

The road to reckless driving: Can parent alcoholism and antisocial behavior affect reckless
driving in children?

By

Max J. Cantor

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Advisors:

Dr. Jennifer Jester

Dr. Robert Zucker

Abstract

The study utilized data from the Michigan Longitudinal Study (MLS) and Michigan traffic citation records of participants within the study. The primary goal was to see if there is a relationship between alcoholism or the antisocial alcoholism subtype in parents, and the reckless driving behavior of their children. The secondary goal was to see what impact the gender match of the parent and child had on the reckless driving behavior relative to the effect of alcoholism subtype, or the impact of having two alcoholic or antisocial alcoholic parents. The results suggest that parent alcoholism is related to reckless driving behavior; however the difference between non-antisocial alcoholism and antisocial alcoholism is not statistically significant. The gender match between alcoholic parent and child could not be analyzed due to insufficient sample size of children with only alcoholic mothers, and instances of two alcoholic or antisocial alcoholic parents were also not significant.

Keywords: alcoholism, alcoholism subtypes, antisocial behavior, antisocial alcoholism, reckless driving behavior

While anecdotally or inferentially it may not be difficult to believe that there is a relationship between parent alcoholism or antisocial behavior and child alcoholism and antisocial behavior, and while there is even empirical evidence to support these claims, it can be easy to overlook how these specific parent behaviors can affect child behaviors. Because we cannot always see the correlations between our behaviors and external variables, and because we cannot understand the causal effects certain variables have on behavior in a vacuum, it can be potentially difficult, even counterintuitive, to imagine that something like alcoholism in our parents could make us more likely to engage in reckless driving behaviors. However, there are several prior studies to consider. For instance, there is empirical data suggesting a positive correlation between parent alcoholism and antisocial alcoholism subtype on children's externalizing and internalizing behavior problems, socioeconomic status, and education (Puttler, Zucker, Fitzgerald, & Bingham, 1998). Furthermore, there is a relationship between alcoholism and antisocial behavior on reckless driving (Vaughn, et al., 2011). Even a child's driving style can be affected by the driving style of the parent (Taubman-Ben-Ari, Mikulincer, & Gillath, 2005). One must also consider that there are statistically significant differences between how men and women behave under different driving conditions (Gonzalez-Iglesias, Gomez-Fraguela, & Luengo-Martin, 2012). When considering these findings, it is not challenging to see how parent alcoholism and antisocial behavior can affect child reckless driving. By understanding how these variables affect reckless driving behavior, we can attempt to better inform individuals of their risk of reckless driving, and thus potentially save lives. The Michigan Longitudinal Study of alcoholism set out to look at what variables are causes of, caused by, or covariates of alcoholism. Thus, I set out to find, using data from the Michigan Longitudinal Study and Michigan Traffic Citation records, whether parent alcoholism subtype has an effect on reckless

driving behavior in children, and whether this effect may vary depending on the gender match of the parent and child or in instances in which there are two alcoholic parents.

Concepts

Alcoholism. Alcoholism is defined, based on a Diagnostic and Statistical Manual (DSM) diagnosis, as abusive consumption of alcohol, dependence on alcohol, or dependence on alcohol with physical symptoms (American Psychiatric Association, 2000). Abusive alcohol consumption is defined as maladaptive, clinically significant, and distressing to the abuser, alcohol dependence is defined as a perceived need to consume alcohol, and alcohol dependence with physical symptoms is when the dependence is so significant that it leads to physiological withdrawal symptoms if not consumed. In this study, parents of the subjects were determined to be either alcoholic or non-alcoholic.

Antisocial Behavior. Antisocial behavior is behavior that displays a lack of empathy or regard for others, deceitfulness, impulsivity, aggressiveness, irresponsibility, lack of remorse, and failure to behave in line with social and legal norms (American Psychiatric Association, 2000). Typically antisocial behavior is only diagnosed as antisocial personality disorder if the individual has displayed antisocial behavior since childhood, however for the purposes of the present research only current antisocial behavior was required to define a parent as antisocial alcoholic. Antisocial behavior in the parents' childhood would not have a direct impact on the behavior of their children.

Alcoholism Subtype. Conceptually, the idea of alcoholism subtypes is meant to recognize that not all alcoholics behave the same, and that there are certain dimensions that can substantially differentiate different types of alcoholics in ways that can relevantly impact statistical analyses. For the purpose of this study, the two alcoholism subtypes are antisocial

alcoholism and non-antisocial alcoholism. A parent is considered to have antisocial alcoholism if they have a diagnosis of alcoholism, and also were diagnosed with symptoms of antisocial behavior during the baseline examination on antisocial behavior. The choice to use these two subtypes specifically is modeled after a previous study using MLS data looking at the relationship between parent alcoholism and child behaviors (Puttler, Zucker, Fitzgerald, & Bingham, 1998).

Driving Styles. “The ways drivers choose to drive or to their habitual driving mode” (Taubman-Ben-Ari, Mikulincer, & Gillath, 2005). The four driving styles, as defined by the multidimensional driving style inventory (MDSI) are reckless and careless driving style, anxious driving style, angry and hostile driving style, and patient and careful driving style. Because the present study examined reckless driving behavior and its relationship to alcoholism and antisocial alcoholism, only the reckless and angry driving styles are pertinent. However, the idea that driving behaviors can be categorically differentiated, and that these styles in parents can affect driving behaviors in children (Taubman-Ben-Ari, Mikulincer, & Gillath, 2005) provides empirical precedent for the hypotheses of the present study.

Reckless Driving Behavior. In order to avoid confounds of driving skill, carelessness, and other factors that are not empirically supported to be related to antisocial behavior or alcoholism per se, reckless driving behavior in the present study is defined as driving behavior that knowingly endangers others or oneself, and falls more in line with the legal misdemeanor offense of reckless driving. In order to avoid perception biases, only objective factors were used to determine reckless driving behavior, as opposed to self-report data or observational data. Thus, reckless driving behavior was specifically quantified based on the sum of misdemeanor driving offenses per subject.

Gender Match Effects. Whether or not parent and child are the same gender can have a statistically significant effect on behavior. A previous MLS study showed that the gender match could affect rates of externalizing and internalizing behavior problems in children relative to alcoholism subtype of parents (Puttler, Zucker, Fitzgerald, & Bingham, 1998), and the Taubman-Ben-Ari et al. driving styles research also suggests specific effects based on whether or not there is a gender match. Instances in which there are two parents with alcoholism were also considered in the present research within the same context as gender match effects.

Overview of Present Research

The present research set out to find a relationship between parent alcoholism subtype and reckless driving behavior in children, as well as the effect of gender match between alcoholic parent and child and the effects of having two alcoholic parents. Prior research suggests a relationship between parent alcoholism and externalizing behavior problems, which could potentially include reckless driving behavior (Puttler, Zucker, Fitzgerald, & Bingham, 1998). This research also suggests that children of antisocial alcoholics are affected more than children of non-antisocial alcoholics, and so it seemed reasonable to test whether this difference existed in the more specific reckless driving behavior variable as well. This research also suggests that the gender match of the parent and child can affect the degree to which parent alcoholism subtype affects child reckless driving behavior. For instance, externalizing behavior was found to be greater in males than females, particularly when there is an alcoholic or antisocial alcoholic father, and alcoholism or antisocial alcoholism in mothers has a greater effect on sons internalizing behavior problems than externalizing behavior problems (Puttler, Zucker, Fitzgerald, & Bingham, 1998). While the present research cites other previous studies to show a relationship between parent driving style and child driving style, differences in driving behaviors

based on gender, and various other factors as they relate to reckless driving, it was primarily the Puttler study which was used as a model to inform the hypothesis and method of the present research. The children of participants recruited from the Michigan Longitudinal Study were used as subjects, parent alcoholism and antisocial behavior data were used as independent variables to test the hypothesis, and the dependent variable was reckless driving behavior, quantified by misdemeanor offenses.

Method

Participants

The participants of this study come from 737 subjects of the Michigan Longitudinal Study. 180 come from families with no parent with alcoholism, 442 have at least one parent with alcoholism but neither parent with antisocial alcoholism, and 115 have at least one parent with antisocial alcoholism, as shown in Figure 1. 216 of the subjects were female and 521 were male. The MLS is an ongoing project started over 25 years ago, and is a collaborative effort between the University of Michigan and Michigan State University. The participants in the MLS were Caucasian families within the East Lansing area, targeted for a male head of family with alcoholism, and control families in the community who were not alcoholic. In order to be recruited, the subjects also were required to have a son between the ages of 3-5. Only families with children of driving age were included in this data subset. Assessments have been repeated every 3 years. Michigan traffic citation records were collected for all subjects residing in the state of Michigan.

