School Engagement and Juvenile Offending Among Maltreated Youth Who Vary by Race/Ethnicity, Gender, and Type of Child Maltreatment

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ABSTRACT

Child maltreatment is a pervasive social problem affecting millions of children and their families every year. While past research has documented the short and long-term deleterious outcomes of abused and neglected children, variations in outcomes based on type of maltreatment, race/ethnicity, and gender are not well understood. This study explored the interrelationships of these variables on youths' school engagement and juvenile criminal offending in a large, diverse sample followed prospectively from the time of maltreatment until youths' sixteenth birthday. Results indicated that maltreated boys were 2.7 – 3.5 times more likely than non-maltreated boys to exhibit poor school engagement (odds ratios = 3.7 – 5.3), and maltreated girls were 3.4 – 4.2 times more likely than non-maltreated girls (odds ratios = 5.3 – 6.9). The increased risk was even greater in relation to juvenile offending. Maltreated boys were 3.3 – 9.2 times more likely to have committed a misdemeanor, felony, or violent felony by the age of 16 (odds ratios = 4.5 – 9.4), and maltreated girls were 3.8 – 12.0 times more likely (odds ratios = 4.4 – 11.7). With respect to race/ethnicity, American Indian, Black, and Hispanic boys and girls tended to have poorer outcomes than Asian and White youths regardless of maltreatment status. Regarding type of abuse, physical abuse was related to suspensions/expulsions and criminal offending for both genders. However, sexual abuse among boys had the strongest relationship to violent felony offending with a rate 17.6 times higher than non-maltreated boys (8.8% vs .5%, OR = 9.5), and significantly higher than physically abused or neglected boys.

INTRODUCTION

Every year in the United States, hundreds of thousands of children are abused or neglected by their parents (U.S. Department of Health and Human Services, 2010). Decades of research consistently indicate that child maltreatment victims are much more likely than their non-maltreated peers to suffer from both short and long-term deleterious outcomes on a variety of physical, psychological, educational, and behavioral indicators (Barnett, Miller-Perrin, & Perrin, 2011). For example, with respect to educational outcomes, maltreated children tend to have lower IQs, lower test scores, poorer grades, higher absenteeism, more disciplinary problems, and are more likely to drop out of school (Eckenrode, Laird, & Doris, 1993; Leiter & Johnsen, 1997; National Working Group on Foster Care and Education, 2008; Stone, 2007; Thornberry, Ireland, & Smith, 2001). With respect to social functioning, abused and neglected children have been found to be at higher risk of antisocial behavior, violence, juvenile delinquency and adult criminality (English, Widom, & Brandford, 2002; Lansford, Miller-Johnson, Berlin, Dodge, Bates, & Petit, 2007; Maxfield & Widom, 1996; Mersky & Topitzes, 2010; Smith, Ireland, & Thornberry, 2005).

However, despite the decades-long history of research in the area, many important questions remain about the impact of child maltreatment. Due to methodological limitations of past research, including cross-sectional and retrospective data, short-term follow-up, inadequate control groups, and limited sample sizes, the potentially differential effects of types of maltreatment and the impact across subgroups of victims has not been well researched (Lansford et al, 2007; Mersky & Topitzes, 2010). Regarding the type of maltreatment and behavioral outcomes, considerable attention has been given to the theoretical relationship between violent victimization (e.g., physical abuse) and violent offending. Several theories suggest an intergenerational “cycle of violence” in which violent behavior develops within children due to prolonged exposure to violence in proximal contexts (e.g., community, media,

home, dyadic relationships). Yet results from a limited number of more rigorous research studies suggest that multiple forms of maltreatment, including neglect, are related to later violent offending (Yun, Ball, & Lim, 2011; Mersky & Reynolds, 2007; Widom & Maxfield, 2001). With respect to the relationship between types of maltreatment and educational outcomes, findings are mixed. Stone (2007) summarized the literature as suggesting that neglect appears to increase risk for general intellectual and academic deficits, physical abuse is most strongly related to disciplinary behaviors but also related to academic difficulties to a lesser degree, and all types of maltreatment are related to grade retention.

Another area of both theoretical and practical interest is the differential impact of maltreatment on girls and boys. Several theorists have suggested that maltreatment, especially sexual abuse, may play a greater role in the development of negative outcomes for females. James Howell (2003) has suggested that child abuse is one of several "gendered" risk factors that may place girls on a different trajectory toward violent delinquency, partly because of the higher prevalence among girls. Several feminist scholars also suggest that childhood victimization plays a greater role in the development of delinquency in girls by disrupting critical relationships and identity formation, adversely affecting mental health, and forcing girls out of the home and onto the streets (Belknap & Holsinger, 1998; Bender, 2010; Chesney-Lind & Pasko, 2004). In addition, the impact of maltreatment on school engagement, which has been found to serve as an important protective factor for girls, has also been implicated in gendered theories of development (Leiter, 2007).

Empirical support, however, for gender differences in maltreatment outcomes has been surprisingly inconsistent. Topitzes and colleagues (Topitzes, Mersky, & Reynolds, 2011) found that maltreatment predicted juvenile delinquency for males but not for females, yet was related to adult criminality for both genders. English and colleagues (English et al., 2002) found maltreatment against boys and girls was significantly related to both adolescent and adult crime.

A study by Markarios (2007) supported the theory of a greater impact of abuse on females, while Johansson and Kempf-Leonard (2009) found that among a host of possible predictors, maltreatment actually decreased the probability of serious or violent offending for males and females. Regarding gender differences and school outcomes among maltreated youths, much less research has specifically addressed the issue. Leiter and Johnsen (1994) concluded that the negative effects of abuse and neglect on educational outcomes were generally similar for girls and boys, though girls showed greater difficulties in some academic areas and in dropping out of school. In a more recent study, Currie and Widom (2010) found that women who had been maltreated as children completed fewer years of schooling and had lower IQ scores in adulthood than non-maltreated women, while maltreated men did not differ from non-maltreated men.

Differences in maltreatment outcomes across racial/ethnic groups, especially when examined along with gender, are even less well understood (Markarios, 2007). Several researchers have found that the adverse effects of abuse were related to children's race, with Black youth more likely to experience negative outcomes than White youth (Lansford, et al., 2007; Lansford, et al., 2002; Widom & Maxfield, 2001). In the study by English and colleagues (2002), while maltreatment was found to increase risk of future criminality across the three racial groups in the study (American Indian, Black, and White youth), the relative risk for juvenile arrests was higher for American Indian and White maltreated youth than for Black youth. And in a test of the interaction of abuse and race, Markarios (2007) did not find any evidence that abuse had a more negative impact on minority females than White females. With respect to educational outcomes, Leiter and Johnsen (1994) suggest maltreatment may significantly impact dropping out of school for White students, but not students of other racial/ethnic groups.

The purpose of this study is to contribute to the conversation regarding the impact of childhood maltreatment by examining school engagement and juvenile justice involvement at

age 16 in a large sample of prospectively followed abused, neglected, and non-maltreated youth. The large sample size allowed for tests of interactions among type of maltreatment, gender, and race/ethnicity. Further, outcomes of maltreated youth were compared to two control groups: one with no history of involvement with child protective services, and a second group of youth who had a CPS investigation but in which the allegations were unsubstantiated.

METHOD

Sample

This study involved a cohort of 367,063 youth in Washington State born during the period from 1987 through 1994. Data regarding youths' maltreatment history, juvenile criminal offending, and educational records were obtained through data sharing agreements with the appropriate agencies and merged by the Washington State Center for Court Research of the Administrative Office of the Courts.

Each youth in the study was categorized into one of three groups depending upon his or her family's history of involvement with Washington's Child Protective Services (CPS) of the Children's Administration. At the time, when a report of maltreatment was made to CPS, intake staff determined whether the alleged situation met the legal definition of abuse or neglect, or if there was imminent harm to the child, and took appropriate action. First, if the alleged abuser was not the parent or guardian, the case was referred to law enforcement for investigation. Second, if the intake information did not meet the definition of abuse or neglect, it was considered as "information only," and no further action was taken. The remaining CPS actions corresponded to the risk level assigned to the case and dictated the level of CPS involvement. Low risk families were generally contacted either by mail or phone and provided with information, moderate risk cases were referred for services outside of CPS, and high risk cases were accepted for an investigation. After an investigation had been conducted, the maltreatment

was considered to be inconclusive, unsubstantiated, or founded for each of the investigated types of maltreatment.

For the purposes of this study, youths were categorized into one of three groups: *no maltreatment*, *investigated*, and *maltreated*. The youths in the *no maltreatment* group (n=352,938) had no known history of CPS investigation in the state and had no documented removal from their home due to abuse or neglect. Youths were selected for this group based on educational records indicating they were enrolled in high school in the state on their sixteenth birthday. Youths in the *investigated* group (n = 18,260) had at least one documented CPS investigation for maltreatment, but all investigations were deemed to be unsubstantiated or inconclusive. *Maltreated* youth (n = 14,630) had been removed from their home and placed in the custody of the state due to one or more founded instances of abuse or neglect.

Types of Maltreatment

Child victims were removed from their home and placed in state custody for a variety of reasons. For this study, removal reasons were first categorized into one of six types: physical abuse, sexual abuse, neglect, parental substance abuse, abandonment/unable to care for the child, and child behavior problems. Three types of maltreatment--physical abuse, sexual abuse, and neglect—were then selected for further study. Abuse or neglect was determined from Children's Administration records on both the findings of CPS investigations and the reasons for removing a child from a home. Because multiple forms of maltreatment often co-occur within families, often confounding studies of different types of maltreatment experiences, this study attempted to limit cases with co-occurring victimization.

For the main maltreatment categories of physical abuse, sexual abuse, and neglect, children must have been removed from their home due to the respective type of parental maltreatment and not have had any documented reasons for removal, or any founded CPS investigations, for the other two main categories of maltreatment. However, other removal reasons (i.e., parental substance abuse, abandonment/unable to care for child, or child behavior

problems) may have occurred in combination with the main maltreatment type. The result of this categorization process was a sample of 3,010 physically abused children (52% girls), 1,016 sexually abused children (74% girls), and 10,398 neglected children (50% girls). The number of children in each of the study categories is presented in Appendix A, along with the average age of the children at the time of removal.

Children in the *investigated* group for each of the three maltreatment types must have been investigated by CPS for the specific maltreatment, with a finding that the allegation was unsubstantiated. In addition, children in these groups must not have been investigated for either of the other two main maltreatment types, nor have any founded investigations or removals due to the other categories of removal reasons. However, they may have been investigated for one or more of the other types of maltreatment (i.e., parental substance abuse, child behavior problems, or unable/unwilling to care for the child) with the result of the investigation being inconclusive.

Outcome Measures

School Engagement

Student-level educational data were obtained from over 200 school districts throughout Washington, comprising approximately one-half of the public school population. Districts ranged in size from a few hundred students to over 20,000 students and were located in rural and urban areas from all regions of the state. Large urban districts, however, were slightly underrepresented in the sample because those districts used different student information systems than the one system managed by the data provider.

The school engagement measures used in this study were based on students' performance during their ninth-grade year. Educational indicators were chosen based on prior research indicating that attendance, academic performance, and disciplinary behavior are among the best predictors of high school graduation (Allensworth & Easton, 2007). Therefore,

the measures selected for this study were the number of unexcused absences, academic credits, and out-of-school suspensions/expulsions during the ninth-grade school year.

Each of the three continuous educational measures was then dichotomized. For unexcused absences, the measure was divided into fewer than 10 unexcused absences and 10 or more unexcused absences during the ninth-grade year. Ten unexcused absences in a year is a statutory threshold in Washington State when students must be referred to juvenile court on a truancy petition. For academic credits, the cut-point was set at four credits, equivalent to two failed courses during the ninth grade, and significantly behind the necessary average of six credits per year needed to graduate. Finally, the two values for suspensions/expulsions were no suspensions/expulsions versus one or more suspensions/expulsions that resulted in temporary or permanent removal from the school. For all three measures the more negative, or higher-risk, of the two outcomes was coded with a higher value.

Juvenile Crime

Juvenile court records obtained from the Administrative Office of the Courts were merged with child welfare data in order to track youths' subsequent offending behavior. Three dichotomous measures of juvenile offending were determined for each youth at the time they turned sixteen years old: whether or not he or she had committed a misdemeanor, felony, or violent felony offense. For each measure, the absence of an offense was coded as 0 and the presence of one or more offenses was coded as 1. A youth was considered to have committed an offense if he or she was convicted, placed on diversion, or had a deferred disposition for one or more offenses within the offense type. Offenses were counted if the actual offense date occurred prior to the youth's sixteenth birthday. An offense was considered a violent felony offense if the associated felony crime fell into one of six categories: assault, robbery, violent property, kidnapping, sex, or homicide. On average, approximately 11,000 misdemeanor cases and 6,000 felony cases, of which about 3,500 are for violent felonies, are referred to juvenile courts in the state each year.

Analytic Strategy

The first step in the analysis involved computing percentages of youths with each specified outcome for each of the 90 separate groups (maltreatment (3) x maltreatment type (3) x race/ethnicity (5) x gender (2)). Next, forward stepwise binary logistic regression was used to test for interactions and main effects among maltreatment, maltreatment type, and race/ethnicity. The three independent variables were entered as categorical covariates. Separate logistic regressions were conducted for males and females to simplify interpretation among complex interactions. Gender differences are presented and discussed in terms of differences in relative risk. To conserve space, parameter estimates and odds ratios are presented only for the statistically significant main effects and interactions in the appendices.

In binary logistic regression, prediction of the dependent variable is made in reference to specific categories of the independent and dependent variables. With respect to the dependent measures in this study, prediction of the more negative, high-risk outcome was made in reference to the absence of the high-risk outcome. For the independent variables, the following were set as the reference categories: for maltreatment, investigated and maltreated youths were compared to non-maltreated youths; for type of maltreatment, physical and sexual abuse were compared to neglected youths; and for race/ethnicity, comparisons were made in reference to White youths.

