

Gender, Suggestibility, and Self-Reported Likelihood of False Confessions

A Thesis

Submitted to the Faculty

of

Drexel University

by

Constance M. Mesiarik, J.D., M.A.

in partial fulfillment of the

requirements for the degree

of

Doctor of Philosophy

July 2008

© Copyright 2008
Constance M. Mesiarik. All Rights Reserved.

Dedications

To my husband, Jason, whose commitment has given me strength to succeed, and to my mom, Veronique, whose support has given me courage to follow my dreams.

Acknowledgments

I would like to thank Dr. Naomi Goldstein, my dissertation chair, advisor, and mentor. Your understanding, guidance, and commitment to my professional development have been invaluable.

Thank you to my committee members, Dr. Gillian Blair, Mr. Robert Dunham, Dr. Kirk Heilbrun, and Dr. Richard Redding for your advice, suggestions, and expertise throughout my training.

This project would not have been possible without the students in Dr. Goldstein's lab, including Rachel Kalbeitzer, Oluseyi Olubadewo, Christina Riggs Romaine, Jennifer Serico, Melinda Wolbransky, Amanda Dovidio Zelechowski, and Heather Zelle. Thank you all for your hard work and dedication to this project.

To my family, thank you for your support through the many, many years of school.

Thank you to my parents, Charles and Veronique, who believed in me and taught me that no dream is ever too big. Mom, thank you for your unconditional support and for always reminding me that my goals are within reach.

Thank you to my best friend, my partner, and my husband, Jason. You have patiently stood by my side every step of the way, supporting me and pushing me when I needed it. Thank you for helping me through the challenges and for celebrating the accomplishments.

Finally, I would like to thank my daughters, Isabelle, Anne, and Sophie, who have taught me to live each day with gratitude and who have inspired me to strive to make a difference.

Table of Contents

LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
ABSTRACT.....	ix
1. BACKGROUND AND LITERATURE REVIEW.....	1
1.1 Miranda Rights.....	4
1.2 False Confessions.....	8
1.3 Suggestibility.....	13
1.3.1 Suggestibility and Miranda Comprehension.....	15
1.3.2 Suggestibility and Intelligence.....	16
1.3.3 Suggestibility and Mental Health.....	18
1.4 Juvenile Suggestibility.....	21
1.4.1 Juvenile versus Adult Suggestibility.....	22
1.4.2 Juvenile Suggestibility and Intelligence.....	23
1.4.3 Juvenile Suggestibility and Mental Health.....	23
1.4.4 Additional Factors Related to Juvenile Suggestibility.....	24
1.5 Gender Differences.....	25
1.5.1 Gender Differences in False Confessions.....	25
1.5.2 Gender Differences in Suggestibility.....	26
1.5.3 Gender Differences in the Juvenile Justice System.....	28
2. THE CURRENT STUDY.....	34
2.1 Hypotheses.....	40
2.1.1 Primary Research Question.....	40

2.1.2 Preliminary Hypotheses.....	40
2.1.3 Primary Hypotheses.....	41
3. METHOD.....	42
3.1 Participants.....	42
3.2 Measures.....	43
3.2.1 Demographic Questionnaire.....	43
3.2.2 Gudjonsson Suggestibility Scale.....	43
3.2.3 Miranda Rights Comprehension Instruments – II.....	45
3.2.4 Massachusetts Youth Screening Instrument – Second Version.....	50
3.2.5 Wechsler Abbreviated Scale of Intelligence.....	52
3.2.6 Measures Administered but Not Used in the Proposed Study.....	53
3.3 Procedures.....	54
4. METHOD OF ANALYSIS.....	56
4.1 Preparatory Analyses.....	56
4.2 Preliminary Hypotheses.....	56
4.2.1 Power Analysis for the Preliminary Hypotheses.....	58
4.3 Primary Hypotheses.....	58
4.3.1 Power Analysis for the Primary Hypotheses.....	60
4.4 Exploratory Analyses.....	60
5. RESULTS.....	62
5.1 Preparatory Analyses.....	62
5.2 Preliminary Hypotheses.....	62