Instruments

The measures used in this study to determine reckless driving behavior were collected from the Michigan traffic citation records of the subjects, which were separated into civil

infraction offenses, misdemeanor offenses, and felony offenses (no felony offenses were committed by the participants). The Diagnostic and Statistical Manual (DSM)-IV lifetime diagnosis of alcoholism of the parents of the subjects was used to determine alcoholism in the parents. The Diagnostic Interview Schedule (DIS) was used to determine DSM diagnoses of antisocial personality disorder at the baseline. The Michigan traffic citation records were used to define an objective measure of reckless driving behavior, while the DSM alcoholism diagnoses and antisocial personality disorder diagnoses were used to determine the parents' alcoholism subtype. If at least one parent had both alcoholism and antisocial personality disorder, the subject was considered the child of an antisocial alcoholic; if at least one parent had alcoholism but neither parent had antisocial alcoholism, the subject was considered the child of a non-antisocial alcoholic; if neither parent had alcoholism, the subject was considered the child of non-alcoholics.

Michigan Department of State Court Manual. The Michigan Department of State Court Manual (MDOS) was used to determine the traffic violations of the subjects based on the traffic citation records codes. The manual provides the names of the citations, what kind of crime was committed; civil infraction, misdemeanor, and felony, as well as a basic summary of the typical punishment for that offense. For the purpose of this study, the violations were summed for each subject into two categories, civil infraction and misdemeanor. Civil infractions are relatively modest offenses, such as speeding and careless driving, which are general traffic violations due to negligence rather than conscious intent, as shown in Table 1, organized by the name of the offense, the code in the MDOS codebook, and the frequency in which this offense occurs in the dataset. For this reason, civil infractions were determined to be a weak indicator of reckless driving behavior. An analysis of the effects of parent alcoholism subtype on mean child

civil infraction offenses was non-significant, potentially supporting this claim. Examples of misdemeanor offenses include various alcohol related offenses, and the aptly named “reckless driving” offense, which is often charged in cases of accidents involving property damage or fatalities in which it was determined that the driver was operating the vehicle without regard for the safety of others. A list of the misdemeanor offenses committed by participants is shown in Table 2, structured in the same way as civil infraction offenses. Given that misdemeanor charges and the reckless driving charge in particular are legally different than civil infractions and imply intentionality on the part of the driver, misdemeanors were determined to be a better objective indicator of reckless driving behavior than civil infractions.

DSM-IV Lifetime Alcoholism Diagnosis. The Diagnostic and Statistical Manual version IV (DSM-IV) Lifetime Alcoholism Diagnosis is a categorical variable that labels alcoholism as alcohol abuse, alcohol dependence, or alcohol dependence with physical symptoms (American Psychiatric Association, 2000). The DSM-IV alcoholism diagnosis was used to determine alcoholism in the parents. For the purposes of the present study, the three DSM alcoholism classifications were dichotomized into alcoholic or non-alcoholic.

DIS T-1 Antisocial Personality Disorder Diagnosis. The Diagnostic Interview Schedule (DIS) is an instrument used by an interviewer to form diagnoses based on a semi-structured interview adapted for both children and adults. The DIS was used to determine antisocial personality disorder (as defined in the DSM) in the parents. Antisocial behavior showed high levels of consistency over time; therefore the baseline diagnosis was used as a proxy for current antisocial behavior. Antisocial behavior is labeled as Child or Adolescent Antisocial Behavior, Adult Antisocial Behavior, and Antisocial Personality Disorder (American Psychiatric Association, 2000), but for the purposes of the analyses of this study, these diagnoses

were converted into a binary variable. The definition of antisocial personality disorder requires antisocial behavior in childhood; however, the present study used adult antisocial behavior since this would be most relevant to the behavior of the offspring.

Data Analysis

The data used in the present study initially consisted of 756 subjects from the MLS, however 19 subjects were missing vital information on parent alcoholism subtype in the dataset and thus were not analyzed. The alcoholism subtype hypothesis, whether parent alcoholism subtype affects reckless driving behavior in children, was tested using a one way analysis of variance (ANOVA) with the parent alcoholism subtype as the independent variable (factor) and the sum of the subjects' civil infractions as the dependent variable. The parent alcoholism subtype variable was coded as a 3-way categorical variable, where subjects with no alcoholic parents were coded as 0, with at least one non-antisocial alcoholic parent and no antisocial alcoholic parent were coded as 1, and with at least one antisocial alcoholic parent were coded as 2. Tukey HSD, Scheffe, and Bonferroni post hoc tests were used to test between group differences. The distribution of misdemeanor offenses are shown in Figure 2.

The effects of gender on reckless driving behavior were tested using a T-test. This analysis tested the relationship between gender and sum of misdemeanor offenses, regardless of parent alcoholism subtype, and included the 19 subjects excluded from the other analyses due to lacking parent alcoholism subtype data.

Because the sample of children of only alcoholic mothers was considered insufficient, as shown in Figure 3 and Figure 4, gender match analyses were not considered statistically valid. Of female children of alcoholics, 61 had two alcoholic parents (34%) and 100 had only one

alcoholic parent (62%), as shown in Figure 5. Of male children of alcoholics, 143 had two alcoholic parents (36%) and 257 had only one alcoholic parent (64%), as shown in Figure 6.

Results

Relationship Between Parent Alcoholism Subtype and Child Reckless Driving Behavior

The range of the number of civil infractions per subject was 0-16, with a mean of 1.05 civil infractions per subject. A one way ANOVA was tested between the parent alcoholism subtype variable and the sum of subject misdemeanor offenses, with the same post hoc tests. The range of the number of misdemeanor offenses per subject was 0-8, with a mean of .34 misdemeanors per subject. The relationship between parent alcoholism subtype and sum of child civil infraction offenses was non-significant, $F(2, 734) = 1.589, p = .205$, as shown in Figure 7. None of the post hoc tests showed any significant relationship between any of the three alcoholism subtype groups and sum of civil infraction offenses. The mean number of misdemeanor offenses for children of non-alcoholics was .16, of non-antisocial alcoholics was .41, and of antisocial alcoholics was .33. The relationship between parent alcoholism subtype and sum of child misdemeanor offenses was found to be significant, $F(2, 734) = 4.265, p = .014$, as shown in Figure 8. All three post hoc tests showed between group significant difference between children of non-alcoholic and non-antisocial alcoholic parents (Tukey $p = .01$, Scheffe $p = .01$, Bonferroni $p = .01$), however none of the tests showed significant difference between children of antisocial alcoholic and non-antisocial alcoholic parents, or antisocial alcoholic and non-alcoholic parents ($p > .30$).

Degree of Effect Relative to Gender

Looking at the relationship between gender of child and sum of misdemeanor offenses, disregarding parent alcoholism subtype using a t-test, statistical significance was found, $t(754) =$

-2.404, $p = .016$. In this test, the subjects included 220 females and 536 males. The mean number of misdemeanor offenses for females was .20, and the mean number of misdemeanor offenses for males was .40, as shown in Figure 9. The two way analysis looking at the interaction between gender and parent alcoholism subtype in predicting sum of misdemeanor offenses was non-significant, $F(2, 731) = 1.701$, $p = .18$. The mean number of misdemeanor offenses for female children of non-alcoholics was .04, of non-antisocial alcoholics was .19, and of antisocial alcoholics was .42, while the mean number of misdemeanor offenses for male children of non-alcoholics was .22, of non-antisocial alcoholics was .51, and of antisocial alcoholics was .30.

Degree of Effect with Two Alcoholic Parents

T-test analyses on the relationship between having two alcoholic parents versus one alcoholic parent and the sum of misdemeanor offenses in males was non-significant $t(398) = .07$, $p = .945$, as shown in Figure 10. The relationship between having two alcoholic parents versus one alcoholic parent and the sum of misdemeanor offenses in females was also non-significant, $t(159) = .598$, $p = .551$, as shown in Figure 11. In other words, even when controlling for gender, the analyses showed no significance between having one or two alcoholic parents and sum of misdemeanor offenses.