In addition to logistic regression, all pairwise comparisons within race/ethnicity, type of maltreatment, and maltreatment history were evaluated using chi-square tests. Results of these tests along with percentages of youth within each of the 90 categories who experienced the negative outcome are presented for each outcome variable. Relative risk (RR) ratios were used as a supplementary method to odds ratios obtained from the logistic regressions for comparing the probability that the negative outcome occurred in one of the maltreatment groups (i.e., investigated, or maltreated) more often than the no maltreatment group within each race/ethnicity and maltreatment type. Relative risk ratios are generally referred to in the text,

although both relative risk ratios (RRs) and odds ratios (ORs) are presented. More specific details can be found in the appendices.

RESULTS

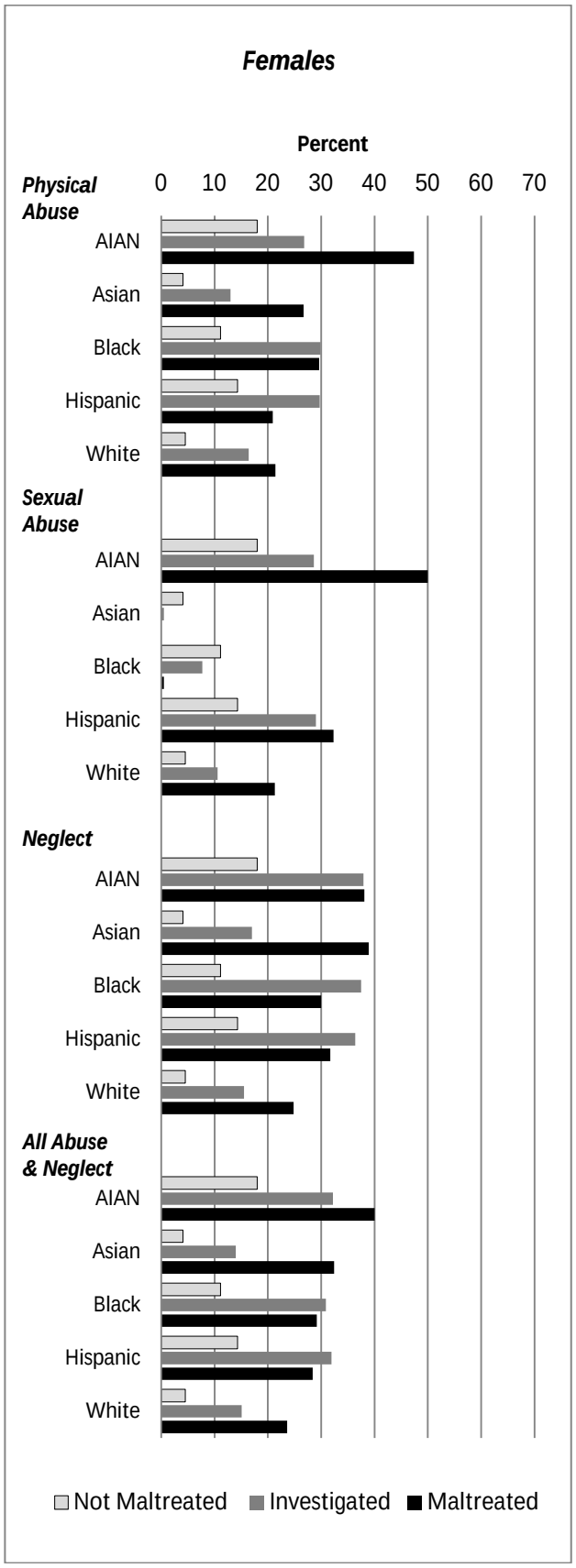
School Engagement

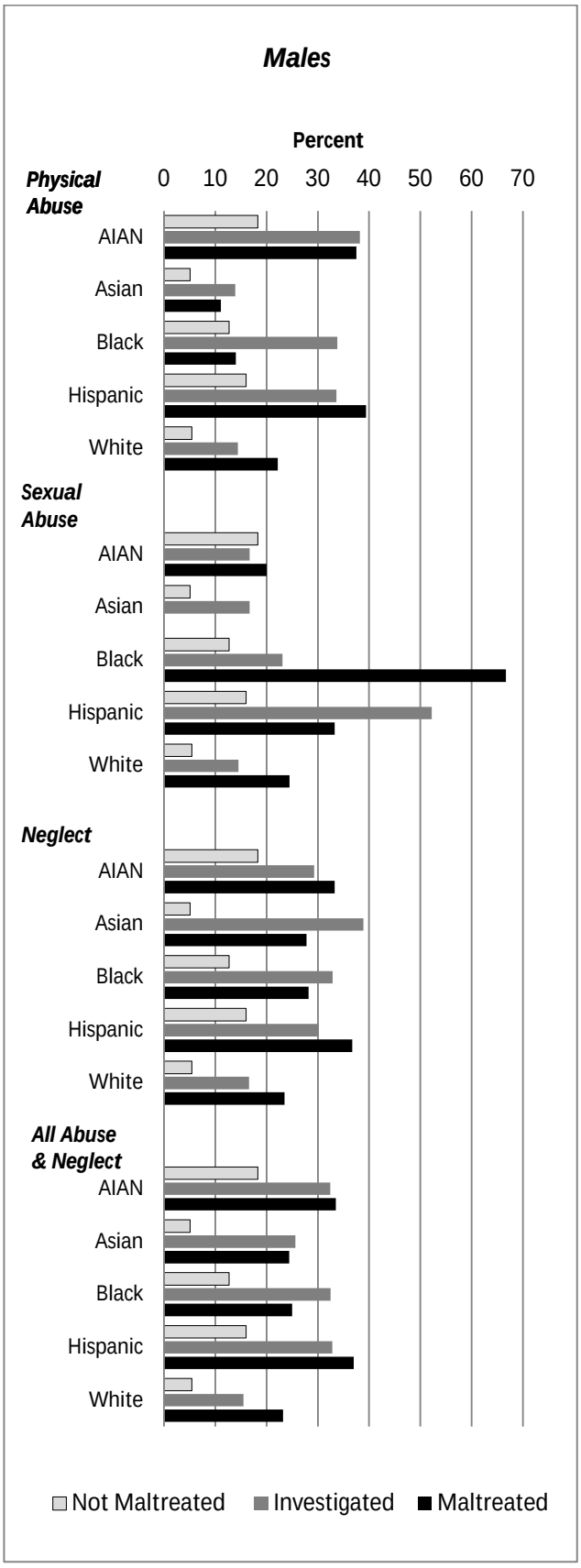
Truancy: Females

The percentages of non-maltreated, investigated, and maltreated females who exhibited substantial educational difficulties during ninth-grade, along with the statistically significant main effects and interactions from the logistic regressions, are presented in Exhibits 1 - 3 and Appendices A – C, respectively. The first educational outcome examined for females and males was in relation to truancy. Students who accumulated ten or more unexcused absences during the school year were considered truant.

Results of the logistic regression indicated that a well-fitting model for females included maltreatment, race/ethnicity, and a maltreatment x race/ethnicity interaction (model chi-square (14) = 3318.30, $p<.001$). Overall, 6.4% of the non-maltreated females exhibited truant behavior. The rate, however, was three times higher for girls whose families had been investigated on suspicion of maltreatment (19.3%, RR = 3.0, OR = 4.22, $p<.001$) and more than four times higher for girls who were removed from their home due to maltreatment (26.8%, RR = 4.2, OR = 6.9, $p<.001$). Among maltreated girls, American Indian/Alaska Native females (hereafter "American Indian" in the text and "AIAN" in the exhibits and appendices) had the highest rate of truancy at 40%, followed by Asian, (32.4%), Black (29.2%), Hispanic (28.4%), and White females (23.6%, see Exhibit 1). Tests of main effects indicated that American Indian, Black, and Hispanic females had significantly higher rates of truancy in comparison to White females when averaged across the three history of maltreatment groups (ORs 2.7 – 4.7, ps< .001, see Appendix A). No statistically significant effects emerged in relation to the type of maltreatment.

Exhibit 1. Percentage of Females and Males Who Were Truant (10 or More Unexcused Absences) During Ninth-Grade.





With respect to the maltreatment x race/ethnicity interaction, results indicated that the odds ratios comparing the rate of truancy among investigated and maltreated females compared to truancy in non-maltreated females was actually lower for American Indian, Black, and Hispanic females in relation to White females. This was due to the fact that White females had a much lower rate of truancy in the non-maltreated group. Therefore, the relative increase in truancy from the non-maltreated to the maltreated group was greater for White females as indicated by the considerably higher relative risk (RR = 5.2 vs. 2.0 – 2.6) even though they had lower rates of truancy in the maltreated groups. The largest relative risk ratio was for Asian females, whose rate of truancy was 7.9 times higher in the maltreatment group compared to the no maltreatment group (see Exhibit 2).

Truancy: Males

With respect to truancy for males, the percentage of boys who met the legal threshold for truancy was 7.4% in the non-maltreated group, 20.1% in the investigated group, and 26.2% in the maltreated group. These rates were very similar to the truancy rates for females (see Exhibit 1). Results of the logistic regression indicated maltreatment, race/ethnicity, and maltreatment x race/ethnicity were all related to truant behavior (model chi-square (22) = 3230.22, $p < .001$, see Appendix B). Averaged across the three maltreatment groups (no maltreatment, investigated, and maltreated), American Indian, Black, and Hispanic males had higher levels of truancy than Asian and White males. However, similar to the results obtained for females, American Indians, Blacks, and Hispanics had lower odds ratios related to the maltreatment x race/ethnicity interaction (ORs = .64, .42, .39, respectively) due to their higher rates of truancy in all three maltreatment groups. Asian males had the most dramatic increases in terms of relative risk in the investigated and maltreated groups compared to their non-maltreated controls, being five times more likely to exhibit truant behavior when maltreatment was investigated or confirmed.

Exhibit 2. Relative Risk of Maltreated versus Non-maltreated Females and Males on Educational Outcomes.