5.3 Primary Hypotheses.....	63
5.4 Full Model Evaluation.....	64
5.5 Exploratory Analyses.....	64
6. DISCUSSION.....	66
6.1 Discussion of Findings.....	66
6.2 Limitations.....	70
6.3 Research and Policy Implications.....	73
7. LIST OF REFERENCES.....	81
8. VITA.....	100

List of Tables

1. Gender Differences in Verbal IQ, Miranda Comprehension, Suggestibility, and MAYSI-2 Scores.....	93
2. Relationships between Age and Variables of Primary Interest.....	94
3. Self-Reported Likelihood of Offering False Confessions as Outcome Variable with Gender, Verbal IQ, and Suggestibility Measures as Predictor Variables.....	95
4. Self-Reported Likelihood of Offering False Confessions as Outcome Variable with <i>MAYSI-2</i> Mental Health Symptoms as Predictor Variables.....	96
5. Suggestibility Measures as Outcome Variables with Verbal IQ, Gender, and <i>MAYSI-2</i> Mental Health Symptoms as Predictor Variables.....	97

List of Figures

1. Gender Differences in Total <i>P-CHIP</i> False Confession Scores.....	98
2. Gender Differences in <i>P-CHIP</i> False Confession Average	
Item Scores By Types of Pressure.....	99

Abstract

Gender, Suggestibility, and Self-Reported Likelihood of False Confessions

Constance M. Mesiarik, J.D., M.A.

Naomi E. Goldstein, Ph.D.

Confessions are readily admissible in court and are extremely powerful in convicting a defendant. A large body of research has focused on the role of suggestibility during the interrogation process and on the relationship between suggestibility and false confessions. However, little research exists on the relationship between gender and suggestibility. Nevertheless, research has revealed that girls in the juvenile justice system display more mental health symptoms than do boys, and research with adults has suggested a relationship between suggestibility and mental illness. The current study examined the relationships between gender, IQ, mental health symptoms, suggestibility, and self-reported likelihood of offering false confessions. The study hypothesized that girls would be more likely than boys to say that they would falsely confess during hypothetical interrogation scenarios. Furthermore, this study hypothesized that suggestibility would mediate the relationships between: (1) gender and self-reported likelihood of offering false confessions; (2) mental health symptoms and self-reported likelihood of offering false confessions; and (3) IQ and self-reported likelihood of offering false confessions. Finally, this study hypothesized that mental health symptoms and IQ would each mediate the relationships between gender and suggestibility and between gender and false confessions. Although results indicated that girls were more likely to report that they would falsely confess, the hypotheses examining mediating variables were unsupported.

CHAPTER 1: BACKGROUND AND LITERATURE REVIEW

In 1990, Jeffrey Mark Deskovic was convicted at the age of 16 of the rape and murder of a high school classmate. Although he maintained his innocence throughout his trial, Mr. Deskovic's conviction was based primarily on a confession he made following six hours of interrogation by police. In 2006, after serving 16 years in prison, Mr. Deskovic's conviction was overturned and he was released when new evidence surfaced which exonerated him. To explain why he had offered this false confession, Mr. Deskovic stated in a recent interview that "[b]elieving in the criminal justice system and being fearful for myself, I told them what they wanted to hear. I thought it was all going to be O.K. in the end" (New York Times, 2006).

There is, perhaps, nothing as powerful in convicting a defendant as his or her own admission to the crime. In 1968, the U.S. Supreme Court stated that confessions are "probably the most probative and damaging evidence that can be admitted" (*Bruton v. U.S.*, 1968). The power of a confession has also been addressed empirically, and Kassin and Neumann (1997) found that confession evidence was more incriminating than eyewitness identification or character testimony. The most logical explanation for such findings is that jurors find it difficult to believe that someone would confess to a crime they did not commit (Wrightsmann & Kassin, 1993).