Discussion

Concerning the alcoholism subtype hypothesis, the relationship between parent alcoholism subtype and child sum of civil infractions being non-significant was unsurprising under the assumption that civil infractions are not a form of reckless driving behavior; at the same time, the argument could be made that civil infraction offenses are still relevant to reckless driving behavior, given that negligence could be seen as a form of apathy for the safety of others or for authority. This may be an interesting theory to test in future studies. Nonetheless the

assumption of the present research is that misdemeanor offenses are a stronger correlate of reckless driving behavior than civil infractions. The statistically significant results of the relationship between parent alcoholism and child sum of misdemeanor offenses is less surprising, given the empirical support; alcoholism leads to increased reckless driving (Vaughn, et al., 2011), parent driving style affects child driving style (Taubman-Ben-Ari, Mikulincer, & Gillath, 2005), and parent alcoholism affects externalizing behavior problems in children in general (Puttler, Zucker, Fitzgerald, & Bingham, 1998). When comparing the frequency of misdemeanor offenses by gender, since male children of alcoholics and antisocial alcoholics tend to exhibit a greater degree of externalizing behavior problems than female children (Puttler, Zucker, Fitzgerald, & Bingham, 1998), and given the differences in how anger can affect traffic violations by gender (Gonzalez-Iglesias, Gomez-Fraguela, & Luengo-Martin, 2012), the fact that males had a greater mean number of misdemeanor offenses than females was predictable. What was unanticipated was that the relationship between parent alcoholism subtype and child reckless driving was not significant. This is especially startling given that the aforementioned prior research would suggest that parent antisocial alcoholism subtype should be significantly related to child reckless driving behavior.

Various explanations can be given for why the data showed some surprising results, some of which were inherent limitations to the study. For instance, the age at which subjects received their driver's license, when subjects began driving with or without a license, where subjects regularly drove, and subjects' annual mileage all could impact the probability of receiving misdemeanor offenses, regardless of actual reckless driving. Without this information, a few confounds exist. For instance, alcoholic parents in the MLS subject pool were shown to have lower socioeconomic status (SES) and income than non-alcoholics, that children of alcoholics

also tend to have lower SES and income than children of non-alcoholics, and that this effect is even greater in antisocial alcoholics and children of antisocial alcoholics (Puttler, Zucker, Fitzgerald, & Bingham, 1998). Lower SES and income could mean that the family of the subject had fewer, if any, available cars, or that prohibitive gas prices limited car usage. This could uniquely affect children of antisocial alcoholics, if this SES car threshold effect only occurs in the lowest SES group. Location could also play a role, as certain areas may be patrolled more heavily, or the police officers that patrol may be more likely to issue misdemeanor offense citations. It is also possible, given that the measure of reckless driving behavior is derived objectively based on misdemeanor offenses, and given that the rate of arrests for misdemeanor offenses were so low in the first place, that subjective reports of reckless driving might have shown an effect more in line with the hypothesis. It may be that, due to low numbers, misdemeanor offenses are not an adequate correlate of actual reckless driving behavior. Given the overwhelming number of misdemeanor charges by subjects in the study that were specifically alcohol or drug related, as opposed to reckless driving specifically, it may also be the case that the specific misdemeanor charges within the study were not an adequate correlate of reckless driving behavior.

It may also be the case that the degree to which the effect is biological versus environmental affected the data. None of the prior research utilized in the framework of the present study necessarily account for whether the effects are due to biology or due to the environment of having an alcoholic or antisocial alcoholic parent. While it may be the case that externalizing behavior in children is a product of alcoholic or antisocial alcoholic parent involvement, or, in many cases, lack of involvement, it may be that the relationship between parent driving style and children's reckless driving behavior is only correlated if the parent was

actively involved in the child's life, or at least in learning driving behaviors. Since the data analyzed does not account for which parents were actively involved in raising the children and which were absentee parents, this may have biased the outcome, particularly if antisocial alcoholic parents were less likely than alcoholic parents to be involved in raising the children.

While statistical significance was found showing greater mean number of misdemeanor offenses for males than females, the two way ANOVA did not find significant difference between gender and parent alcoholism subtype. This may be due the recruitment criteria of the MLS, which was based around male alcoholic fathers with a son age 3-5. A recruitment strategy that targeted male and female alcoholic parents with male or female children equally may find different results.

Furthermore, because of the recruiting criteria of the MLS, there was an insufficient sample size of children of only alcoholic mothers, and therefore the gender match hypothesis could not be analyzed. While there was no specific empirical evidence to support a greater effect on child reckless driving in instances of two alcoholic parents versus one, it seemed intuitive that the effect would compound. The lack of significant results on the two alcoholic parent analyses may be due to the aforementioned insufficiencies of using misdemeanor offenses as a correlate of reckless driving behavior.

Conclusion

The study aimed to show a relationship between parent alcoholism subtype and child reckless driving behavior primarily, and secondarily to show a relationship between gender match of parent and child, and effects of having two alcoholic parents on child reckless driving behavior. While the results showed a relationship between parent alcoholism and reckless driving behavior in children, the results did not show a statistically significant relationship between parent

antisocial alcoholism subtype and child reckless driving behavior in particular. Furthermore, there was insufficient data to test the relationship between alcoholic parent gender and child reckless driving behavior, and the relationship between having two alcoholic parents and reckless driving behavior in children was also not found to be significant. Follow up studies could examine subjective reckless driving behaviors, such as how subjects describe their own driving behavior, or how others describe their driving behavior, to possibly give a more comprehensive (albeit arguably less valid) dataset on reckless driving behavior. Alternatively, a longitudinal study could be designed from the ground up, or a prior longitudinal study with certain vital information on driving behavior such as annual mileage and age of independent driving could be used instead of MLS data, or vital driving data could be collected in the future from MLS subjects, to account for potential confounds in the data. Nonetheless, the insights derived from the present study on the relationship between parent alcoholism and children's reckless driving behavior can still have practical implications on how we look at driving risks in present and future drivers.

References

- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of mental Disorders Fourth Edition (Text Revision)*. Arlington: American Psychiatric Publishing.
- Gonzalez-Iglesias, B., Gomez-Fraguela, J., & Luengo-Martin, M. (2012). Driving anger and traffic violations: Gender differences. *Transportation research part F: Traffic psychology and behaviour*, 404-412.
- Puttler, L., Zucker, R., Fitzgerald, H., & Bingham, C. (1998). Behavioral outcomes among children of alcoholics during the early and middle childhood years: Familial subtype variations. *Alcoholism: Clinical and experimental research*, 1962-1972.
- Taubman-Ben-Ari, O., Mikulincer, M., & Gillath, O. (2005). From parents to children-similarity in parents and offspring driving styles. *Transportation research part F: psychology and behaviour*, 19-29.
- Vaughn, M., Define, R., Delisi, M., Perron, B., Beaver, K., Fu, Q., & Howard, M. (2011). Sociodemographic, behavioral, and substance use correlates of reckless driving in the United States: Findings from a national sample. *Journal of psychiatric research*, 347-353.

Author Note

Max J. Cantor, Department of Psychology, University of Michigan, Ann Arbor.

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Tables

Table 1

Civil Infractions

Offense	Code	Frequency
Negligent Driving	1810	15
Radar Speeding Violation	2000	378
Speeding, limited access highway	2100	116
Speeding in construction zone	2105	2
Speed, excessive for conditions	2300	18
Fail to stop at intersection	2400	22
Overtaking, fail to give way	2430	3
Fail to stop flashing red lights	2440	28
Fail to comply to traffic control device	2500	17
Fail to yield	2600	22
Fail to yield to pedestrian	2620	1
Private drive, fail to stop	2640	1
Fail to use turn signal	2650	1
Glaring lights	2740	5
Following too closely	2800	1
Illegal turn	2810	5
Improper turn	2820	10
One way street wrong way / one way traffic sign disobey	2830	2
Right turn only lane, drove thru	2840	10
Seat, too many in front	2870	2
Insurance, no proof or no	3100	83

No insurance 3106 7

Table 2

Misdemeanors

Offense	Code	Frequency
Unlawful bodily alcohol content/operated under infl liquor/combined	1020	2
Operating while intoxicated	1025	9
Operating with presence of drugs	1105	1
Ability impaired-liquor, oper while	1200	36
Person under 21 with BAC	1240	3
Open intoxicants in vehicle -driver	1300	2
Open intoxicants in vehicle- passenger	1306	1
Person under 21 transport or possess in motor vehicle - driver	1307	1
Fraud ID to purchase liquor	1330	1
Person under 21 purchase/consume/possess liquor	1360	92
Reckless driving	1800	3
Racing	1820	1
Display license, fail to	3000	43
Drove while license not valid or improper license	3010	1
CMV, driving without proper endorsement or designator	3027	1
Restrictions, violated license	3050	3
District Ct. restricted license violation	3060	4
No insurance - misdemeanor	3108	1
License, drove while denied/revoked/suspended	3200	27
Drove while license canceled	3220	3