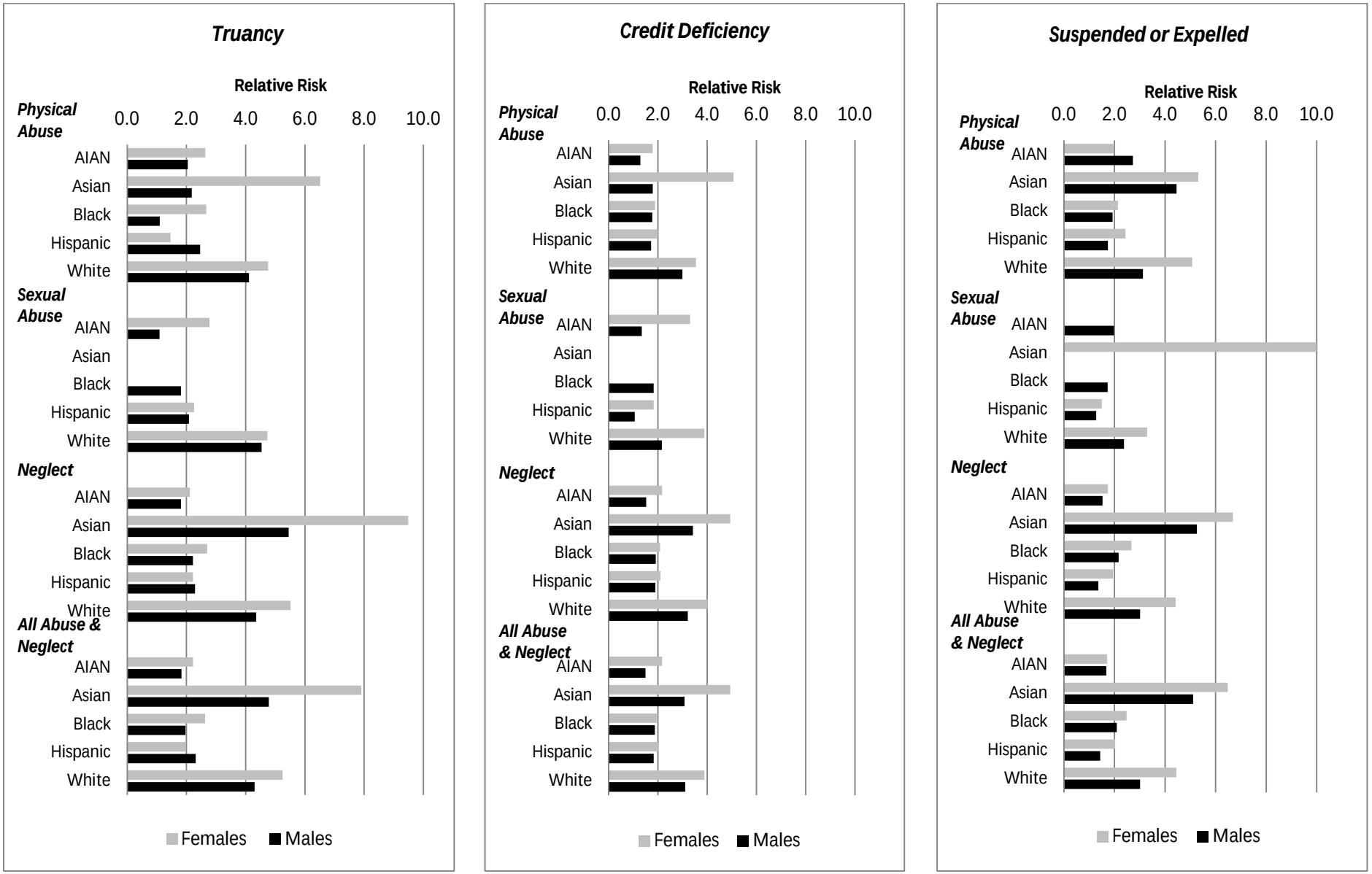


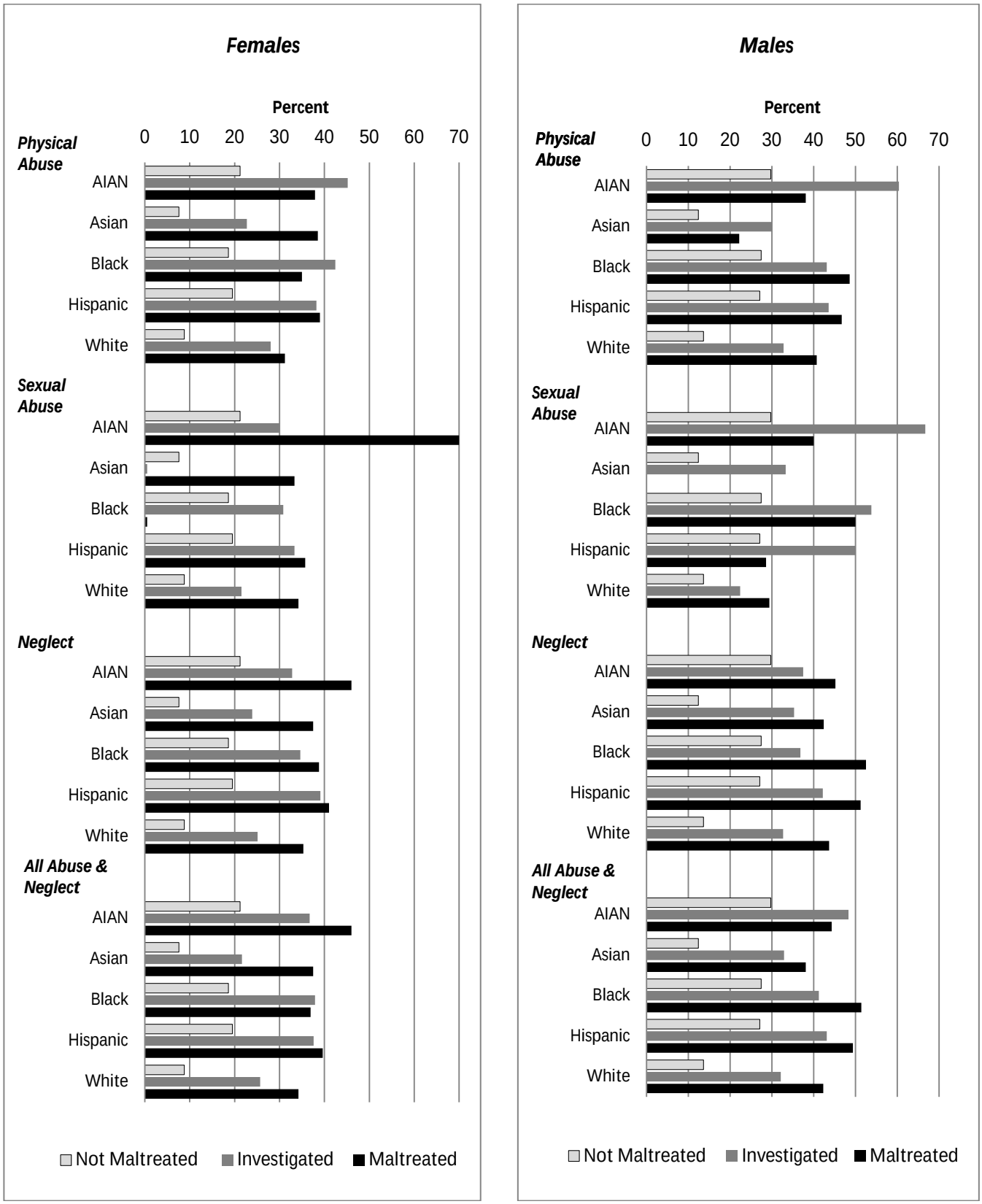
Exhibit 2 displays the relative risk for truancy for maltreated females and males in relation to non-maltreated youths of the same gender. In all racial/ethnic groups except Hispanics, females had a higher relative risk than males, with Asian females exhibiting the largest difference between the percentage of truants in the maltreated group (26.7%) in relation to the non-maltreated group (4.1%).

Academic Credits: Females

Another important measure of school engagement is the number of academic credits a student has earned at the end of ninth-grade. Exhibit 3 and Appendix B display the percentage of students with four or fewer credits earned during the school year -- equivalent to two or more failed courses and substantially behind the average of six per year needed to graduate in four years. Overall, 10.8% of the non-maltreated females and 28.4% (RR = 2.6) of the investigated females had four or fewer credits. For the maltreated girls, more than one-third (36.6%) were already "off-track" to graduate, a rate 3.4 times higher than the non-maltreated girls.

Results from logistic regression indicated statistically significant effects for maltreatment, race/ethnicity, and the maltreatment x race/ethnicity interaction (model chi-square (14) = 2804.41, $p<.001$). Among non-maltreated females, American Indian (21.2%), Black (18.6%), and Hispanic (19.5%) girls were approximately 2-3 times more likely to be behind in credits compared to Asian (7.6%) and White (8.8%) non-maltreated girls. Similar results were obtained for girls whose families had been investigated for maltreatment (American Indian = 36.7%, Black = 37.9%, Hispanic = 37.6%, Asian = 21.6%, White = 25.7%), although the relative increase from the non-maltreated to investigated groups was higher for Asian and White girls. With respect to maltreated females, the five racial/ethnic groups were more similar (range 34.2% - 46.0%), and the relative increase over their investigated peers was much less. However, the relative risk for the maltreated group was still 3.4 times higher than non-maltreated group (OR = 5.4, $p<.001$). Nearly one-half (46.0%) of all maltreated American Indian girls were behind in credits after the ninth-grade.

Exhibit 3. Percentage of Females and Males Who Were Credit Deficient (4 or Fewer Credits) at the End of Ninth-Grade.



Academic Credits: Males

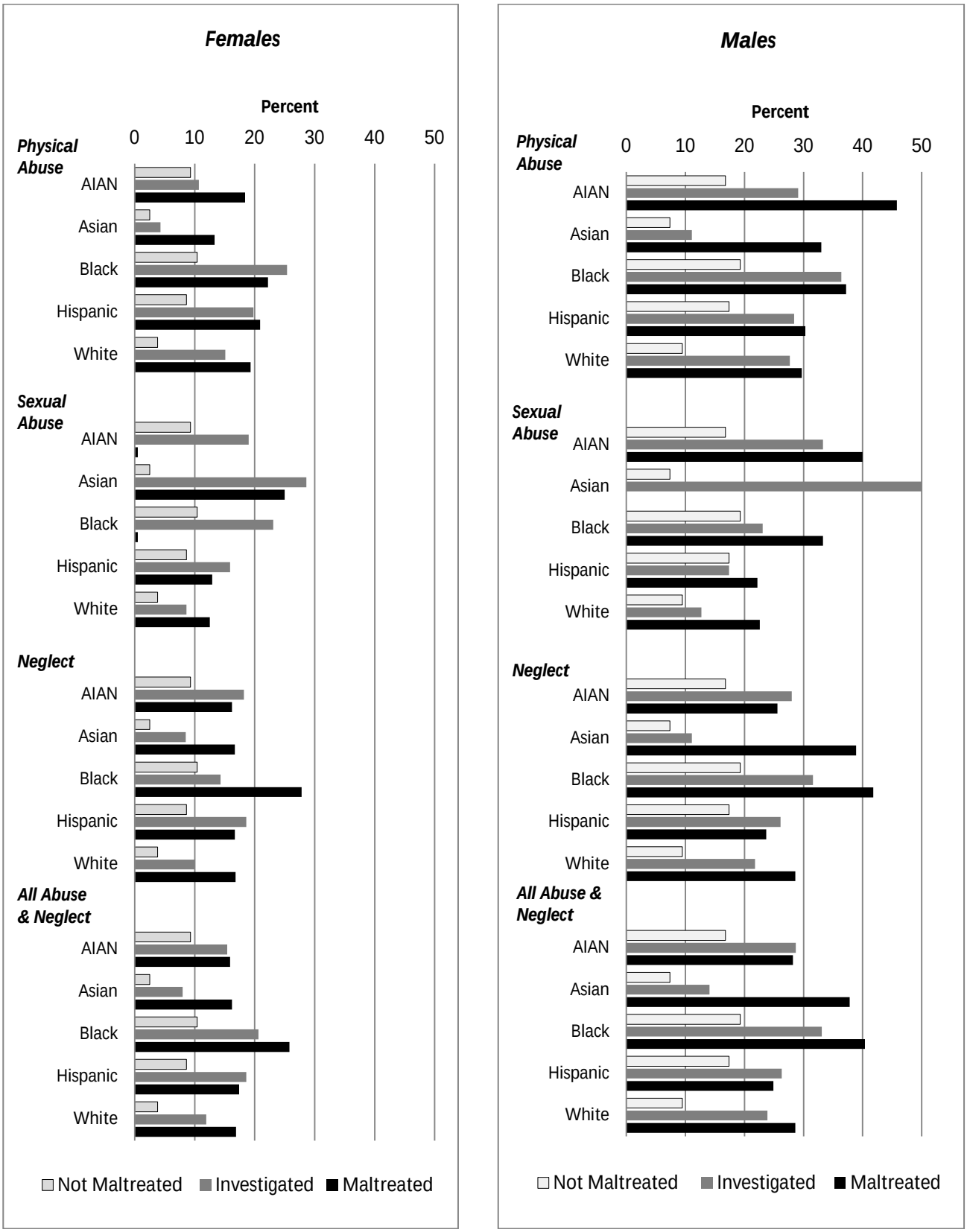
The percentage of males with low academic credits was 16.2% in the non-maltreated sample. The rate was 2.2 times higher among males whose families had been investigated for maltreatment (34.9%, OR = 3.2, p<.001) and 2.7 times higher among maltreated males (44%; OR = 5.3, p<.001). The fact that nearly half of all maltreated males were already significantly behind in their course credits by then end of ninth-grade was especially alarming. Logistic regression analyses indicated maltreatment, race/ethnicity, and the maltreatment x race/ethnicity interaction were all significantly related to course credits (model chi-square (14) = 3098.32, p< .001). American Indian (OR = 4.0), Black (OR = 3.0), and Hispanic males (OR = 3.2) had a significantly higher rate of credit deficiency in all maltreatment categories compared to White males, though their relative increase over their non-maltreated groups was much smaller (ps<.001, see Appendix C). American Indian males had the highest level of credit deficiency in the non-maltreated and investigated groups, but not in the maltreated group (see Exhibit 3).

Similar to truancy, a comparison of the relative risk of credit deficiency in maltreated compared to non-maltreated females and males indicated that although males exhibited more academic problems in general, maltreated females had the highest relative risk over their same-gender non-maltreated peers (see Exhibit 2). The effect was most pronounced among Asian females.

Suspensions/Expulsions: Females

Finally, with respect to school engagement, investigated and maltreated females evidenced substantially higher rates of being suspended or expelled during ninth-grade. Overall, for the non-maltreated girls, only 4.7% had a history of being removed from school due to behavioral issues. The rate, however, was 2.9 times higher among investigated girls (13.4%, OR = 3.0, p<.001) and 3.7 times higher among maltreated girls (17.4%; OR = 5.3, p<.001). Logistic regression indicated that maltreatment, race/ethnicity, maltreatment x race/ethnicity,

Exhibit 4. Percentage of Females and Males Who Had One or More Suspensions or Expulsions During Ninth-Grade.



and maltreatment x type of maltreatment were all related to suspensions/expulsions during ninth-grade (model chi-square (18) = 1539.25, $p<.001$). Girls whose families were *investigated for physical abuse* were more likely to be suspended or expelled than non-maltreated girls (15.8% vs. 4.7%, RR = 3.3) to a greater degree than girls whose families were investigated for neglect in comparison to non-maltreated girls (11.7% vs. 4.7%, RR = 2.5, OR for interaction = 1.4, $p<.01$). For girls who were physically abused and removed from their home, the percentage with at least one suspension/expulsion was only slightly higher than for neglected girls who were removed from their home (19.5% vs. 17.5%), and the difference was not statistically significant. With respect to the maltreatment x race/ethnicity interaction, results were similar to the other educational indicators. American Indian, Black, and Hispanic females had higher rates of suspensions/expulsions than Asian or White females among the non-maltreated and investigated groups, but among all maltreated females regardless of type the rates were much more similar (maltreated: American Indian = 15.9%, Asian = 16.2%, Black = 25.8%, Hispanic = 17.4%, White = 16.9%). The one exception was for Black females who had consistently higher percentages for a suspension or expulsion among the non-maltreated, investigated, and maltreated groups (see Exhibit 4 and Appendix C).

Suspensions/Expulsions: Males

For males, results related to suspensions/expulsions followed the same general pattern as for truancy and credit deficiency. Logistic regression indicated statistically significant maltreatment, race/ethnicity, maltreatment x race/ethnicity, and maltreatment x type of maltreatment effects (model chi-square (18) = 1859.76, $p<.001$). Eleven percent (11.0%) of non-maltreated boys were suspended or expelled during the ninth-grade compared to 24.7% of the investigated boys (OR = 2.7, $p<.001$) and 29.5% of the maltreated boys (OR = 3.7, $p<.001$). Interestingly, the one exception was the same as found with respect to females: the percentage of boys whose families had been *investigated for physical abuse* (27.9%) was significantly higher than for boys whose families had been investigated for neglect (23.1%; physical abuse x

investigated interaction: OR = 1.3, $p<.01$). The finding, however, did not hold for boys who had actually been physically abused and removed from their home (physical abuse = 31.9%, neglect 29.1%). Boys investigated for sexual abuse, and those who were sexually abused and removed, appeared to be less likely to be suspended or expelled than boys who were physically abused or neglected, but the results were not statistically significant. Of note, the small sample sizes and low statistical power among the sexual abuse groups precluded strong tests of statistical significance.

