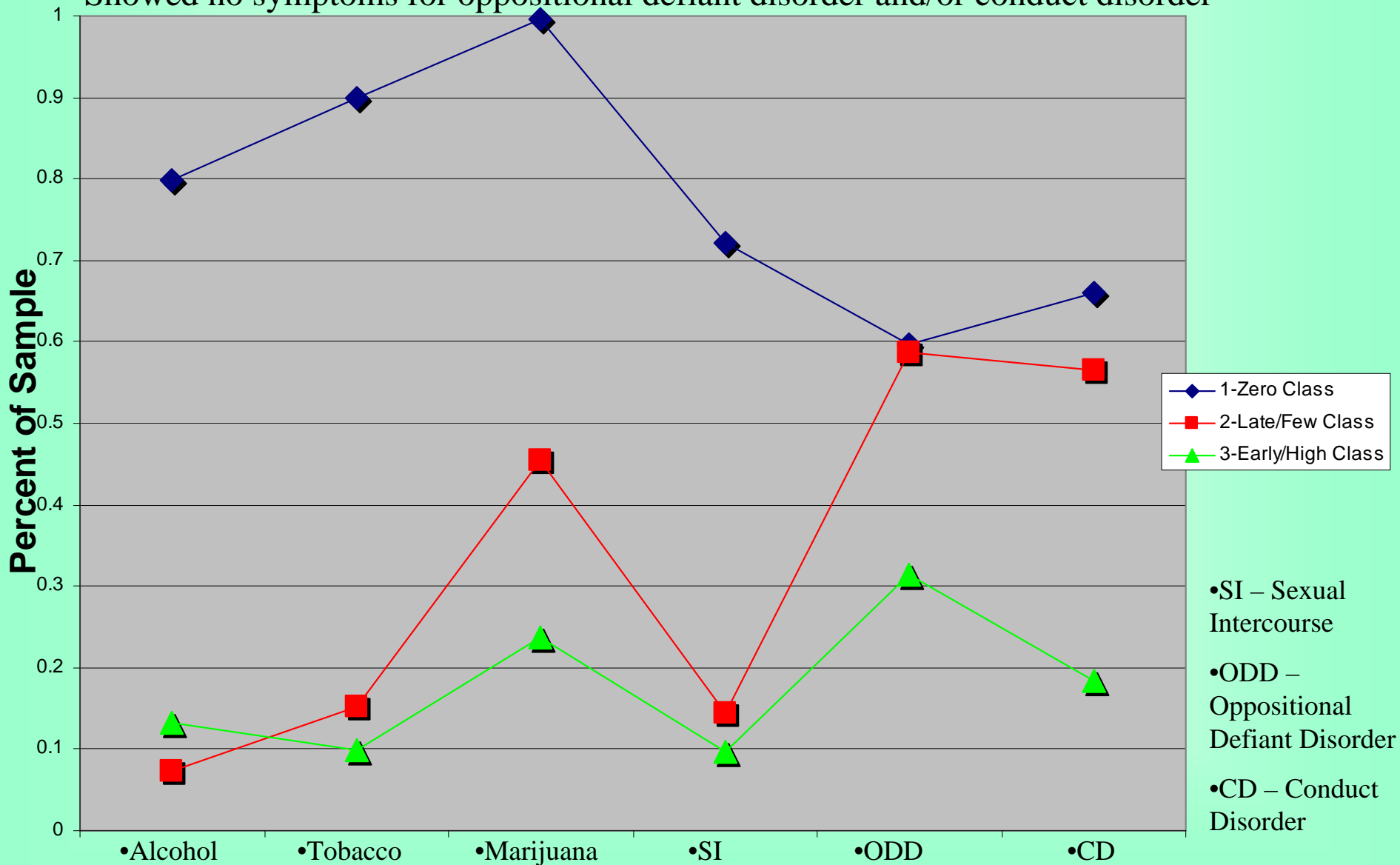
	None	Late/Few	Early/High
Alcohol Use	0.133	0.364	0.503
Tobacco Use	0.098	0.364	0.539
Marijuana Use	0.237	0.249	0.514
Intercourse	0.096	0.308	0.596
Oppositional	0.315	0.293	0.392
Conduct	0.184	0.335	0.481

- 931 Sample Total
- 298 (32.0%) – **“Zero Class”**
 -
- 388 (41.7%) – **“Late/Few Class”**
 -
 - Normative Class
- 245 (26.3%) – **“Early/High Class”**
 -
 - High Risk Class
 - Target of Analysis