Given the power of a confession in convicting a defendant, the reliability of such a confession is critical. Unfortunately, research examining the reliability of confessions suggests that false confessions occur more frequently than originally believed. In two separate studies, Gudjonsson and Sigurdsson found that 12% of adult Icelandic prison inmates claimed to have falsely confessed at some point during their

lives (Gudjonsson & Sigurdsson, 1994; Sigurdsson & Gudjonsson, 1996). In addition, their findings also suggested that the most likely age at which an individual gives a false confession is between the ages of 16 and 20 (Sigurdsson & Gudjonsson, 1996). In another self-report study examining 10,472 adolescents and young adults (ages 16-24) in Iceland, researchers found that, of the 1,896 participants who had been interrogated by police, 138 (7.3%) claimed to have given a false confession (Gudjonsson, Sigurdsson, Asgeirsdottir, & Sigfusdottir, 2006). Gudjonsson et al. (2006) examined differences between individuals who reported being interrogated only once and those who reported being interrogated more than once and found that 12% of those who had been interrogated multiple times claimed to have made a false confession at some point compared to 3% of those who had only been interrogated once. The mean age of false confessors in this study was 17.6 years. In a U.S. study of 205 cases of wrongful convictions, one author reported that 8.4% of these cases involved coerced confessions (Rattner, 1988).

In an analysis of 125 proven false confessions, Drizin and Leo (2004) reported that 33% of these false confessions were made by juveniles and that more than half of the juveniles in this sample were under the age of 16. Although they were not examining alleged false confessions, Ruback and Vardaman (1997) studied the rate of confessions among juvenile offenders, finding that 84% of juveniles confessed to at least part of the charges against them. Whether any of these confessions were false or coerced was not determined, but these findings illustrate the frequency with which confessions occur in a juvenile population and, therefore, the importance of examining the validity of these confessions. With respect to false confessions, research conducted

with an adult (ages 19-66) prison population has suggested that younger offenders were more likely than older offenders to report that police pressure was their reason for offering false confessions (Gudjonsson & Petursson, 1991).

Although there is evidence to suggest that confessions are not consistently reliable, courts have been reluctant to exclude confession evidence. The U.S. Supreme Court stated in 1961 that for a confession to be admissible as evidence, it must be voluntarily given, as determined by a review of the “totality of the relevant circumstances” (*Columbe v. Connecticut*, 1961). Confessions have been excluded in situations in which police used physical force with suspects; promised suspects immunity; threatened suspects with harm or punishment; and failed to inform suspects of their rights, as required by *Miranda v. Arizona* (Kassin, 1997). Other than these specific situations, confessions, generally, have been readily admitted.

The U.S. Supreme Court revisited the issue of confessions in 1991, in *Arizona v. Fulminante*. In *Fulminante*, the defendant, while incarcerated for an unrelated offense, had confessed to another prison inmate that he killed his stepdaughter. The prison inmate he had confessed to was a paid informant for the Federal Bureau of Investigation. The Court recognized the confession in this case as being coerced and stated that its admission was prejudicial. However, the Court noted that an erroneously admitted confession could constitute “harmless error” if the State could show that “the error complained of did not contribute to the verdict obtained” (*Chapman v. California*, 1967). Essentially, the Court found that even unreliable confessions could be admitted if there is enough additional evidence to form a basis for conviction.

The concept of “harmless error” as applied to confessions has been empirically studied (Kassin & Sukel, 1997). Kassin and Sukel (1997) found that mock jurors acknowledged that confessions resulted from high pressure and, therefore, deemed them involuntary. The mock jurors stated that they were able to follow a judge’s instructions to disregard a confession and refrain from using it in their decision-making. Nevertheless, although the mock jurors stated an ability to follow the law by not allowing an involuntary statement to affect their decision-making, the confession still impacted the verdict. When presented with confession evidence, jurors were more likely to convict, despite acknowledging that the confession was involuntary and despite the judge’s instruction to disregard the confession evidence.