Crime, drug

9200 23

Figures

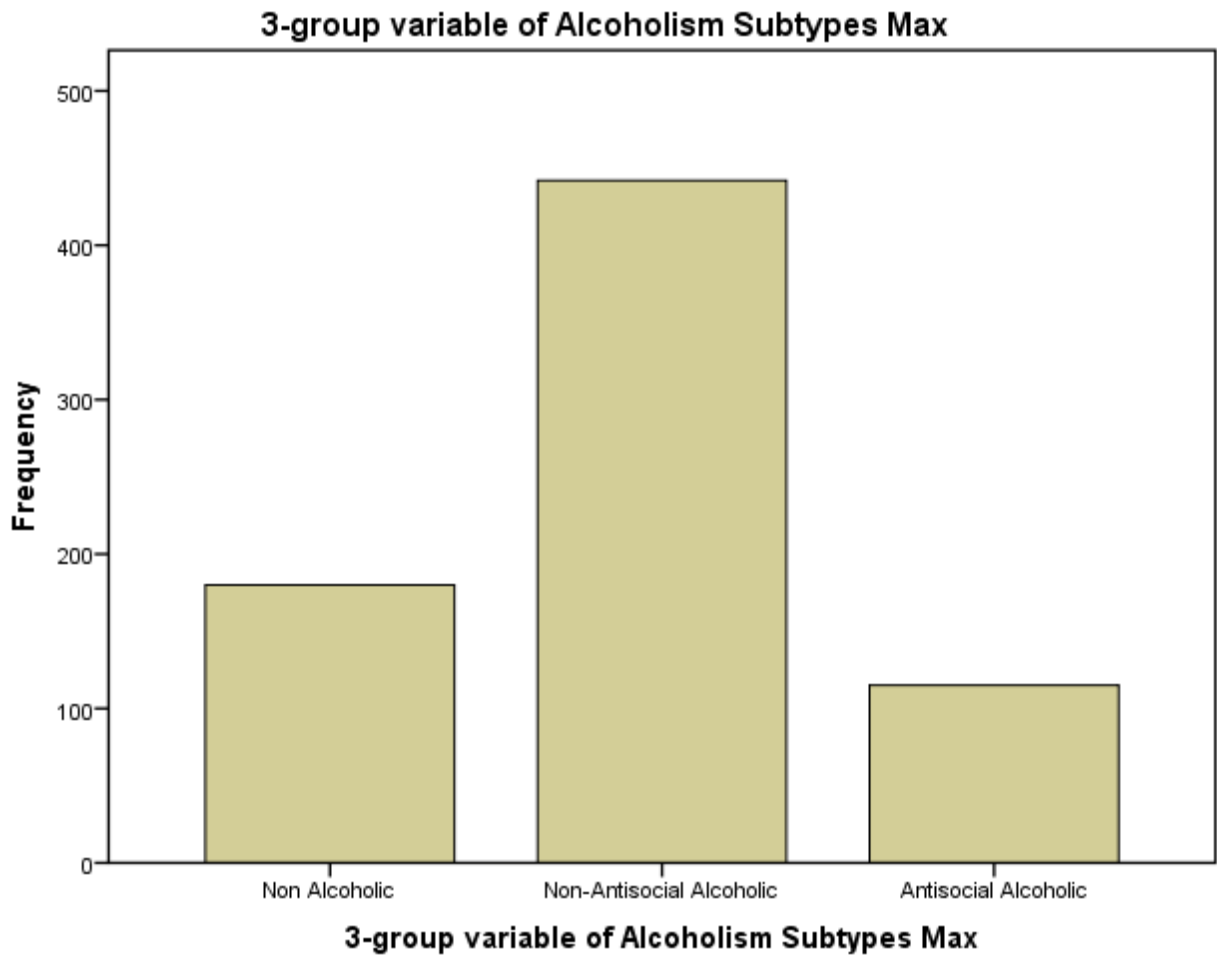


Figure 1. The frequency of Non-Alcoholic, Non-Antisocial Alcoholic, and Antisocial Alcoholic parents.

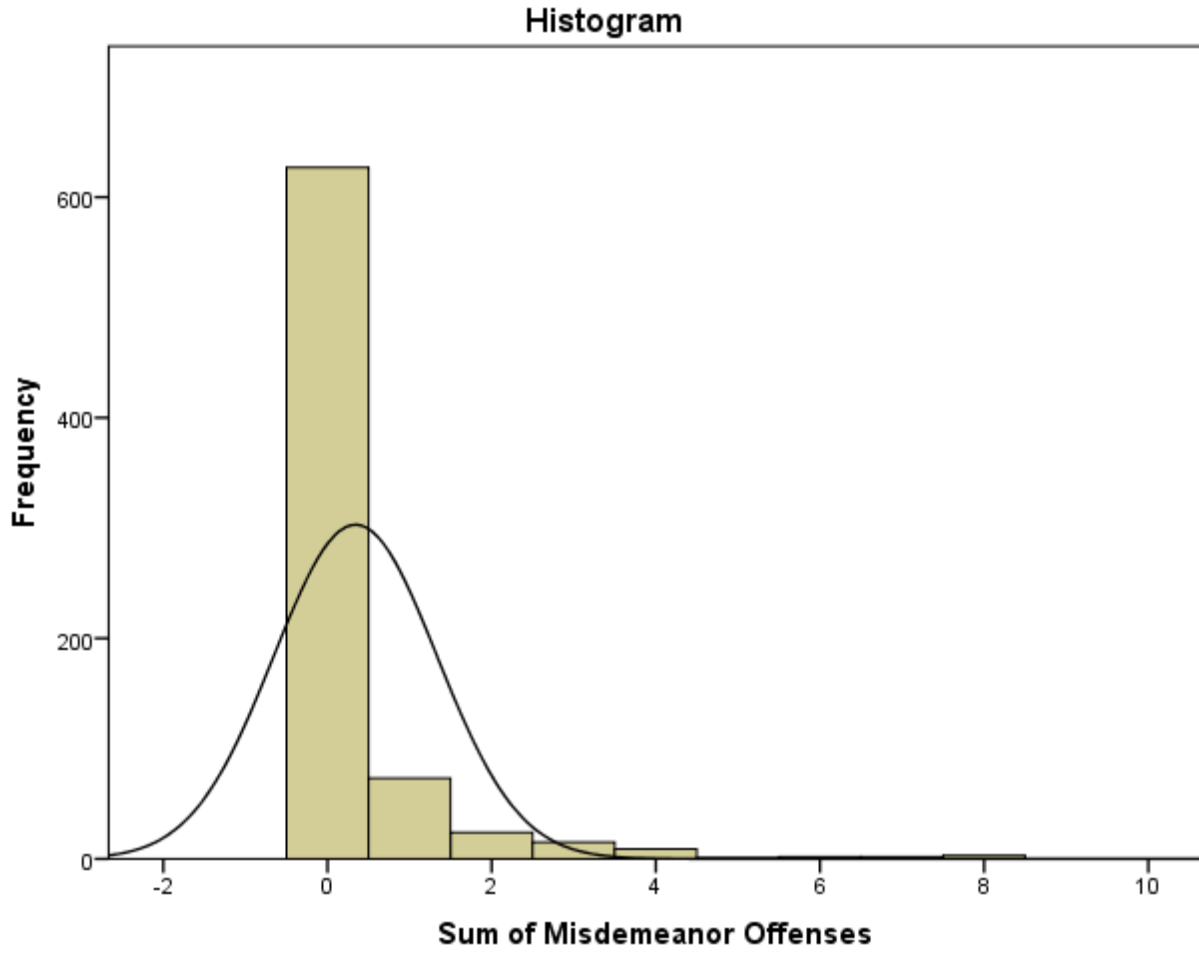


Figure 2. The distribution of misdemeanor offenses with normal curve shown.