With respect to race/ethnicity, data suggested that while all racial/ethnic groups exhibited similarly increased risk in the investigated group compared to the non-maltreated group (RRs = 1.5 – 2.5), Asian boys who had been maltreated and removed from their home were much more likely to have behavior problems at school, especially in comparison to other non-maltreated boys who were also Asian. Physically abused Asian boys were 4.6 times more likely to be suspended or expelled than their same-race and non-maltreated peers (37.8% vs. 7.4%) , and neglected Asian boys were 5.3 times more likely to be suspended or expelled (see Exhibit 4).

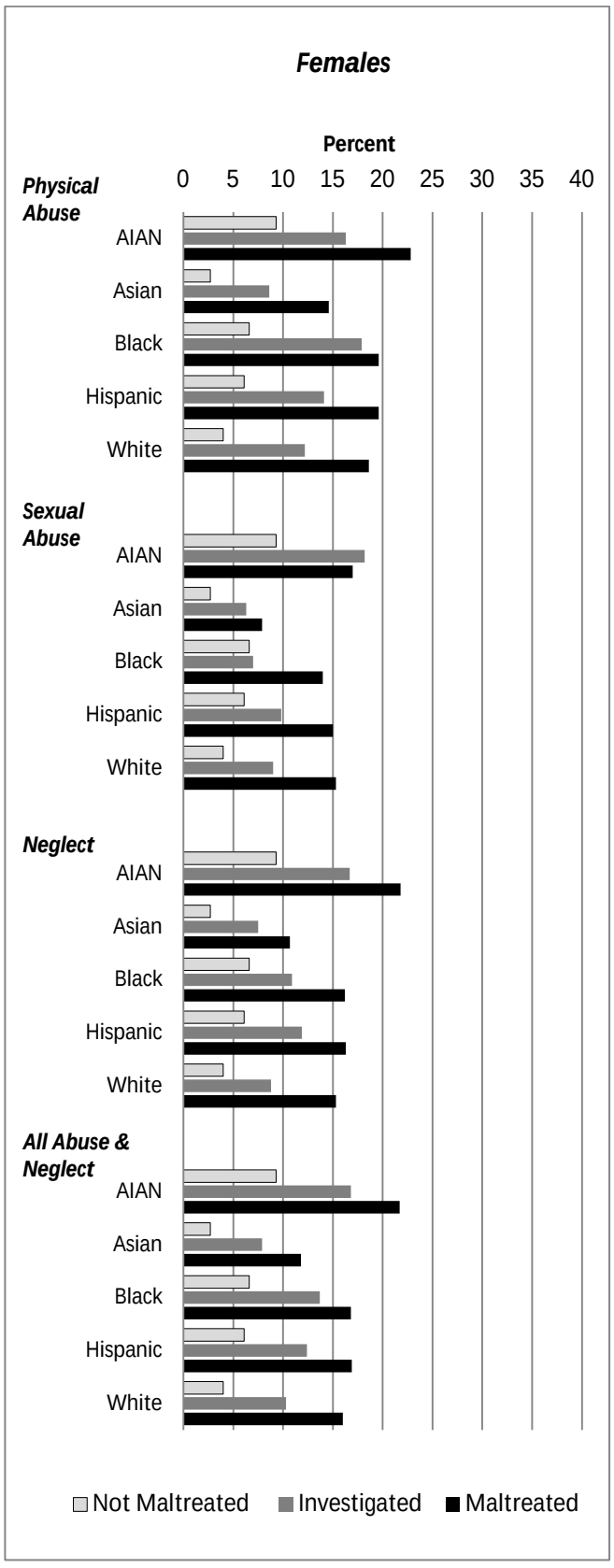
In regards to gender differences, males were more likely to be suspended or expelled than females across all maltreatment groups and types of maltreatment. However, females again evidenced higher relative risk. For example, 29.5% of maltreated boys had a suspension or expulsion compared to 11.0% of non-maltreated boys, resulting in a relative risk of 2.7. Maltreated girls, however, had a significantly lower rate of suspensions/expulsions at 17.4% compared to just 4.7% among non-maltreated girls, but a relative risk of 3.7.

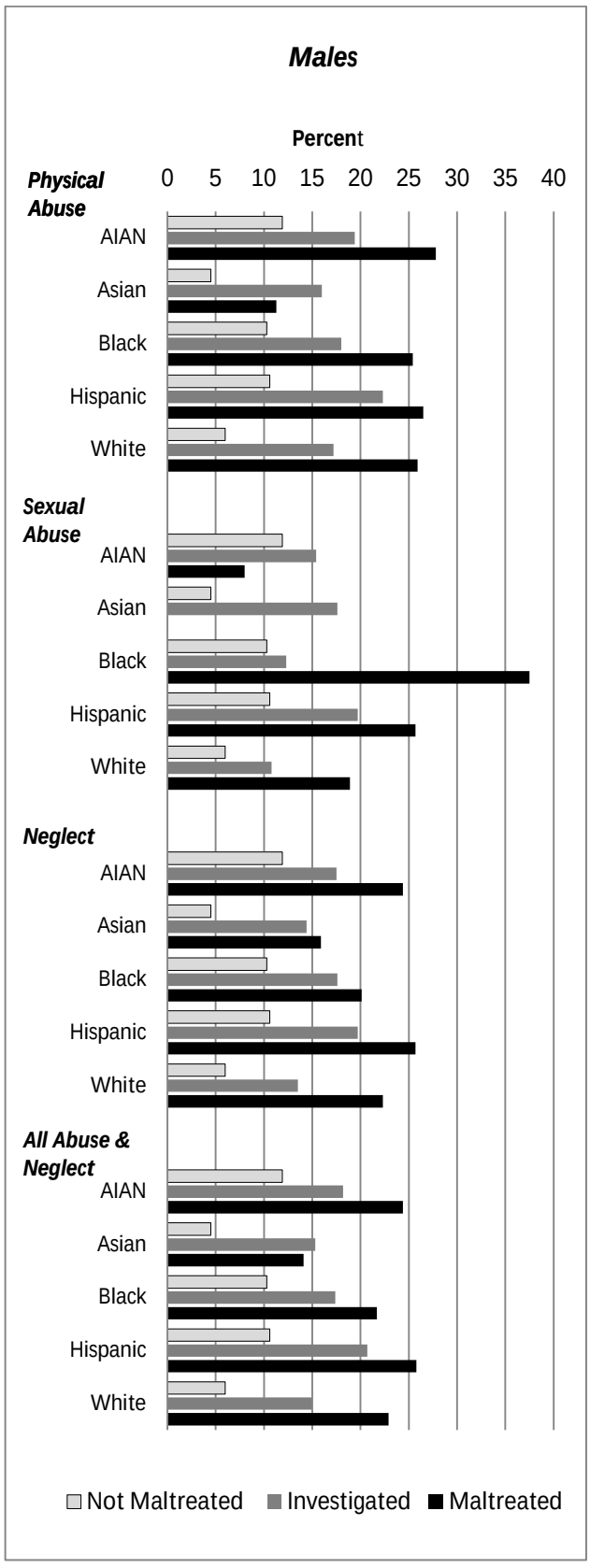
Juvenile Crime

Misdemeanors: Females

Exhibits 5, 7, and 8 present the percentages of youths who committed one or more misdemeanors, felonies, or violent felonies prior to age 16. These percentages along with the statistically significant results from the logistic regression and follow-up chi-square analyses for

Exhibit 5. Percentage of Females and Males Who Had One or More Misdemeanors by Age 16.





the two-group comparisons within each race/ethnicity and type of maltreatment are presented in Appendices D – F.

With respect to the percentage of females with at least one misdemeanor, overall 4.4% of females with no known history of CPS involvement committed a misdemeanor by the age of 16. The percentage was 2.5 times higher (11.1%) for females in the investigated but unsubstantiated group, and 3.8 times higher (16.8%) for females who were removed from their home due to maltreatment. Results from the logistic regression analysis confirmed the significantly higher rate of misdemeanors for both investigated (OR = 2.40, p<.001) and maltreated (OR = 4.41, p<.001) females.

Logistic regression also indicated that maltreatment, race/ethnicity, maltreatment x race/ethnicity, and maltreatment x type of maltreatment, were all related to misdemeanor crimes (model chi-square (18) = 2613.02, p<.001). Physical abuse had the strongest relationship with misdemeanor crime among investigated and maltreated girls with 19.2% of physically abused girls having committed a misdemeanor, followed by 16.5% of neglected girls and 14.9% of sexually abused girls (physical abuse x maltreatment interaction, OR = 1.2, p< .001). In addition, girls whose parents were investigated on suspicion of physical abuse (12.8%) were more likely to commit a misdemeanor than were girls whose parents were suspected of neglect (9.8%, physical abuse x investigated OR = 1.4, p<.001).

Among racial/ethnic groups, American Indian females were most likely to have committed a misdemeanor across all three maltreatment groups (non-maltreated = 9.3%, investigated = 16.8%, maltreated = 21.7%, OR = 2.45, p<.001)). American Indian, Black, and Hispanic females had significantly higher rates in comparison to White females when averaged across the no maltreatment, investigated, and maltreated groups (ORs= 1.55 - 2.45, ps<.001), while Asian females had a lower rate in comparison to White females (OR = .67, p<.001). The maltreatment x race/ethnicity interactions, however, indicated significantly less change among

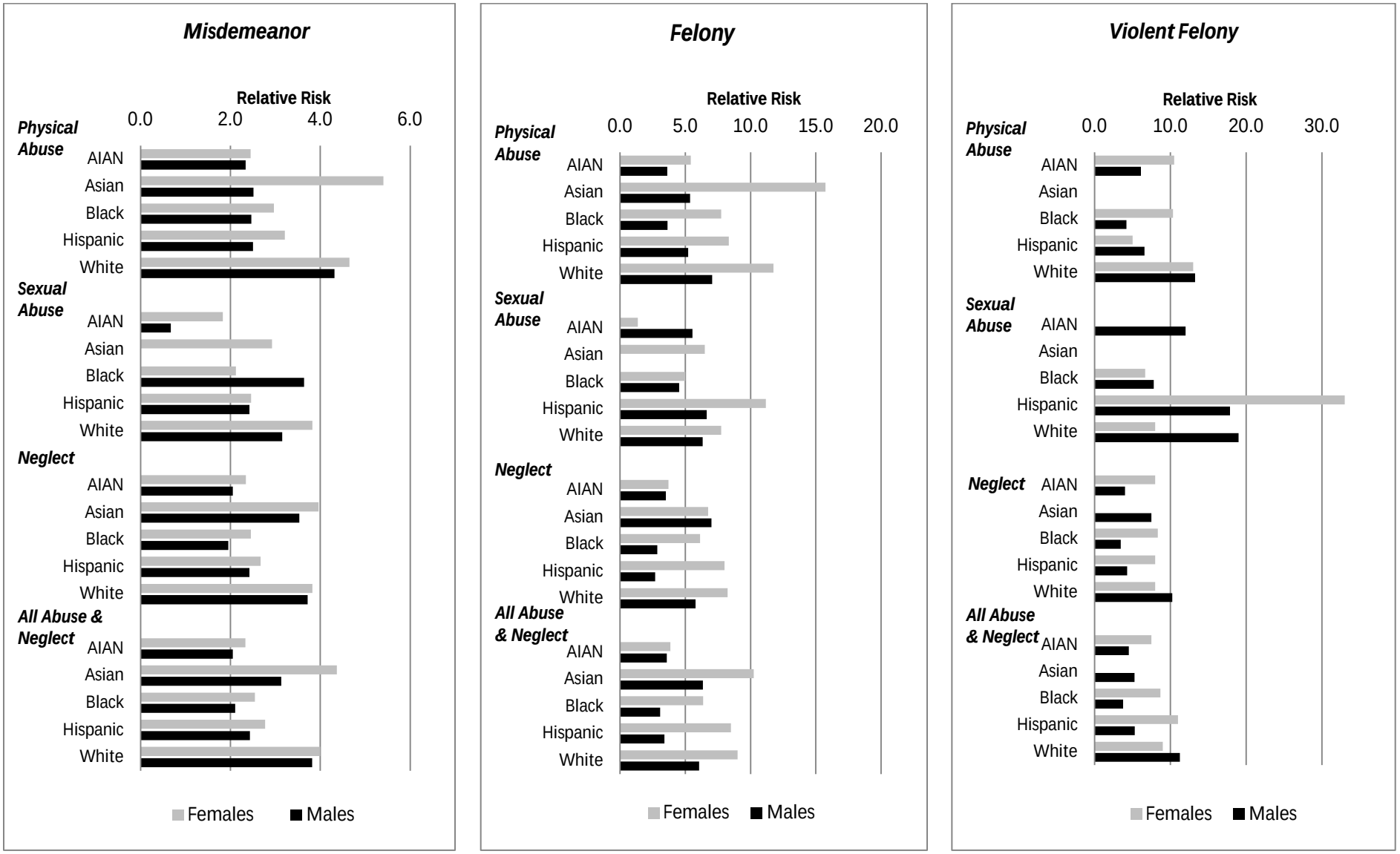
American Indian, Black, and Hispanic females in relation to White females (ORs = .60 -.80, *p*s<.05).