None

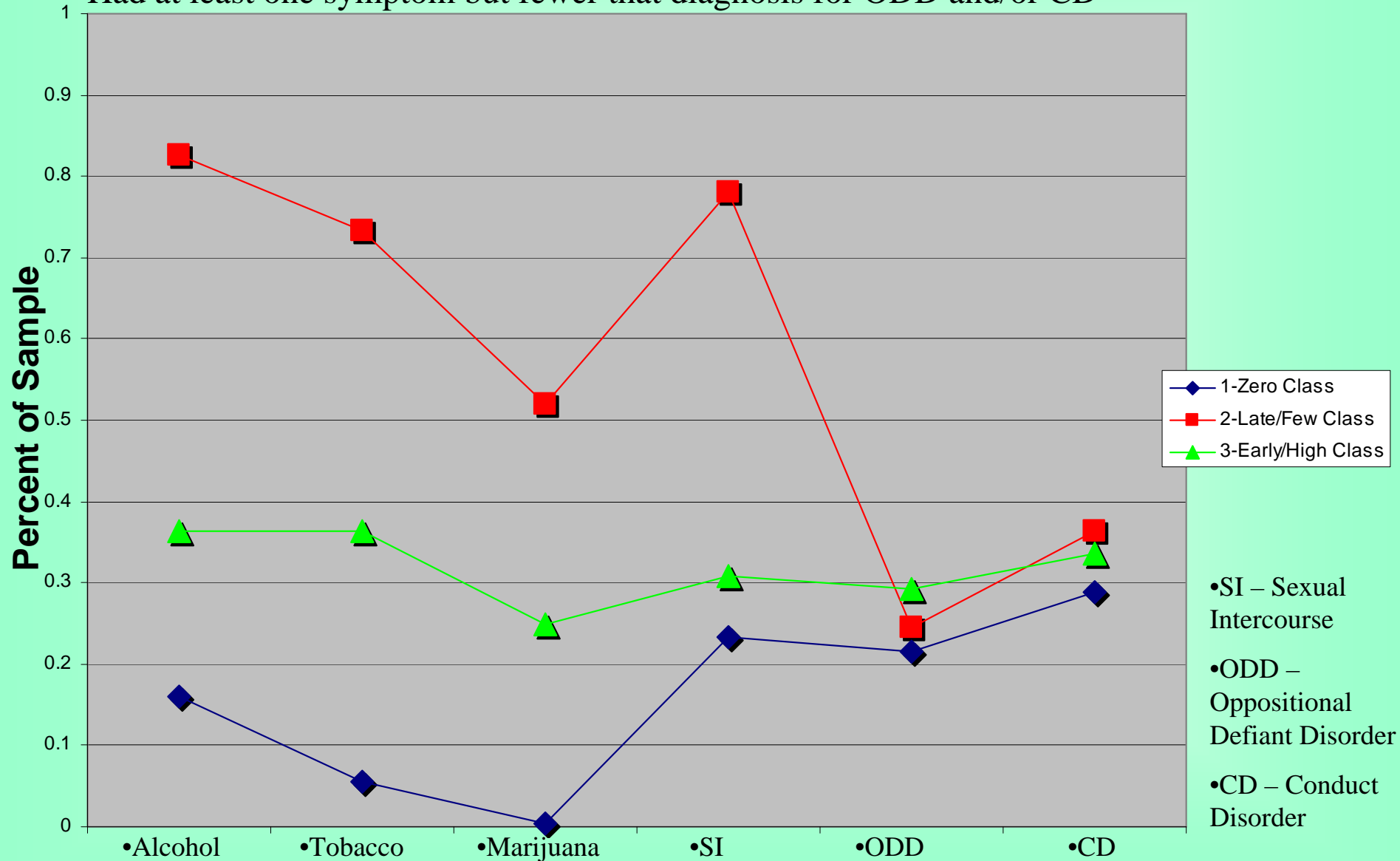
•Did not use any substance or engage in sexual intercourse