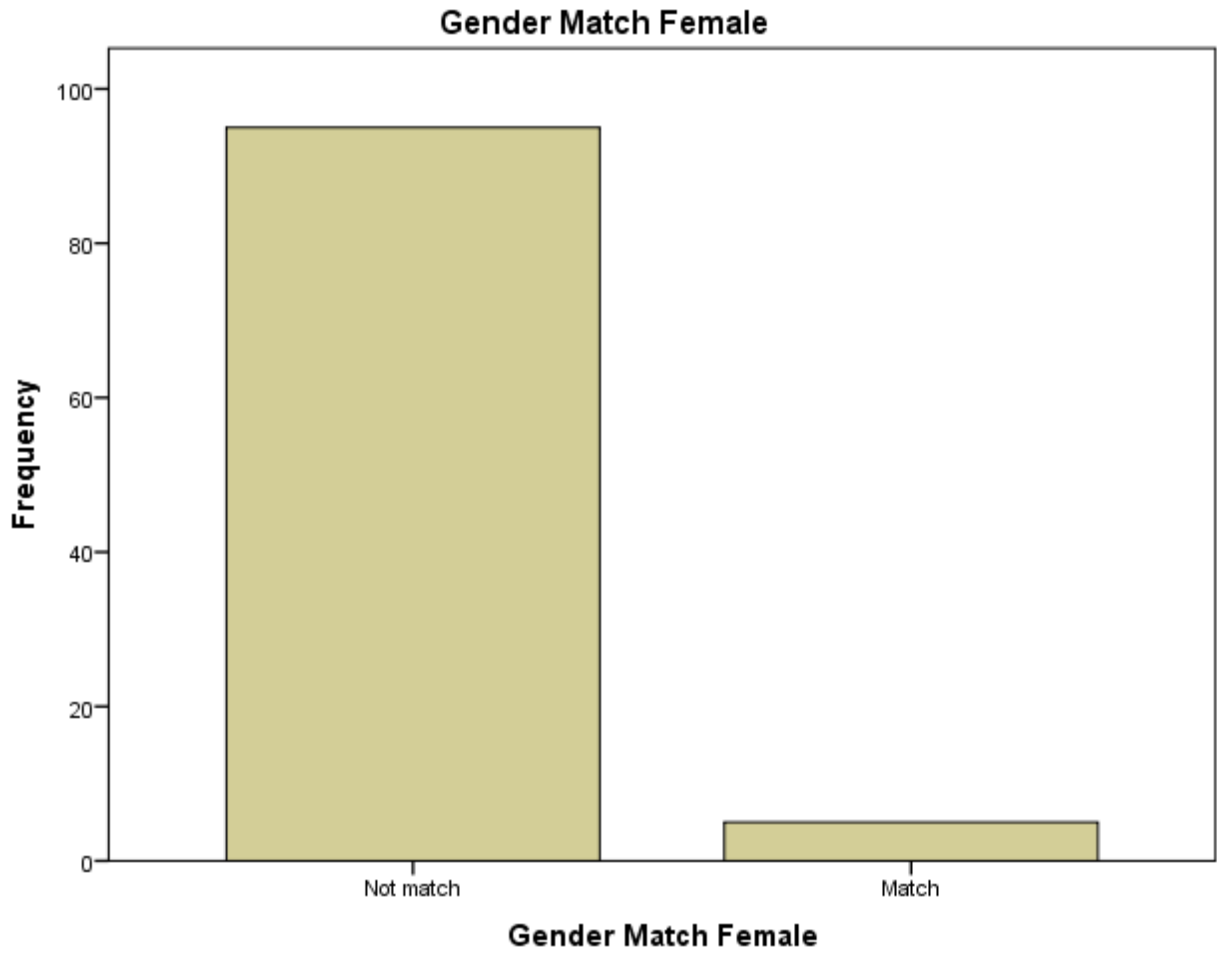


Figure 3. The frequency of female children of alcoholics with an alcoholic parent of the opposite gender (not match) and same gender (match).

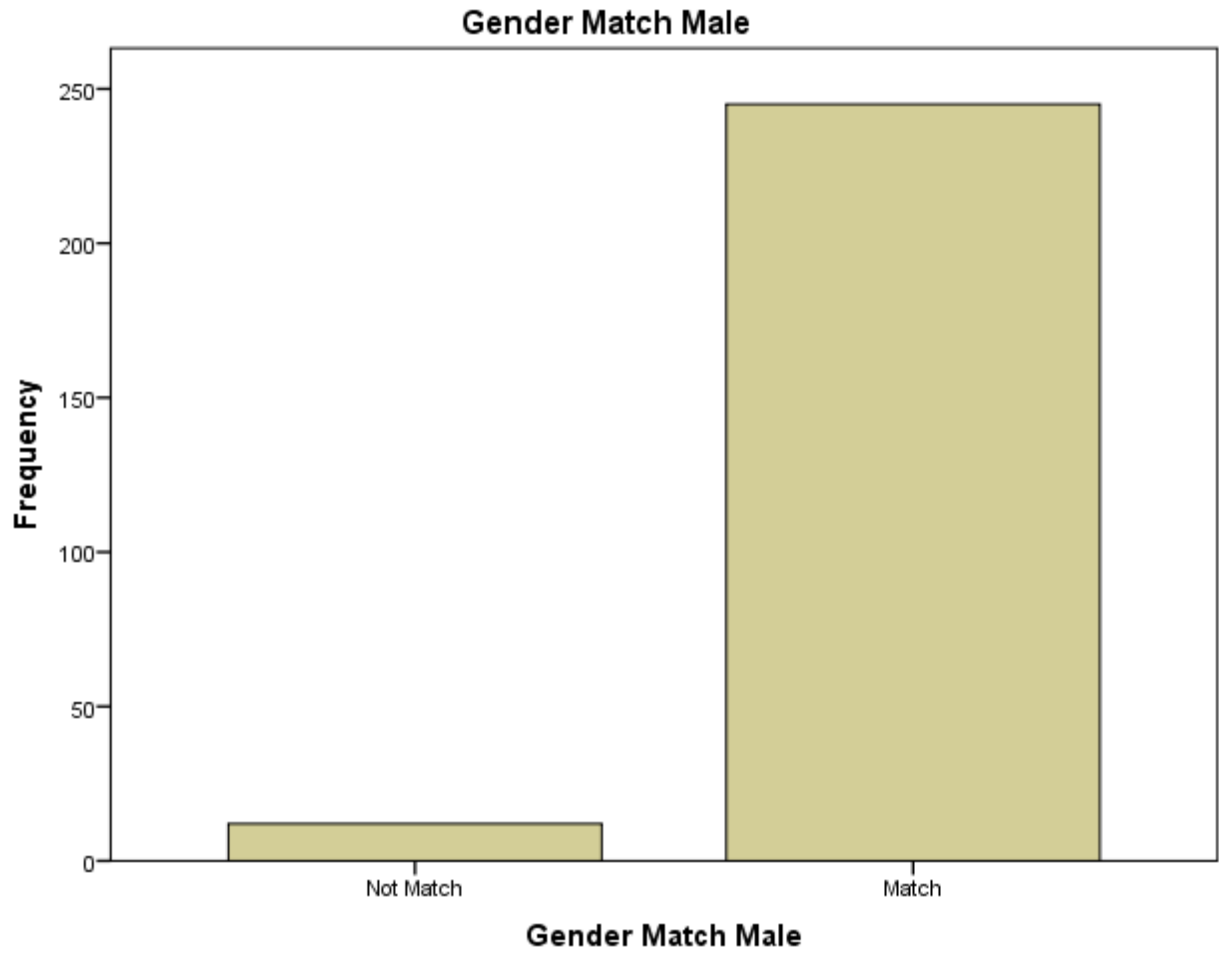


Figure 4. The frequency of male children of alcoholics with an alcoholic parent of the opposite gender (not match) and same gender (match).