Misdemeanors: Males

The pattern of results in relation to misdemeanor crime for males was very similar to the pattern for females, albeit in a context of higher crime rates across nearly every group in the study. Overall, 6.9% of non-maltreated boys, 16.1% of investigated boys, and 23.0% of maltreated boys were convicted of a misdemeanor by age 16 (investigated OR = 2.5, *p*<.001; maltreated OR = 4.5, *p*<.001).

With respect to type of maltreatment, males were similar to females in that physical abuse had a stronger association with misdemeanor crime than neglect for both the investigated and maltreated groups. Boys whose families had been investigated for physical abuse were 2.6 times more likely to have a misdemeanor (17.6% vs. 6.9%), while boys who had been removed from their home due to physical abuse were 3.7 times more likely (25.3% vs. 6.9%). Comparable risk ratios for the neglect group were 2.2 for investigated (15.0%) and 3.2 for neglected/removed boys (22.4%). For American Indian, Black, Hispanic, and White males, percentages for those who had been physically abused ranged from 25.4% to 27.8%. For abused Asian males, however, the rate was not only the lowest among the racial/ethnic groups (11.3%), but was lower than that of investigated Asian males (16.0%). With respect to relative risk, physical abuse appeared to have the greatest impact on White males (see Exhibit 5). Abused White males had a misdemeanor rate 4.3 times higher than non-abused White males, while the rate was 2.3 to 2.5 times higher for the other racial/ethnic groups. With respect to gender differences, females had slightly higher relative risk ratios than males across all racial/ethnic groups, though inspection of the odds ratios indicated nearly identical patterns (see Exhibit 6).

Exhibit 6. Relative Risk of Maltreated versus Non-maltreated Females and Males for Juvenile Crime.



Felonies: Females

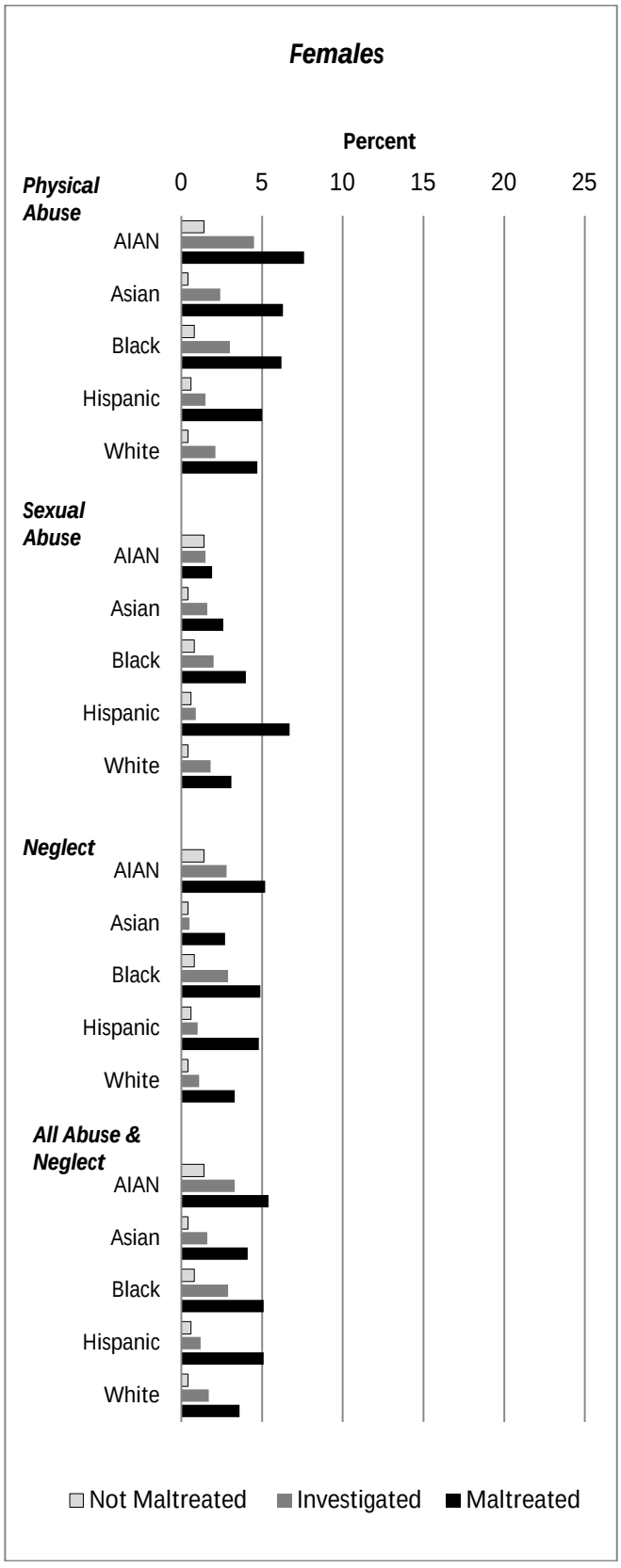
Although the percentage of youths who committed a felony was substantially lower than that of a misdemeanor, results indicated that the relationship of the study variables to felony crime remained quite strong (model chi-square (18) = 998.7, $p<.001$). While only .5% of non-maltreated females committed a felony prior to their sixteenth birthday, the rate was 3.6 times higher among investigated females (1.8%, OR = 3.2, $p<.001$) and 8.4 times higher among maltreated females (4.2%, OR = 8.8, $p<.001$). Similar to misdemeanor crime, physically abused females, as well as those females whose families were investigated for physical abuse, were at greater risk of a subsequent felony offense than neglected females (physical x investigated interaction OR = 1.7, $p<.001$; physical abuse x maltreated OR = 1.4, $p<.05$). Within the physical abuse category, the rate for investigated females was 4.6 times higher than the non-maltreated group (2.3%), and for physically abused and removed females the rate was 10.6 times higher (5.3%). For neglect, the percentage was 1.4% for the investigated group (RR = 2.9), and for the neglected/removed youths it was 3.9% (RR = 7.8). And for sexual abuse, the percentage of investigated girls with a felony offense was 1.6% (RR = 3.2), while for sexually abused/removed girls it was 3.6% (RR = 7.2, see Exhibit 7).

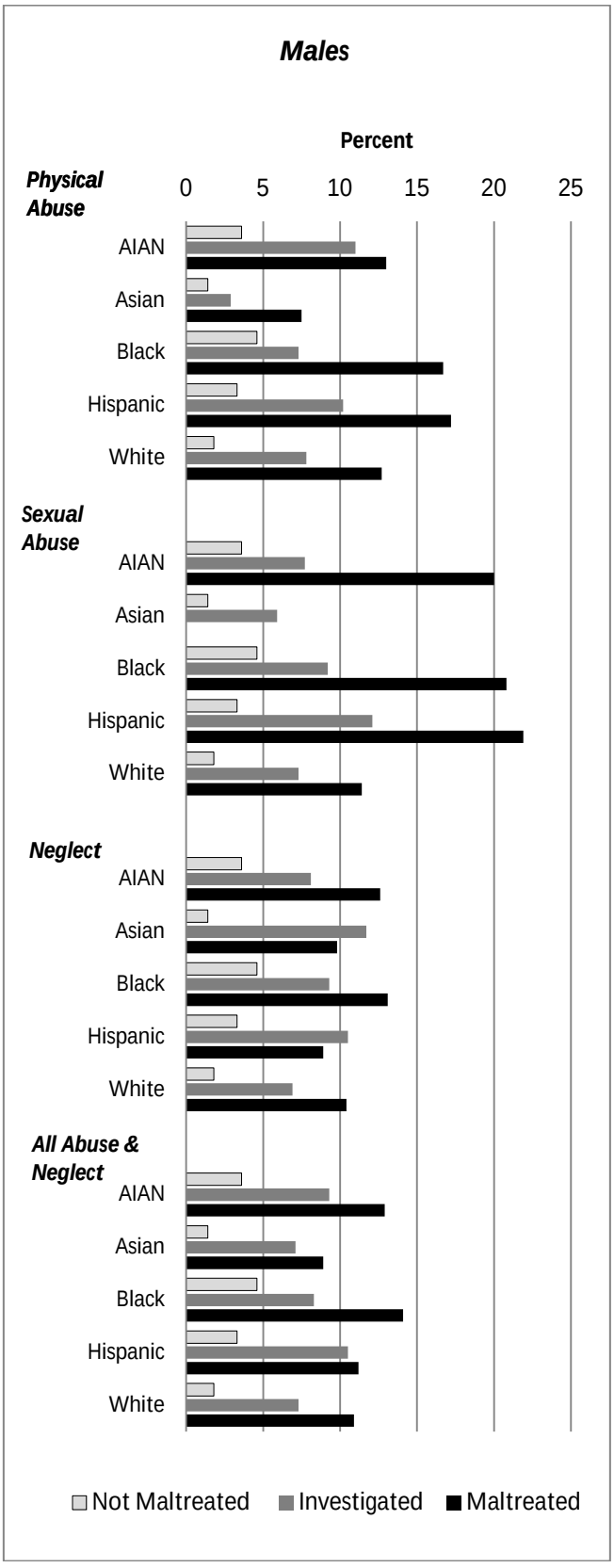
With respect to race/ethnicity, American Indian (OR = 3.5) , Black (OR = 1.9), and Hispanic (OR = 1.5) females in general were more likely to have committed a felony by age 16 than were White females. However, the most dramatic increases in felony offending when comparing the maltreatment group and non-maltreatment group within any particular racial/ethnic group and type of maltreatment were seen for physically abused Asian females (RR = 15.8), physically abused White females (RR = 11.8), and sexually abused Hispanic females (RR = 11.2).

Felonies: Males

Felony crime was also related to the study variables for males. Logistic regression indicated statistically significant effects for maltreatment, race/ethnicity, maltreatment x

Exhibit 7. Percentage of Females and Males Who Had One or More Felonies by Age 16.





race/ethnicity, and maltreatment x race/ethnicity x type of maltreatment (model chi-square (30) = 2435.21, p<.001). While 2.2% of non-maltreated males had a felony prior to age 16, the rate was 3.5 times higher among males whose families were investigated for maltreatment (7.8%, OR = 4.3, p<.001), and 5.3 times higher among maltreated males (11.6%, OR = 6.6, p<.001). The pattern varied, however, across racial/ethnic groups. For American Indian, Black, and White youths, percentages increased consistently from the non-maltreated to the investigated to the maltreated groups. For Asian and Hispanic males, however, while the same pattern held for physical abuse, Asians and Hispanics had a lower rate of felonies in the neglected and removed group compared to their investigated group. In addition, sexual abuse was more strongly related to felony offending than neglect for Hispanic males. While 3.3% of non-maltreated Hispanic males committed a felony, the percentage jumped to 12.1% for Hispanic males whose families were investigated for sexual abuse, and 21.9% for Hispanic males who were sexually abused and removed from their home (maltreatment x Hispanic x sexual abuse interaction OR = 2.9, p<.05). Sexually abused American Indian (20%) and Black males (20.8%) had the second and third highest percentages across all other maltreatment categories, types of maltreatment, and racial/ethnic groups, though the statistical tests did not achieve significance. Inspection of relative risk ratios indicated that maltreatment most often placed females at greater increased risk than males, though again in the context of lower rates of felony offenses in general (see Exhibit 6).

Violent Felonies: Females

The relationship between maltreatment and serious social misconduct was also evident with respect to violent felony offending. Overall, just .1% of females had committed a violent felony by age 16, but the rate was four times higher among investigated females (.4%, OR = 4.4, p<.001) and 12 times higher among maltreated girls (1.2%, OR = 11.7 p<.001). The relative risk of violent felony offending was similar across types of maltreatment, with rates 12-15 times higher among maltreated females (physical RR= 15.0, sexual RR= 12.0, neglect RR = 12.0)

compared to non-maltreated females, and 2 - 4 times higher for maltreated versus investigated females (physical RR = 3.8, sexual RR = 2.0, neglect RR = 3.0).

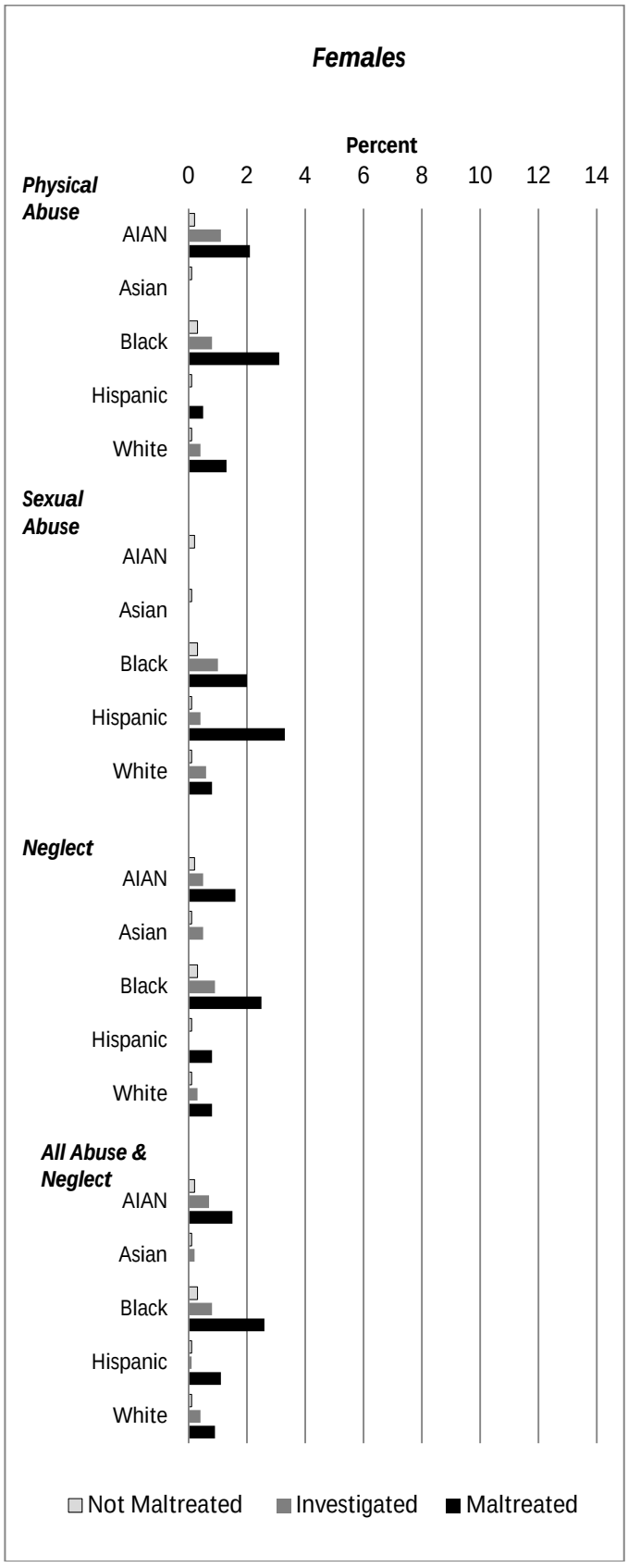
The only other statistically significant effect for females was with respect to race/ethnicity. A greater percentage of maltreated Black (2.6%, OR = 3.41, $p<.001$), American Indian (1.5%, OR = 2.30, $p<.001$), and Hispanic (1.1%, OR = 1.52, $p<.001$) females had committed a violent felony offense by age 16 in comparison to maltreated White females (.9%, see Exhibit 8).