1.1 Miranda Rights

The power of confession evidence and its admissibility in court suggest a heightened need for admitted confessions to be valid and reliable. In 1966, the U.S. Supreme Court decided *Miranda v. Arizona*, which afforded rights to suspects detained by police during custodial interrogation. Specifically, the court held that those being detained by police should be informed of their rights against self-incrimination and their rights to legal representation. The language of a *Miranda* warning varies across jurisdictions (Oberlander & Goldstein, 2001). However, a typical warning includes the right to remain silent, the right to have an attorney present during police interrogation, and the right to stop questioning at any time. Detainees are also informed that what they say may be used against them in court and that, if they are unable to afford an attorney, an attorney will be provided to them (Oberlander & Goldstein, 2001).

The protections afforded in *Miranda* were extended to juveniles (*In re Gault*, 1967; *Kent v. U.S.*, 1966). Whereas the predominate goal of the adult system was to punish offenders, rehabilitation was the original purpose of the juvenile justice system. However, the *parens patriae* role of the juvenile justice system has quickly fallen out of favor, and the juvenile system has become increasingly similar to the criminal justice system. As a result, rights, such as those described in *Miranda* and originally established in an adult context, have been applied to juveniles. In an increasingly punitive system, juveniles require the same protections afforded adults. In 1967, the Supreme Court, although not specifically addressing *Miranda* rights, concluded that juveniles were entitled to certain adult protections, including receiving notice of charges, the right to an attorney, the right to confront accusers, the right to cross-examine witnesses, and the right to remain silent (*In re Gault*, 1967).

Miranda also requires that suspects in custodial interrogations understand the rights that police inform them of. Once detainees have been informed of their rights, they may choose to answer police questions by waiving their *Miranda* rights. Such a waiver must be provided “voluntarily, knowingly, and intelligently,” in order to be considered valid (*Miranda v. Arizona*, 1966, p. 444). The inquiry into whether or not a waiver is valid has two dimensions. “First, the relinquishment of the right must have been voluntary in the sense that it was the product of a free and deliberate choice rather than intimidation, coercion, or deception. Second, the waiver must have been made with a full awareness of both the nature of the right being abandoned and the consequences of the decision to abandon it” (*Moran v. Burbine*, 1986, p. 421). In examining these two dimensions, courts use a “totality of the circumstances” approach

to determining whether or not a waiver is valid (*Moran v. Burbine*, 1986). Using the totality of the circumstances approach in the juvenile context, courts have considered various factors, such as age, education, intelligence, length and nature of the interrogation process (Grisso, 1981). Additional factors discussed by Oberlander and Goldstein (2001) include the suspect's background, experience, conduct, and whether the suspect was in custody.

The validity of a *Miranda* waiver has been studied in various populations. For example, individuals who are mentally retarded are more likely to submit to pressures when compared with people of average intellectual abilities (Ellis & Luckasson, 1985). Individuals who are mentally retarded appear to have an inadequate understanding of the *Miranda* rights they are waiving and may not realize that their waiver may lead to an increased risk of offering self-incriminating information (Fulero & Everington, 1995; O'Connell, Garmoe, & Goldstein, 2005). In light of such evidence, Brodsky and Bennett (2005) recommend that the validity of waivers of all individuals with an IQ below 80 should be routinely examined.

Although juveniles are afforded the protections provided by the *Miranda* warning, research suggests that juveniles' comprehension of *Miranda* rights is markedly different from adult levels of comprehension. The primary factors identified as relating to *Miranda* comprehension are age and IQ, with younger individuals and those with lower IQs generally displaying lower levels of *Miranda* comprehension (Grisso, 1981). This early research also found that gender and socioeconomic status were not related to comprehension of *Miranda* rights. The original instruments to assess juveniles' comprehension of *Miranda* rights were developed in the 1970s

(Grisso, 1998) and were recently revised (Condie, Goldstein, & Grisso, in preparation). Although research with the revised instruments has only been conducted with boys (research with girls is in progress), findings are similar to those obtained in the 1970s (Goldstein, Kalbeitzer, Chulvick, & Condie, 2004). Specifically, age and IQ remain the primary predictors of *Miranda* comprehension (Goldstein, Condie, Kalbeitzer, Osman, and Geier, 2003).