•Showed no symptoms for oppositional defiant disorder and/or conduct disorder



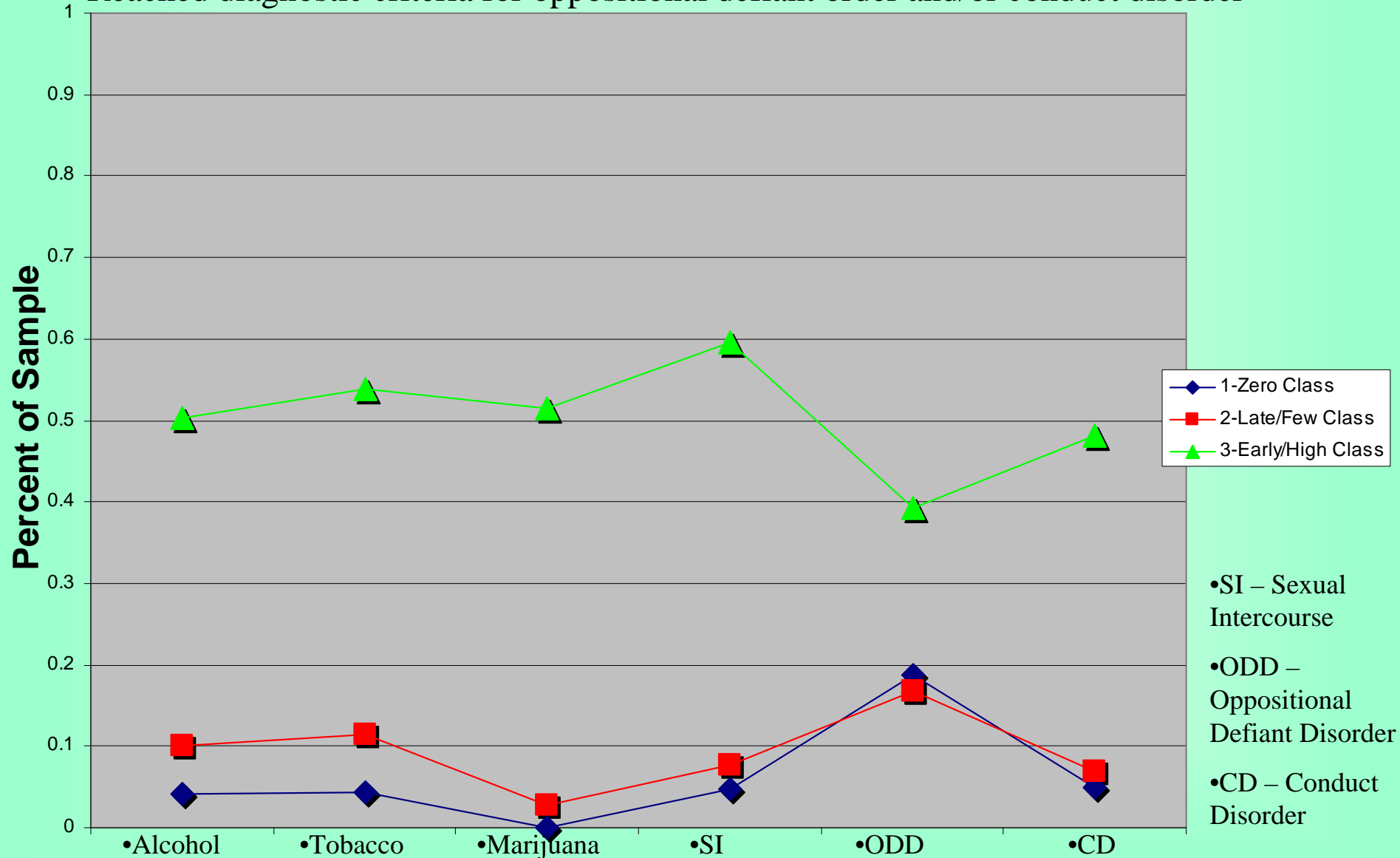
Late Use / Few Symptoms

- Used substances and/or engaged in sexual intercourse at a later age
- Had at least one symptom but fewer that diagnosis for ODD and/or CD



Early Use / High Symptoms

- Used substances and/or engaged in sexual intercourse at early age
- Reached diagnostic criteria for oppositional defiant order and/or conduct disorder



- SI – Sexual Intercourse
- ODD – Oppositional Defiant Disorder
- CD – Conduct Disorder

Logistic Regression Models

Modeling probability of latent class membership using the Late/Few Class as the comparison - Controlling For Age -

Early/High Class Vs Late/Few Class

	OR	95% CI
AA	1.89***	1.33 - 2.70
Male	1.72**	1.21 - 2.44
HR	1.91**	1.24 - 2.94
RDD	1.88**	1.24 - 2.86