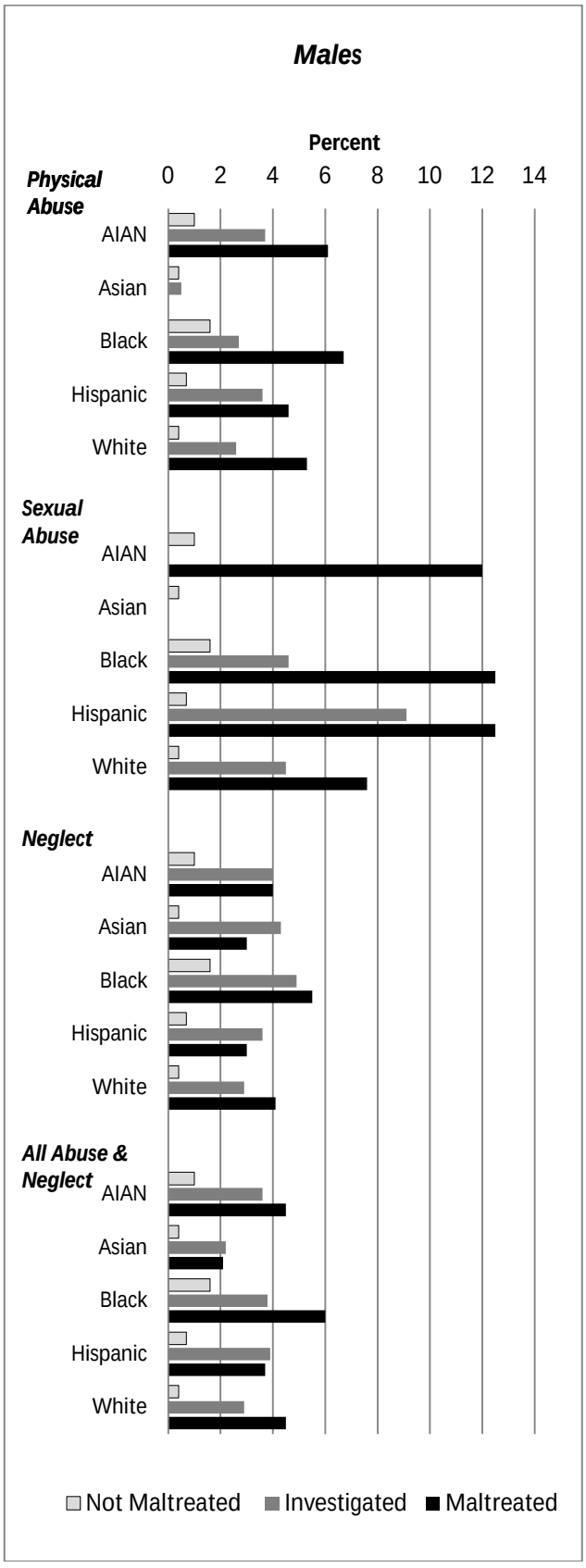
Violent Felonies: Males

A much different pattern emerged in relation to violent felony offending for boys than for girls. Logistic regression indicated statistically significant effects for maltreatment, race/ethnicity, maltreatment x race/ethnicity, and maltreatment x type of maltreatment (model chi-square (18) = 1285.10, $p<.001$). With respect to the type of maltreatment, although the numbers of sexually abused boys in the study were relatively low and results should be interpreted with caution, sexually abused boys (8.8%) were 17.6 times more likely to be referred on a violent felony than non-maltreated boys (.5%), and boys whose families were investigated for sexual abuse were 9.4 times more likely (4.7%). Violent crime was substantially higher among sexually abused boys (8.8%) than physically abused (5.3%) and neglected boys (4.1%, sexual abuse x maltreatment interaction OR = 2.3, $p<.001$).

With respect to race/ethnicity, Black males (6.0%) had the highest percentage of violent felony offenses among maltreated males when combining the three types of maltreatment (other racial/ethnic groups = 2.1% - 4.5%). When considering non-maltreated, investigated, and maltreated youths together, American Indian (OR = 2.4, $p<.001$), Black (OR = 3.8, $p<.001$), and Hispanic males (OR = 1.7, $p<.001$) all had significantly higher rates than White males, while White males evidenced the highest relative risk among the maltreated group compared to the non-maltreated group (4.5% vs. .4%, RR =11.3).

Exhibit 8. Percentage of Females and Males Who Had One or More Violent Felonies by Age 16.





Inspection of the relative risk ratios of females and males suggested that violent felony offending was one area where the relative risk for males were greater than for females for some racial/ethnic groups and for some types of maltreatment when comparing maltreated and non-maltreated youths. However, the pattern was only consistent across maltreatment types for White males and females.

DISCUSSION

Child maltreatment remains a pervasive social problem affecting millions of children and their families every year. While past research has documented the short and long-term deleterious outcomes of abused and neglected children, variation in outcomes based on maltreatment status, type of maltreatment, race/ethnicity, and gender are not well understood. This purpose of this study was to explore the interrelationships of these variables on youths' school engagement and juvenile criminal offending in a large, diverse sample followed prospectively from the time of maltreatment until youths' sixteenth birthday.

Results of this study add to the mounting evidence that child maltreatment is related to serious negative outcomes in youths' lives. Across every outcome variable--including ninth-grade truancy, credit deficiency, suspensions/expulsions, misdemeanor crime, felony crime, and violent felony crime—children who were maltreated by their parents and subsequently removed from their home were at significantly higher risk. Across the educational variables, maltreated boys were 2.7 – 3.5 times more likely than non-maltreated boys to exhibit poor functioning (odds ratios = 3.7 – 5.3), and maltreated girls were 3.4 – 4.2 times more likely (odds ratios = 5.3 – 6.9). The increased risk was even greater in relation to juvenile offending. Maltreated boys were 3.3 – 9.2 times more likely to have committed a misdemeanor, felony, or violent felony by the age of 16 (odds ratios = 4.5 – 9.4), and maltreated girls were 3.8 – 12.0 times more likely than their non-maltreated peers (odds ratios = 4.4 – 11.7).

One interesting aspect of this study was the inclusion of a sample of children whose families had been investigated by Child Protective Services for maltreatment, but in which the investigation determined the physical abuse, sexual abuse, or neglect could not be substantiated. Results of this study highlight the considerable risk for maladaptive outcomes for this sizable group of children as well. Although not at the heightened level of risk as maltreated children, boys in the investigated group were 2.2 – 6.2 times more likely to exhibit poor educational and social functioning in adolescence than non-maltreated boys (odds ratios = 2.5 – 7.0), and girls in the investigated group were 2.5 – 4.0 times more likely than non-maltreated girls (odds ratios = 2.4 – 4.4).

The distinction between investigated and maltreated children in this study raises some important considerations. For one, it is not known whether high-risk, investigated families with unsubstantiated allegations of abuse or neglect have non-maltreated children who exhibited poor outcomes due to other detrimental aspects of the home or personal environment (e.g., parental substance abuse, domestic violence, child behavior problems); whether the children had been exposed to a lesser degree of maltreatment which did not meet legal criteria; or whether the children experienced severe maltreatment that went undetected by investigators. Certainly other possibilities exist as well. This study did not attempt to determine causal explanations for later maladaptive outcomes. However, the findings do clearly point to the critical need for early assessment and intervention among these high-risk families. Information provided to CPS that was concerning enough to prompt investigating was a good indicator of highly distressed families and their children. These families should be offered, and strongly encouraged to accept, assistance and intervention. Simply failing to substantiate child maltreatment certainly does not equate to a lack of needs as approximately 20 – 30% of this group of children displayed significant academic problems by the end of ninth grade, and 10 – 20% had been adjudicated delinquent by age 16.

Similarly, children who experienced poor outcomes in the maltreated group in this study have undoubtedly experienced numerous other factors associated with their maltreatment, not the least of which was being removed from their home and placed in foster care. A substantial body of literature addresses these factors which may have a large negative or positive impact on the child. The finding that in certain circumstances the maltreated and removed children were no more likely to exhibit detrimental behavior than investigated children may indicate the benefits of foster care. However, this was not often the case. And while the outcomes may have been significantly worse had the maltreated children not been placed in the custody of the state, the fact that approximately 40% were still significantly off track for graduation by the end of ninth grade and nearly a quarter had already been involved with the juvenile justice system indicate that substantial improvements remain to be made.

This study also provided strong evidence of the need for increased prevention and intervention efforts for American Indian, Black, and Hispanic youths and their families. Regardless of maltreatment status, or lack thereof, these youths generally had higher rates of school disengagement and juvenile offending than Asian and White youths. Odds ratios for American Indian, Black, and Hispanic youths in comparison to White youths ranged from 1.5 to 4.7 across every outcome measure. Though the main effects were due largely to the differences among the non-maltreated group given the uneven distribution of youths across maltreatment categories, differences persisted on most measures even among maltreated youth. This is not to diminish the needs of Asian and White youths, especially those who have been abused or neglected. In fact, these youths often had the highest relative risk ratios among the racial/ethnic groups. Service providers and policy makers must be sensitive to the severe consequences associated with maltreatment across all racial/ethnic groups and respond in an informed and culturally appropriate manner. In addition, further research on racial/ethnic differences in the experiences of, and responses to, child maltreatment is clearly needed.

Perhaps the most intriguing findings were with respect to the type of maltreatment on different outcomes and its relation to gender. Consistent with theories that family violence is related to social misconduct, physically abused females and/or females whose families had been investigated for physical abuse were more likely than neglected females to have been suspended or expelled from school, and to have committed a misdemeanor or felony. However, physical abuse was not found to be related to violent felony offending, perhaps because violent felony offenses were very rare for females. Additional research on the types of misdemeanors and felony crimes committed by physically abused females is needed to determine if the abusive experience is related to general social misconduct or more aggressive and violent misconduct. Sexual abuse among females did not appear to be related to school engagement or criminal offending over and above other forms of maltreatment, though a unique impact on other critical areas of development may certainly exist.

For males, physical abuse and/or investigation for physical abuse was significantly related to being suspended or expelled from school and having committed a misdemeanor. Post hoc analyses also suggested physical abuse was related to felony offending and violent felony offending more so than neglect. The relationship between males who were sexually abused and violent felony offending, however, was surprising. Sexually abused males were, on average, 17.6 times more likely to commit a violent felony offense by age 16 than non-maltreated males (8.8% vs. .5%). In addition, sexually abused males were more than twice as likely to commit a violent felony offense than neglected males (8.8% vs. 4.1%), and 1.7 times more likely than physically abused males (8.8 vs. 5.3%). The pattern was consistent across every racial/ethnic group with sufficient numbers of sexually abused youths for analysis (i.e., all groups except Asian males).

The consequences of sexual abuse among boys, and more specifically the possible relationship to violent acting-out behavior, is in desperate need of additional attention. Very little research has addressed the issue owing to a number of factors including the secrecy and

underreporting of abuse, the minimization and stigmatization of male victimization, and stereotypes of male sexuality in youth. Prevalence research indicates that although male sexual abuse is less common than female sexual abuse, it is not a rare experience.

Many factors likely affect the impact and outcomes of sexual abuse, one of which is whether the abuse was intra- or extrafamilial. It is important to note that the sexually abused children in this study experienced an especially destructive form of abuse—that of being molested by family members, or molested with the knowledge of family members, and removed from the home. That said, the potentially devastating consequences of sexual abuse against boys, and of maltreatment in general, cannot be dismissed. Researchers, service providers, and policy makers must increase efforts to understand the causes and consequences of different types of child maltreatment for boys and girls across all racial/ethnic groups, and respond in a sensitive and effective manner throughout the youths' adolescence in order to prevent destructive outcomes and promote healthy development.

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Appendix A. Number of Children in Each Study Category and the Mean Age (and Standard Deviation) at Removal for the Maltreated Group.