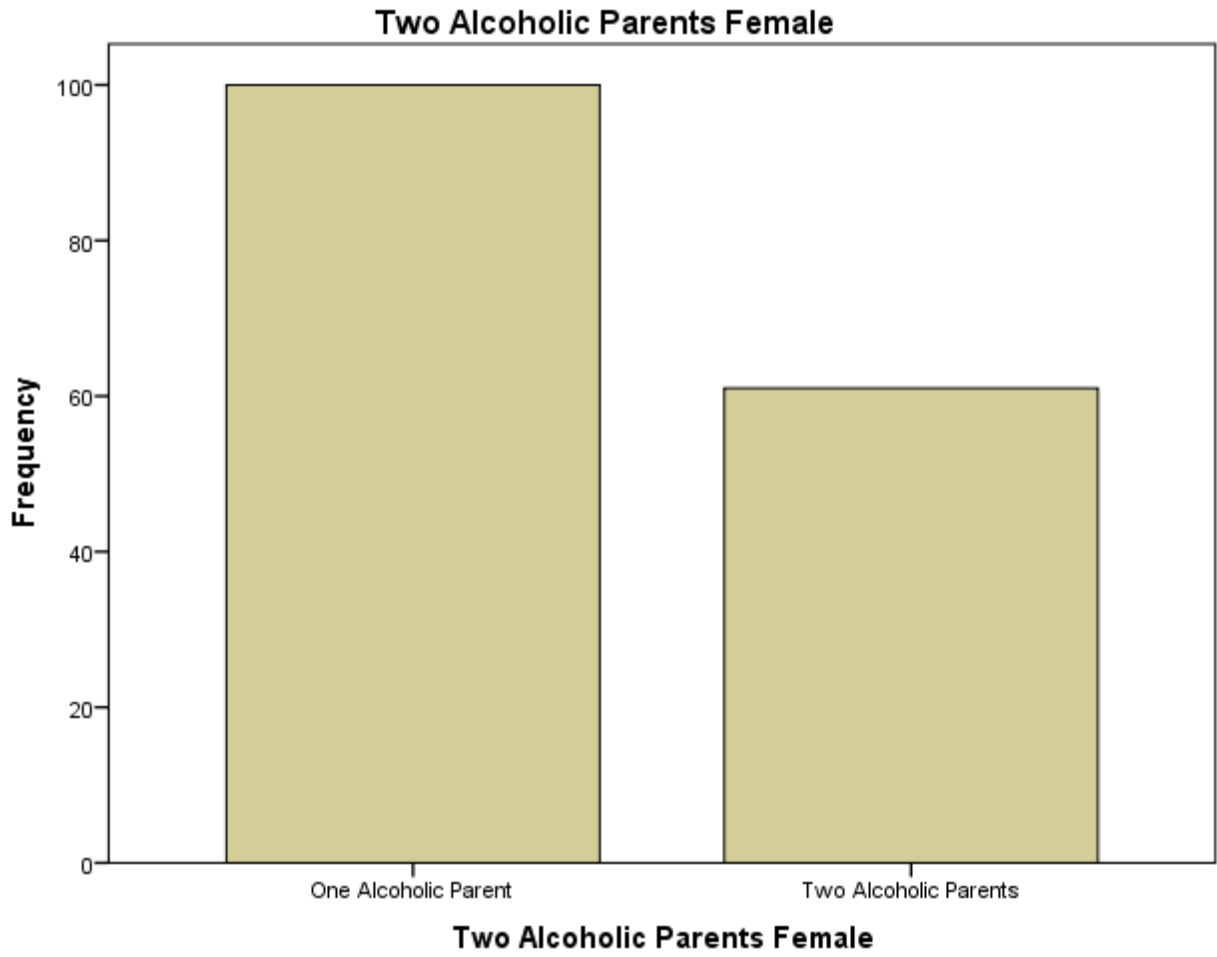


Figure 5. The frequency of female children of alcoholics with two alcoholic parents and without two alcoholic parents (0).

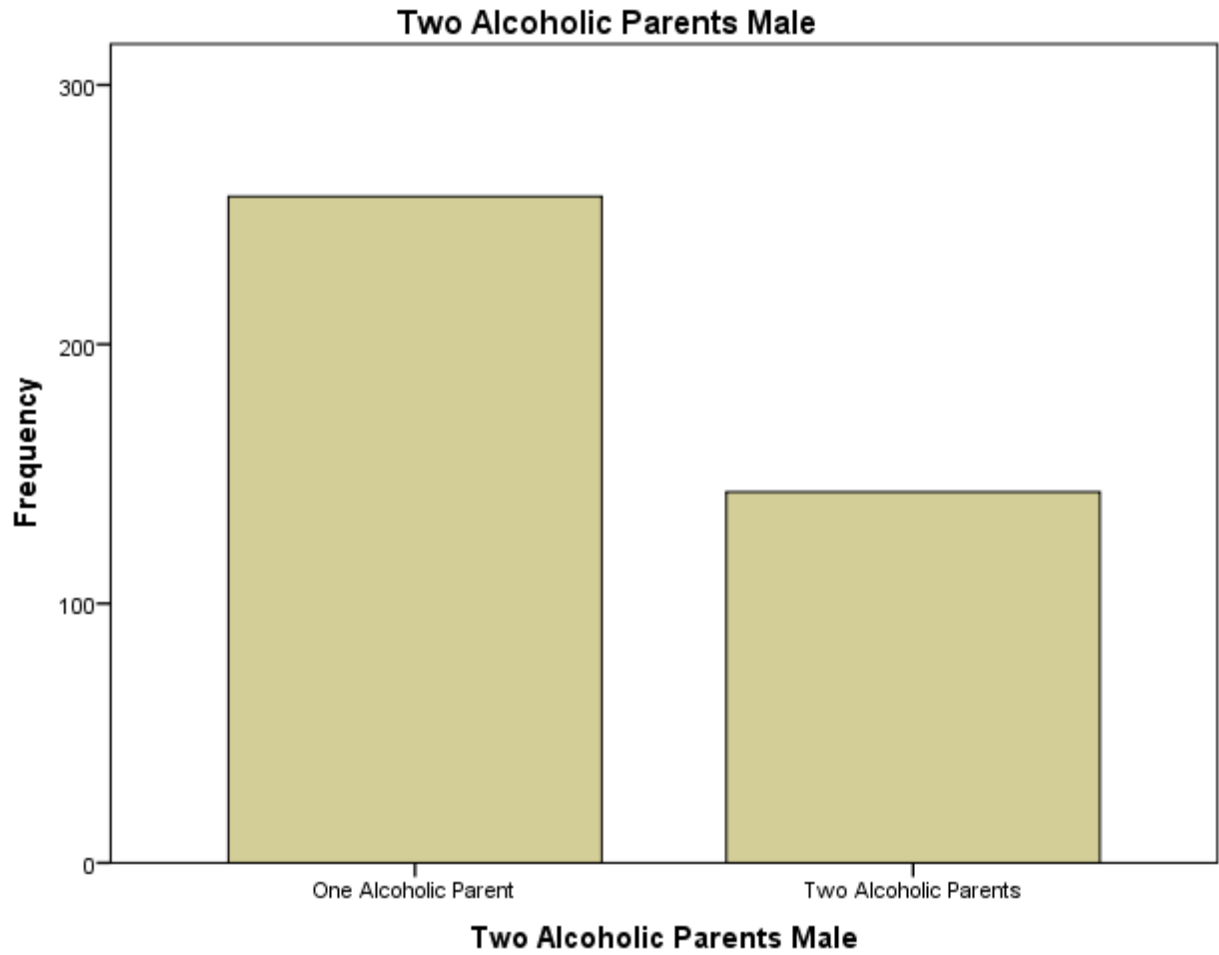


Figure 6. The frequency of male children of alcoholics with one alcoholic parent and with two alcoholic parents.