Zero Class Vs Late/Few Class

	OR	95% CI
AA	1.2	0.82 - 1.74
Male	0.68*	0.49 - 0.96
HR	0.72	0.46 - 1.12
RDD	0.62*	0.40 - 0.97

Note: HR-High Risk Families, RDD-Recurrent Drunk Driving Families, AA-African American, EA-European American

+ Odds Ratios have a P value <0.1

* Odds Ratios have a P value <0.05

** Odds Ratios have a P value <0.01

*** Odds Ratios have a P value <0.001

Logistic Regression Models by Ethnicity

Modeling probability of latent class membership using the Late/Few Class as the comparison - Controlling For Age -

European Americans

Early/High Class Vs Late/Few Class

	OR	95% CI
Male	1.02	0.58 - 1.79
HR	4.40**	1.74 - 10.95
RDD	4.34**	1.88 - 10.01

Zero Class Vs Late/Few Class

	OR	95% CI
Male	0.62*	0.34 - 0.98
HR	0.67	0.32 - 1.38
RDD	0.6	0.32 - 1.14

African Americans

Early/High Class Vs Late/Few Class

	OR	95% CI
Male	2.78***	1.78 - 4.34
HR	1.5	0.88 - 2.54
RDD	1.15	0.64 - 2.06

Zero Class Vs Late/Few Class

	OR	95% CI
Male	0.79	0.52 - 1.22
HR	0.78	0.45 - 1.37
RDD	0.68	0.38 - 1.21

Note: HR-High Risk Families, RDD-Recurrent Drunk Driving Families, AA-African American, EA-European American

+ Odds Ratios have a P value <0.1

* Odds Ratios have a P value <0.05

** Odds Ratios have a P value <0.01

*** Odds Ratios have a P value <0.001

Substance Abuse/Dependence and Depression Risk

Logistic Regression Models – Modeling probability of Substance Dependence or Depression for each Latent Class using the Late Use Latent Class as the comparison - Controlling For Age, Race, Gender, HR Families, and RDD Families -

Early/High Class Vs Late/Few Class

	OR	95% CI
Alcohol Abuse/Dep	2.89***	1.89 - 4.42
Tobacco Dependence	3.01***	1.81 - 5.01
Marijuana Abuse/Dep	2.23*	1.18 - 4.19
Depression	1.87*	1.06 - 3.29

European Americans

	OR	95% CI
Alcohol Abuse/Dep	4.62***	2.39 - 8.96
Tobacco Dependence	4.00***	2.05 - 7.79
Marijuana Abuse/Dep	1.58	0.59 - 4.21
Depression	1.35	0.58 - 3.17

African Americans

	OR	95% CI
Alcohol Abuse/Dep	2.25**	1.22 - 4.15
Tobacco Dependence	2.3 ⁺	0.94 - 5.63
Marijuana Abuse/Dep	3.12*	1.12 - 8.64
Depression	2.14 ⁺	0.99 - 4.60

Zero Class Vs Late/Few Class

	OR	95% CI
Depression	0.98	0.48 - 1.99

European Americans

	OR	95% CI
Depression	0.84	0.30 - 2.36

African Americans

	OR	95% CI
Depression	0.99	0.38 - 2.58

Note: HR-High Risk Families, RDD-Recurrent Drunk Driving Families, AA-African American, EA-European American

+ Odds Ratios have a P value <0.1

* Odds Ratios have a P value <0.05

** Odds Ratios have a P value <0.01

*** Odds Ratios have a P value <0.001

Comments

- Subjects are at **higher risk** to fall within the **Early/High latent class** when the subject is:
 - Male
 - African American
 - From a High Risk family or Recurrent Drunk Driving Family
- Subjects were **more likely** to be placed in the **Zero latent class** when the subject is:
 - Female
 - From a Low Risk or High Risk Family
- Subjects among the **Early/High class** are at **higher risk** compared to Late/Few class to have:
 - Alcohol Dependence or Abuse
 - Tobacco Dependence
 - Marijuana Dependence or Abuse
 - Depression
- **European Americans** within the **Early/High class** compared to Late/Few class are at **higher risk** for:
 - Alcohol Dependence or Abuse
 - Tobacco Dependence
- **African Americans** within the **Early/High class** compared to Late/Few class are at **higher risk** for:
 - Alcohol Dependence or Abuse
 - Marijuana Dependence or Abuse
- Our data suggest a class reflecting general early use of all substances, but not early use of a particular substance
- Level of conduct disorder and oppositional defiant disorder symptoms did not differentiate the **Zero** class from the **Late/Few** class