		Females:			Age at Removal from Home (Maltreated Group Only)	
Physical		**Not Maltreated**	**Investigated**	**Maltreated**	**Mean**	**SD**
	AIAN	1,507	178	145	9.0	4.8
	Asian	3,858	245	96	11.9	
	Black	1,832	396	225	9.9	4.9
	Hispanic	7,468	525	199	11.2	4.7
	White	38,981	2,437	915	11	4.8
Sexual						
	AIAN	1,494	66	53	10.6	4.3
	Asian	3,924	64	38	11.7	4
	Black	1,913	100	50	8.5	5.1
	Hispanic	7,316	224	120	11.2	4.3
	White	39,271	969	489	10.3	4.4
Neglect						
	AIAN	1,494	215	706	7.8	4.6
	Asian	3,813	186	112	8.4	4.6
	Black	1,947	341	759	7.4	4.8
	Hispanic	7,553	480	479	9	4.8
	White	39,238	2,374	3,135	8.5	4.5

		Males:			Age at Removal from Home (Maltreated Group Only)	
Physical		**Not Maltreated**	**Investigated**	**Maltreated**	**Mean**	**SD**
	AIAN	1,494	215	706	7.8	5.1
	Asian	3,813	186	112	8.8	4.4
	Black	1,947	341	759	8.6	4.4
	Hispanic	7,553	480	479	8.8	4
	White	39,238	2,374	3,135	9.4	4.3
Sexual						
	AIAN	1,570	26	25	9.1	4.8
	Asian	4,034	17	6	9.3	4.2
	Black	2,062	65	24	7.9	5
	Hispanic	8,248	66	32	11.4	3.3
	White	42,106	426	185	8.9	4.5
Neglect						
	AIAN	1,590	223	675	7.2	4.6
	Asian	3,926	188	132	8.1	4.2
	Black	2,174	386	758	7.1	4.5
	Hispanic	8,005	579	541	8.2	4.2
	White	41,837	2,836	3,101	8.2	4.3

Appendix B. Percentage of Females and Males Who Were Truant (10 or more Unexcused Absences) during Ninth Grade.

	Females:			Significant X^2 tests
Physical	**Not Maltreated**	**Investigated**	**Maltreated**	(p<.05)
AIAN	18.0	26.8	47.4	NM < I < M
Asian	4.1	13.0	26.7	NM < I , M
Black	11.1	29.9	29.6	NM < I , M
Hispanic	14.3	29.7	20.9	NM < I
White	4.5	16.4	21.4	NM < I , M
	6.4	19.7	24.3	
Sexual				
AIAN	18.0	28.6	50.0	
Asian	4.1	0.0	(25.0)	
Black	11.1	7.7	(0.0)	
Hispanic	14.3	29.0	32.3	NM < I , M
White	4.5	10.6	21.3	NM < I < M
	6.4	14.4	24.5	
Neglect				
AIAN	18.0	37.9	38.1	NM < I , M
Asian	4.1	17.0	38.9	NM < I , M
Black	11.1	37.5	30.0	NM < I , M
Hispanic	14.3	36.4	31.7	NM < I , M
White	4.5	15.5	24.8	NM < I < M
	6.4	20.7	28.1	
All Abuse/Neglect				
AIAN	18.0	32.2	40.0	NM < I < M
Asian	4.1	14.0	32.4	NM < I , M
Black	11.1	30.9	29.2	NM < I , M
Hispanic	14.3	31.9	28.4	NM < I , M
White	4.5	15.1	23.6	NM < I < M
	6.4	19.3	26.8	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.44	0.09	264.43	4.22***
Maltreated	1.93	0.08	610.80	6.90***
Race/ethnicity				
AIAN	1.54	0.05	824.65	4.67***
Black	0.98	0.07	249.20	2.66***
Hispanic	1.27	0.03	1653.95	3.55***
Maltreatment x Race/ethnicity				
AIAN x Investigated	-0.57	0.20	8.12	0.57**
AIAN x Maltreated	-0.79	0.16	25.48	0.45***
Black x Maltreated	-0.70	0.22	10.07	0.50**
Hispanic x Investigated	-0.28	0.13	4.39	0.76*
Hispanic x Maltreated	-1.02	0.17	35.36	0.37***

	Males:			Significant X^2 tests
Physical	**Not Maltreated**	**Investigated**	**Maltreated**	(p<.05)
AIAN	18.3	38.2	37.5	NM < I , M
Asian	5.1	13.9	11.1	NM < I
Black	12.7	33.8	14.0	NM, M < I
Hispanic	16.0	33.6	39.4	NM < I , M
White	5.4	14.4	22.2	NM < I < M
	7.4	19.0	23.6	
Sexual				
AIAN	18.3	16.7	(20.0)	
Asian	5.1	16.7	*	
Black	12.7	23.1	(66.7)	
Hispanic	16.0	52.2	33.3	NM < I
White	5.4	14.5	24.5	NM < I < M
	7.4	20.9	27.1	
Neglect				
AIAN	18.3	29.3	33.3	NM < I , M
Asian	5.1	38.9	27.8	NM < I , M
Black	12.7	32.9	28.2	NM < I , M
Hispanic	16.0	30.2	36.7	NM < I , M
White	5.4	16.6	23.5	NM < I < M
	7.4	21.0	26.8	
All Abuse/Neglect				
AIAN	18.3	32.4	33.5	NM < I , M
Asian	5.1	25.6	24.4	NM < I , M
Black	12.7	32.5	25.0	NM < I , M
Hispanic	16.0	32.8	37.0	NM < I , M
White	5.4	15.5	23.2	NM < I < M
	7.4	20.1	26.2	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.18	0.07	312.79	3.24***
Maltreated	1.68	0.07	525.90	5.34***
Race/ethnicity				
AIAN	1.38	0.08	280.10	3.97***
Black	1.09	0.08	169.29	2.99***
Hispanic	1.16	0.04	732.85	3.20***
Maltreatment x Race/ethnicity				
AIAN x Investigated	-0.45	0.20	4.80	0.64*
AIAN x Maltreated	-0.88	0.18	24.06	0.42***
Asian x Investigated	0.76	0.28	7.55	2.13**
Black x Maltreated	-0.95	0.21	20.33	0.39***
Hispanic x Maltreated	-0.51	0.17	8.74	0.60**

Notes: Percentages in parentheses represent cells with 5 or fewer individuals. Only statistically significant effects from the logistic regression are reported.

Appendix C. Percentage of Females and Males with Credit Deficiency after Ninth Grade.

		Females:			Significant X^2 tests (p<.05)		*Males:*			Significant X^2 tests (p<.05)
Physical		**Not Maltreated**	**Investigated**	**Maltreated**		**Physical**	**Not Maltreated**	**Investigated**	**Maltreated**	
	AIAN	21.2	45.2	37.9	NM < I , M	AIAN	29.7	60.4	38.1	NM < I
	Asian	7.6	22.7	38.5	NM < I , M	Asian	12.4	30.0	22.2	NM < I
	Black	18.6	42.4	35.0	NM < I , M	Black	27.4	43.1	48.6	NM < I , M
	Hispanic	19.5	38.2	39.0	NM < I , M	Hispanic	27.1	43.6	46.7	NM < I , M
	White	8.8	28.0	31.2	NM < I , M	White	13.6	32.8	40.7	NM < I , M
		10.8	30.8	33.3			16.2	35.9	41.5	
Sexual						**Sexual**				
	AIAN	21.2	30.0	70.0	NM < M	AIAN	29.7	(66.7)	40.0	
	Asian	7.6	0.0	(33.3)		Asian	12.4	33.3	*	
	Black	18.6	30.8	(0.0)		Black	27.4	53.8	(50.0)	NM < I
	Hispanic	19.5	33.3	35.7	NM < I , M	Hispanic	27.1	50.0	28.6	NM < I
	White	8.8	21.5	34.2	NM < I	White	13.6	22.4	29.4	NM < I
		10.8	23.9	36.0			16.2	30.2	30.8	
Neglect						**Neglect**				
	AIAN	21.2	32.8	46.0	NM < M	AIAN	29.7	37.5	45.2	NM < M
	Asian	7.6	23.9	37.5	NM < I , M	Asian	12.4	35.3	42.4	NM < I , M
	Black	18.6	34.6	38.8	NM < I , M	Black	27.4	36.8	52.5	NM, I < M
	Hispanic	19.5	39.1	41.0	NM < I , M	Hispanic	27.1	42.2	51.2	NM < I , M
	White	8.8	25.1	35.3	NM < I , M	White	13.6	32.7	43.7	NM < I < M
		10.8	27.6	37.8			16.2	34.7	45.5	
All Abuse/Neglect						**All Abuse/Neglect**				
	AIAN	21.2	36.7	46.0	NM < I , M	AIAN	29.7	48.3	44.3	NM < I , M
	Asian	7.6	21.6	37.5	NM < I , M	Asian	12.4	32.9	38.1	NM < I , M
	Black	18.6	37.9	36.9	NM < I , M	Black	27.4	41.2	51.4	NM < I , M
	Hispanic	19.5	37.6	39.6	NM < I , M	Hispanic	27.1	43.1	49.4	NM < I , M
	White	8.8	25.7	34.2	NM < I < M	White	13.6	32.1	42.3	NM < I < M
		10.8	28.4	36.6			16.2	34.9	44.0	
		b	SE	Wald	Exp(B)		b	SE	Wald	Exp(B)
Maltreatment						**Maltreatment**				
	Investigated	1.28	0.06	503.85	3.58***	Investigated	1.18	0.07	312.79	3.24***
	Maltreated	1.68	0.06	685.55	5.37***	Maltreated	1.68	0.07	525.90	5.34***
Race/ethnicity						**Race/ethnicity**				
	AIAN	1.02	0.05	396.51	2.77***	AIAN	1.38	0.08	280.10	3.97***
	Asian	-0.16	0.05	10.33	0.85**	Black	1.09	0.08	169.29	2.99***
	Black	0.86	0.05	279.80	2.37***	Hispanic	1.16	0.04	732.85	3.20***
	Hispanic	0.92	0.03	1183.06	2.51***					
Maltreatment x Race/ethnicity						**Maltreatment x Race/ethnicity**				
	AIAN x Investigated	-0.51	0.20	6.46	0.60*	AIAN x Investigated	-0.45	0.20	4.80	0.64*
	AIAN x Maltreated	-0.53	0.16	10.86	0.59**	AIAN x Maltreated	-0.88	0.18	24.06	0.42***
	Black x Maltreated	-0.75	0.22	11.50	0.48**	Asian x Investigated	0.76	0.28	7.55	2.13**
	Hispanic x Investigated	-0.37	0.13	8.24	0.69**	Black x Maltreated	-0.95	0.21	20.33	0.39***
	Hispanic x Maltreated	-0.69	0.16	17.97	0.50***	Hispanic x Maltreated	-0.51	0.17	8.74	0.60**

Notes: Percentages in parentheses represent cells with 5 or fewer individuals. Only statistically significant effects from the logistic regression are reported.

Appendix D. Percentage of Females and Males Who Were Suspended or Expelled during Ninth Grade.

	Females: Not Maltreated	Investigated	Maltreated	Significant X^2 tests (p<.05)
Physical				
AIAN	9.3	10.7	18.4	
Asian	2.5	4.3	13.3	
Black	10.4	25.4	22.2	NM < I
Hispanic	8.6	19.8	20.9	NM < I , M
White	3.8	15.1	19.3	NM < I , M
	4.7	15.8	19.5	
Sexual				
AIAN	9.3	19.0	0.0	
Asian	2.5	28.6	(25.0)	
Black	10.4	23.1	(0.0)	
Hispanic	8.6	15.9	12.9	NM < I
White	3.8	8.6	12.5	NM < I , M
	4.7	11.2	12.0	
Neglect				
AIAN	9.3	18.2	16.2	NM < I , M
Asian	2.5	8.5	16.7	NM < I , M
Black	10.4	14.3	27.8	NM < M
Hispanic	8.6	18.6	16.7	NM < I , M
White	3.8	10.0	16.8	NM < I , M
	4.7	11.7	17.5	
All Abuse/Neglect				
AIAN	9.3	15.4	15.9	NM < I
Asian	2.5	8.0	16.2	NM < I
Black	10.4	20.6	25.8	NM < I
Hispanic	8.6	18.6	17.4	NM < I
White	3.8	11.9	16.9	NM < I < M
	4.7	13.4	17.4	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.10	0.11	107.33	3.01***
Maltreated	1.66	0.09	344.88	5.26***
Race/ethnicity				
AIAN	0.97	0.07	194.24	2.63***
Asian	-0.41	0.08	24.37	0.67***
Black	1.09	0.06	286.96	2.97***
Hispanic	0.88	0.04	563.14	2.42***
Maltreatment x Race/ethnicity				
AIAN x Investigated	-0.66	0.25	6.86	0.52**
AIAN x Maltreated	-1.06	0.20	27.02	0.35***
Black x Investigated	-0.46	0.23	3.91	0.63*
Black x Maltreated	-0.58	0.23	6.29	0.56*
Hispanic x Investigated	-0.37	0.16	5.47	0.69*
Hispanic x Maltreated	-0.85	0.20	18.23	0.43***
Maltreatment Type x Maltreatment				
Physical x Investigated	0.33	0.13	6.69	1.39*

	Males: Not Maltreated	Investigated	Maltreated	Significant X^2 tests (p<.05)
Physical				
AIAN	16.8	29.1	45.8	NM < M
Asian	7.4	11.1	33.0	NM < M
Black	19.3	36.4	37.2	NM < I , M
Hispanic	17.4	28.4	30.3	NM < I
White	9.5	27.7	29.7	NM < I , M
	11.0	27.9	31.9	
Sexual				
AIAN	16.8	33.3	40.0	
Asian	7.4	50.0	*	
Black	19.3	23.1	(33.3)	
Hispanic	17.4	17.4	22.2	
White	9.5	12.7	22.6	NM < M
	11.0	16.5	24.3	
Neglect				
AIAN	16.8	28.0	25.6	NM < I , M
Asian	7.4	11.1	38.9	NM , I < M
Black	19.3	31.6	41.8	NM < I , M
Hispanic	17.4	26.1	23.7	NM < I , M
White	9.5	21.8	28.6	NM < I < M
	11.0	23.1	29.1	
All Abuse/Neglect				
AIAN	16.8	28.7	28.2	NM < I
Asian	7.4	14.1	37.8	NM < I < M
Black	19.3	33.1	40.4	NM < I
Hispanic	17.4	26.3	24.9	NM < I
White	9.5	23.9	28.6	NM < I < M
	11.0	24.7	29.5	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	0.99	0.07	177.25	2.69***
Maltreated	1.32	0.08	305.79	3.74***
Race/ethnicity				
AIAN	0.65	0.05	158.25	1.92***
Asian	-0.28	0.05	32.39	0.76***
Black	0.82	0.05	307.15	2.27***
Hispanic	0.69	0.03	736.21	1.99***
Maltreatment x Race/ethnicity				
AIAN x Investigated	-0.40	0.20	3.87	0.67*
AIAN x Maltreated	-0.66	0.18	14.17	0.52***
Asian x Maltreated	0.69	0.32	4.66	1.99*
Black x Investigated	-0.36	0.18	4.04	0.70*
Hispanic x Investigated	-0.55	0.14	16.19	0.58***
Hispanic x Maltreated	-0.88	0.19	22.25	0.42***
Maltreatment Type x Maltreatment				
Physical x Investigated	0.26	0.10	7.74	1.30**

Notes: Percentages in parentheses represent cells with 5 or fewer individuals. Only statistically significant effects from the logistic regression are reported.