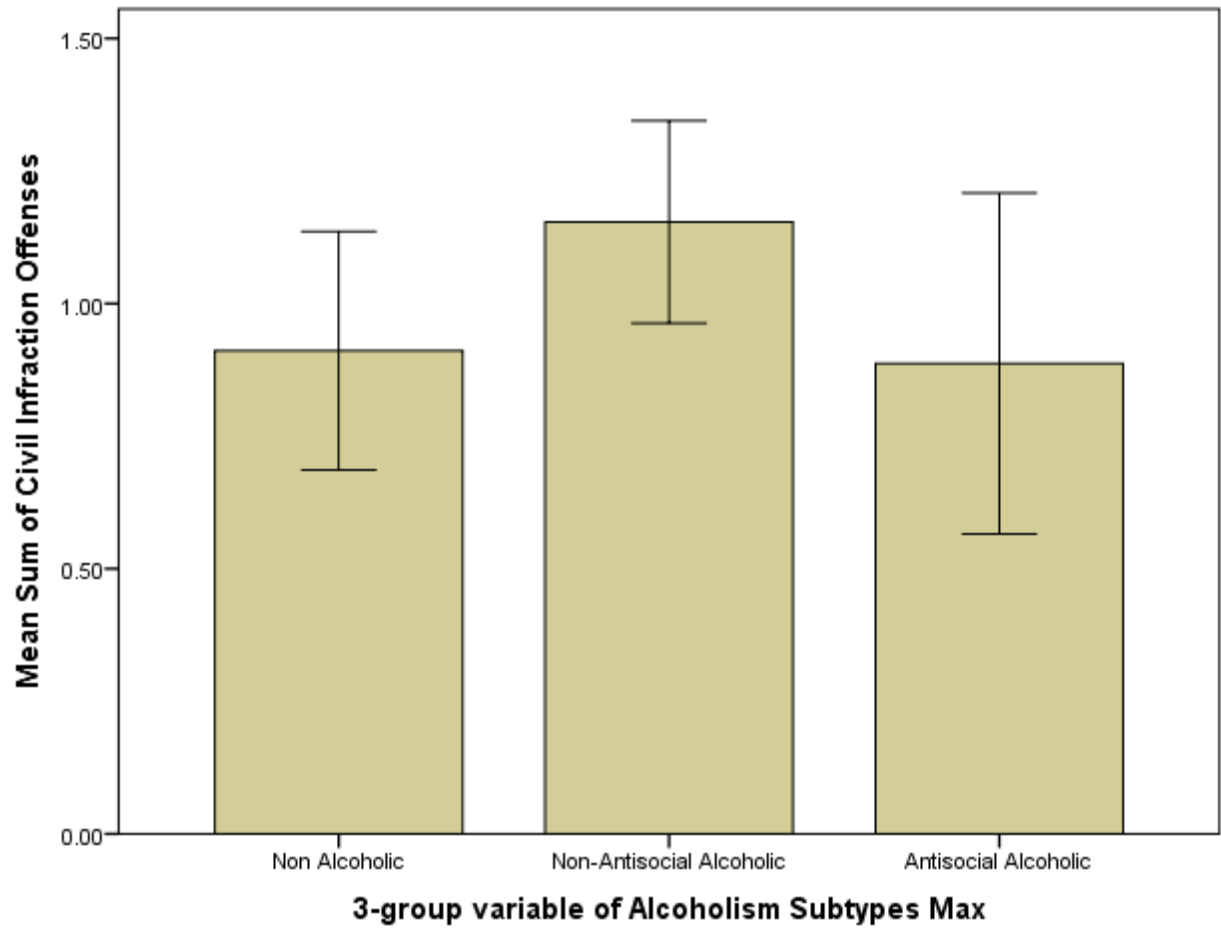


Figure 7. Effects of alcoholism subtype on mean number of civil infraction offenses with 95% confidence intervals.

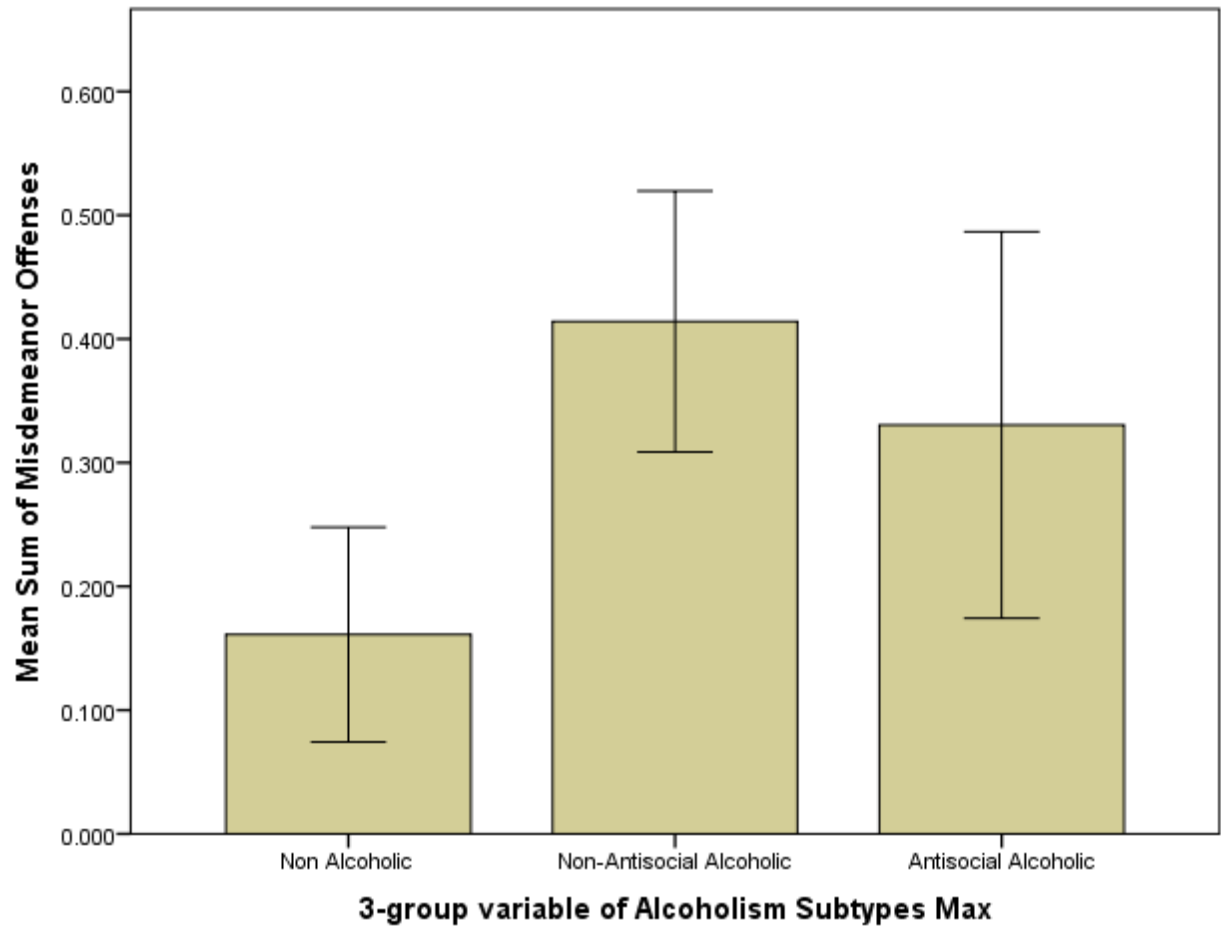


Figure 8. Effects of alcoholism subtype on mean number of misdemeanor offenses with 95% confidence intervals.

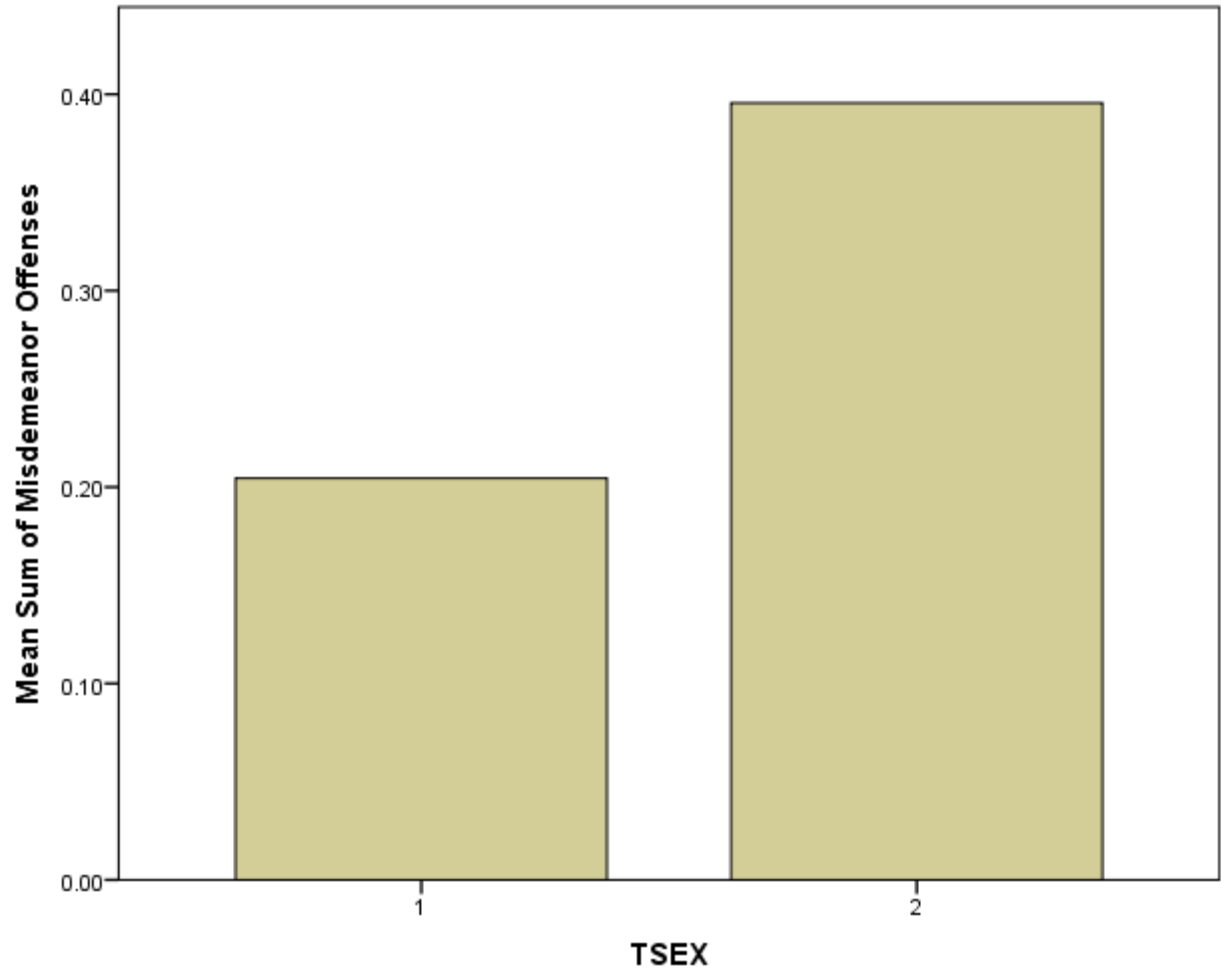


Figure 9. The mean number of misdemeanor offenses for female subjects (1) and male subjects (2).