Appendix E. Percentage of Females and Males Who Committed a Misdemeanor by Age 16.

		Females:			*Males:*		
		Not Maltreated	Investigated	Maltreated	Not Maltreated	Investigated	Maltreated
Physical							
	American Indian	9.3	16.3	22.8	11.9	19.4	27.8
	Asian	2.7	8.6	14.6	4.5	16.0	11.3
	Black	6.6	17.9	19.6	10.3	18.0	25.4
	Hispanic	6.1	14.1	19.6	10.6	22.3	26.5
	White	4.0	12.2	18.6	6.0	17.2	25.9
		4.4	12.8	19.2	6.9	17.6	25.3
Sexual							
	American Indian	9.3	18.2	17.0	11.9	15.4	8.0
	Asian	2.7	6.3	7.9	4.5	17.6	--
	Black	6.6	7.0	14.0	10.3	12.3	37.5
	Hispanic	6.1	9.8	15.0	10.6	19.7	25.7
	White	4.0	9.0	15.3	6.0	10.8	18.9
		4.4	9.2	14.9	6.9	12.3	19.6
Neglect							
	American Indian	9.3	16.7	21.8	11.9	17.5	24.4
	Asian	2.7	7.5	10.7	4.5	14.4	15.9
	Black	6.6	10.9	16.2	10.3	17.6	20.1
	Hispanic	6.1	11.9	16.3	10.6	19.7	25.7
	White	4.0	8.8	15.3	6.0	13.5	22.3
		4.4	9.8	16.5	6.9	15.0	22.4
All Abuse/Neglect							
	AIAN	9.3	16.8	21.7	11.9	18.2	24.4
	Asian	2.7	7.9	11.8	4.5	15.3	14.1
	Black	6.6	13.7	16.8	10.3	17.4	21.7
	Hispanic	6.1	12.4	16.9	10.6	20.7	25.8
	White	4.0	10.3	16.0	6.0	14.9	22.9
		4.4	11.1	16.8	6.9	16.1	23.0

	Females:				*Males:*			
	b	SE	Wald	Exp(B)	b	SE	Wald	Exp(B)
Maltreatment								
Investigated	0.88	0.06	187.06	2.40***	0.92	0.05	333.43	2.50***
Maltreated	1.48	0.05	940.47	4.41***	1.50	0.04	1239.20	4.47***
Race/ethnicity								
AIAN	0.90	0.05	280.54	2.45***	0.75	0.05	259.30	2.11***
Asian	-0.40	0.06	46.02	0.67***	-0.30	0.05	44.46	0.74***
Black	0.53	0.06	93.23	1.71***	0.58	0.04	184.52	1.79***
Hispanic	0.44	0.03	192.58	1.55***	0.62	0.02	669.43	1.85***
Maltreatment x Type								
Physical x Investigated	0.32	0.07	19.03	1.38***	0.22	0.06	13.34	1.25***
Physical x Maltreated	0.21	0.08	8.09	1.24***	0.18	0.07	6.91	1.20**
Maltreatment x Race								
AIAN x Investigated	-0.32	0.14	5.02	0.73*	-0.51	0.14	13.87	0.60***
AIAN x Maltreated	-0.52	0.11	24.11	0.60***	-0.65	0.10	41.64	0.52***
Black x Maltreated	-0.48	0.11	19.85	0.62***	0.32	0.15	4.50	1.37*
Hispanic x Investigated	-0.23	0.10	4.87	0.80*	-0.41	0.11	15.16	0.67***
Hispanic x Maltreated	-0.38	0.11	12.51	0.68***	-0.66	0.10	48.00	0.52***
					-0.21	0.09	5.69	0.81*
					-0.46	0.10	22.90	0.63***

Note: Only statistically significant effects from the logistic regression are reported.

Appendix F. Percentage of Females and Males Who Committed a Felony by Age 16.

Females:

	Not Maltreated	Investigated	Maltreated	Significant X^2 tests (p<.05)
Physical				
AIAN	1.4	4.5	7.6	NM < I , M
Asian	0.4	2.4	6.3	NM < I , M
Black	0.8	3.0	6.2	NM < I , M
Hispanic	0.6	1.5	5.0	NM < I , M
White	0.4	2.1	4.7	NM < I < M
	0.5	2.3	5.3	
Sexual				
AIAN	1.4	1.5	1.9	
Asian	0.4	1.6	2.6	
Black	0.8	2.0	4.0	
Hispanic	0.6	0.9	6.7	NM , I < M
White	0.4	1.8	3.1	NM < I , M
	0.5	1.6	3.6	
Neglect				
AIAN	1.4	2.8	5.2	NM < M
Asian	0.4	0.5	2.7	NM < M
Black	0.8	2.9	4.9	NM < I , M
Hispanic	0.6	1.0	4.8	NM , I < M
White	0.4	1.1	3.3	NM < I < M
	0.5	1.4	3.9	
All Abuse/Neglect				
AIAN	1.4	3.3	5.4	NM < I , M
Asian	0.4	1.6	4.1	NM < I , M
Black	0.8	2.9	5.1	NM < I , M
Hispanic	0.6	1.2	5.1	NM, I < M
White	0.4	1.7	3.6	NM < I , M
	0.5	1.8	4.2	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.17	0.17	50.59	3.23***
Maltreated	2.17	0.10	453.11	8.80***
Race/ethnicity				
AIAN	1.25	0.14	83.48	3.50***
Black	0.66	0.16	17.05	1.94***
Hispanic	0.39	0.10	15.29	1.48***
Maltreatment x Type				
Physical x Investigated	0.53	0.18	8.59	1.70***
Physical x Maltreated	0.33	0.12	5.87	1.38*
Maltreatment x Race/ethnicity				
AIAN x Maltreated	-0.80	0.22	13.73	0.45***
Hispanic x Investigated	-0.71	0.30	5.70	0.49*

Note: Only statistically significant effects from the logistic regression are reported.

Males:

	Not Maltreated	Investigated	Maltreated	Significant X^2 tests (p<.05)
Physical				
AIAN	3.6	11.0	13.0	NM < I , M
Asian	1.4	2.9	7.5	
Black	4.6	7.3	16.7	NM , I < M
Hispanic	3.3	10.2	17.2	NM < I , M
White	1.8	7.8	12.7	NM < I < M
	2.2	7.9	12.7	
Sexual				
AIAN	3.6	7.7	20.0	
Asian	1.4	5.9	--	
Black	4.6	9.2	20.8	
Hispanic	3.3	12.1	21.9	NM < I , M
White	1.8	7.3	11.4	NM < I , M
	2.2	7.3	14.0	
Neglect				
AIAN	3.6	8.1	12.6	NM < I , M
Asian	1.4	11.7	9.8	NM < I , M
Black	4.6	9.3	13.1	NM < I , M
Hispanic	3.3	10.5	8.9	NM < I , M
White	1.8	6.9	10.4	NM < I < M
	2.2	7.9	10.4	
All Abuse/Neglect				
AIAN	3.6	9.3	12.9	NM < I , M
Asian	1.4	7.1	8.9	NM < I , M
Black	4.6	8.3	14.1	NM < I < M
Hispanic	3.3	10.5	11.2	NM < I , M
White	1.8	7.3	10.9	NM < I < M
	2.2	7.8	11.6	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.45	0.05	709.32	4.26***
Maltreated	1.89	0.05	1221.90	6.61***
Race/ethnicity				
AIAN	0.71	0.08	77.62	2.03***
Asian	-0.26	0.08	10.76	0.77**
Black	0.95	0.06	228.19	2.60***
Hispanic	0.60	0.04	209.98	1.83***
Maltreatment x Race/ethnicity				
AIAN x Investigated	-0.61	0.26	5.28	0.55*
AIAN x Maltreated	-0.55	0.15	13.39	0.58***
Asian x Investigated	0.78	0.25	10.03	2.18**
Black x Investigated	-0.69	0.19	12.88	0.50***
Black x Maltreated	-0.75	0.13	31.15	0.47***
Hispanic x Maltreated	-0.83	0.17	25.65	0.44***
Maltreatment x Type x Race/ethnicity				
Invest x Phys x Asian	-0.15	0.47	9.89	0.23**
Mal x Phys x Hispanic	0.76	0.26	8.31	2.14**
Mal x Sex x Hispanic	1.06	0.45	5.42	2.88*

Appendix G. Percentage of Females and Males Who Committed a Violent Felony by Age 16.

Females:

	Not Maltreated	Investigated	Maltreated	Significant X^2 tests (p<.05)
Physical				
AIAN	0.2	1.1	2.1	NM < M
Asian	0.1	0.0	0.0	
Black	0.3	0.8	3.1	NM , I < M
Hispanic	0.1	0.0	0.5	
White	0.1	0.4	1.3	NM < I < M
	0.1	0.4	1.5	
Sexual				
AIAN	0.2	0.0	0.0	
Asian	0.1	0.0	0.0	
Black	0.3	1.0	2.0	
Hispanic	0.1	0.4	3.3	NM , I < M
White	0.1	0.6	0.8	NM < I , M
	0.1	0.6	1.2	
Neglect				
AIAN	0.2	0.5	1.6	NM < M
Asian	0.1	0.5	0.0	
Black	0.3	0.9	2.5	NM < M
Hispanic	0.1	0.0	0.8	NM < M
White	0.1	0.3	0.8	NM < I < M
	0.1	0.4	1.2	
All Abuse/Neglect				
AIAN	0.2	0.7	1.5	
Asian	0.1	0.2	0.0	
Black	0.3	0.8	2.6	NM < I < M
Hispanic	0.1	0.1	1.1	NM , I < M
White	0.1	0.4	0.9	NM < I < M
	0.1	0.4	1.2	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.48	0.19	60.26	4.38***
Maltreated	2.46	0.15	288.82	11.66***
Race/ethnicity				
AIAN	0.83	0.22	14.70	2.30***
Black	1.28	0.17	50.64	3.41***
Hispanic	0.42	0.18	5.26	1.52***

Males:

	Not Maltreated	Investigated	Maltreated	Significant X^2 tests (p<.05)
Physical				
AIAN	1.0	3.7	6.1	NM < I , M
Asian	0.4	0.5	0.0	
Black	1.6	2.7	6.7	NM , I < M
Hispanic	0.7	3.6	4.6	NM < I , M
White	0.4	2.6	5.3	NM < I , M
	0.5	2.7	5.3	
Sexual				
AIAN	1.0	0.0	12.0	NM , I < M
Asian	0.4	--	--	
Black	1.6	4.6	12.5	NM < M
Hispanic	0.7	9.1	12.5	NM < I , M
White	0.4	4.5	7.6	NM < I , M
	0.5	4.7	8.8	
Neglect				
AIAN	1.0	4.0	4.0	NM < I , M
Asian	0.4	4.3	3.0	NM < I , M
Black	1.6	4.9	5.5	NM < I , M
Hispanic	0.7	3.6	3.0	NM < I , M
White	0.4	2.9	4.1	NM < I < M
	0.5	3.3	4.1	
All Abuse/Neglect				
AIAN	1.0	3.6	4.5	NM < I , M
Asian	0.4	2.2	2.1	NM < I , M
Black	1.6	3.8	6.0	NM < I < M
Hispanic	0.7	3.9	3.7	NM < I , M
White	0.4	2.9	4.5	NM < I < M
	0.5	3.1	4.6	

	b	SE	Wald	Exp(B)
Maltreatment				
Investigated	1.95	0.11	324.64	7.01***
Maltreated	2.25	0.10	554.16	9.45***
Race/ethnicity				
AIAN	0.86	0.15	32.96	2.36***
Black	1.33	0.11	154.98	3.78***
Hispanic	0.51	0.09	35.56	1.67***
Maltreatment x Race/ethnicity				
AIAN x Investigated	-0.61	0.31	3.94	0.55*
AIAN x Maltreated	-0.81	0.24	11.59	0.45**
Black x Investigated	-1.02	0.22	21.61	0.36***
Black x Maltreated	-1.01	0.19	29.36	0.37***
Hispanic x Maltreated	-0.70	0.23	9.58	0.50**
Type of Maltreatment x Maltreatment				
Sexual x Maltreated	0.83	0.23	13.69	2.30***

Note: Only statistically significant effects from the logistic regression are reported.