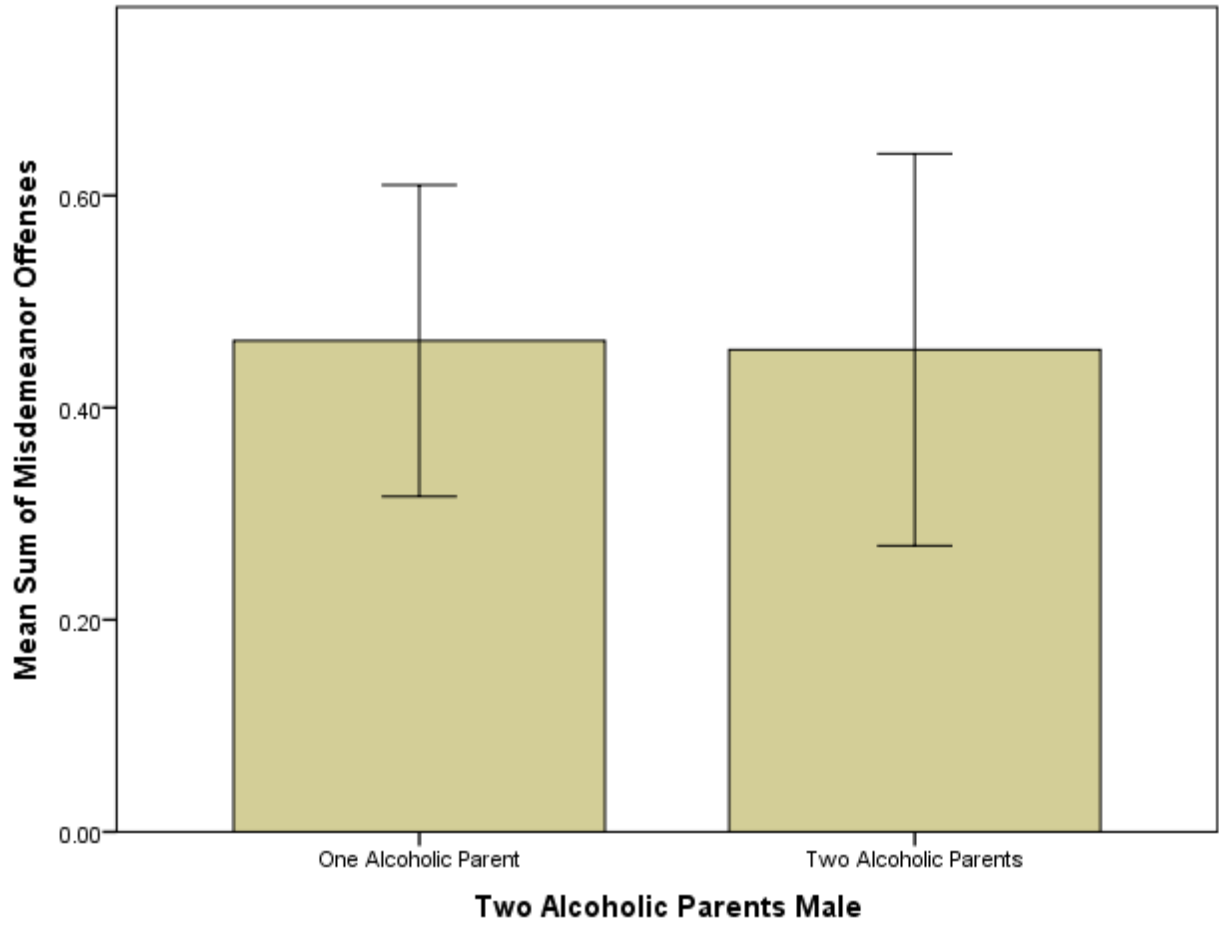


Figure 10. Effects of having two alcoholic parents on misdemeanor offenses for males.

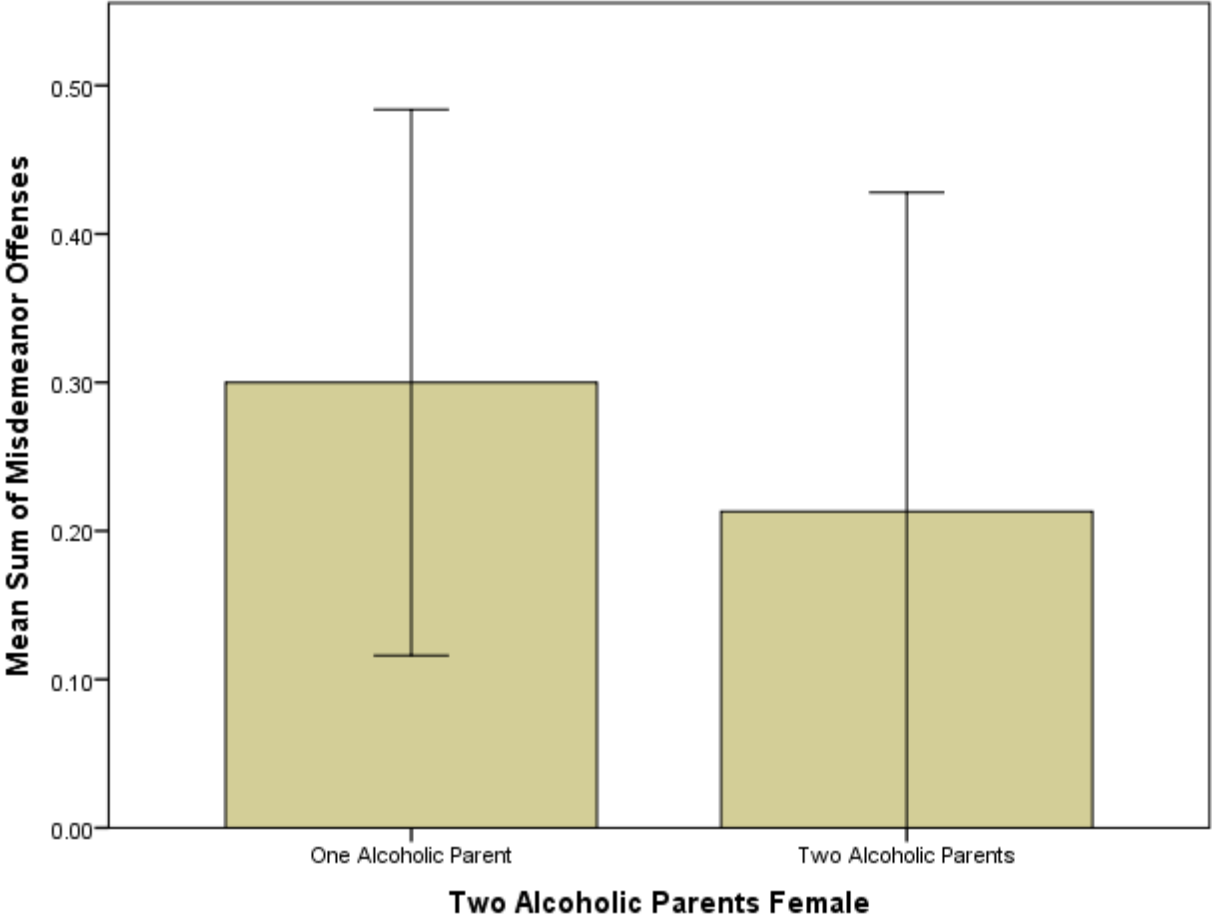


Figure 11. Effects of having two alcoholic parents on misdemeanor offenses for females.