Although research over the past 30 years has consistently suggested that juveniles potentially lack the levels of comprehension needed for a valid *Miranda* waiver, courts have been reluctant to treat juvenile *Miranda* waivers differently from adult waivers. For example, the U.S. Supreme Court, in examining juveniles' right to counsel, stated that the same "totality of circumstances" approach should be used when considering the validity of a juvenile's *Miranda* waiver (*Fare v. Michael C.*, 1979). Specifically, the Court stated that it "discern[s] no persuasive reasons why any other approach is required where the question is whether a juvenile has waived his rights, as opposed to whether an adult has done so. The totality approach permits – indeed it mandates – inquiry into all the circumstances surrounding the interrogation."

Although age may be considered as part of the determination of whether or not a waiver was valid (e.g., see Grisso, 1980), the Supreme Court recently determined that police are not required to consider age in determining the validity of a *Miranda* waiver (*Yarborough v. Alvarado*, 2004). Although the totality approach is applicable across a majority of the states, some states use a per se exclusionary rule. In these states, any confession made by a juvenile under a set age (typically, age 16 and under) is deemed automatically inadmissible unless certain statutory guidelines have been followed, such

as permitting the juvenile to consult with a parent or some other “interested adult” (Grisso, 1980; Krzewinski, 2002).

1.2 False Confessions

False confessions are likely to occur once juvenile detainees have waived their *Miranda* rights. In fact, a recent study found that individuals who were innocent were actually more likely to sign a waiver than those who were guilty, with only 19% of innocent participants invoking their *Miranda* rights to silence and an attorney, as compared to 36% of guilty participants (Kassin & Norwick, 2004). Kassin and Norwick (2004) asked undergraduate students to participate in a mock theft paradigm, after which they were questioned by an interrogator. When “innocent” participants were asked why they signed a waiver, they gave reasons based on self-preservation (e.g., “I would’ve looked suspicious if I chose not to talk”) or their belief that justice would prevail (e.g., “I didn’t have anything to hide”). When detainees waive the rights afforded under *Miranda*, they are effectively deciding to continue with the interrogation process and to answer police questions without the assistance of counsel. Individuals in police custody who are not represented by counsel are more likely to confess (Moston, Stephenson, & Williamson, 1992). In a study examining juvenile defendants ages 11 to 17, Viljoen, Klaver, and Roesch (2005) found that adolescents ages 15 and under were more likely to waive their right to counsel and to confess (regardless of veracity) than were older adolescents. The adolescents in that study who claimed to have falsely confessed did not differ from the rest of the sample in their understanding and appreciation of interrogation warnings, as measured by Grisso’s

Instruments for Assessing Understanding and Appreciation of Miranda Rights (Grisso, 1998).

False confessions were also examined in a non-forensic/correctional setting among young children (ages 6 to 9) using a paradigm initially developed by Kassin and Kiechel (1996), in which participants are accused of crashing a computer by hitting a key they were told to avoid then asked to confess to hitting the wrong key (Candel, Merckelbach, Loyen, & Reyskens, 2005). In this study, 36% of the children confessed to hitting the forbidden computer key. As an explanation for why the false confession rates were lower than in the adolescent and adult populations, the authors reported that, due to the children's young age in this study, they were not confronted with false evidence.

During the interrogation process, the central goal of the police is to obtain some information related to the crime under investigation. Given the power of confessions, it is not surprising that obtaining a confession is a primary goal of police during an interrogation (Redlich, 2004). Often, confessions are obtained as a result of various tactics used by police during the interrogation process and few limits are placed on what police may resort to in order to secure a confession. Barring a few exceptions (e.g., see Kassin, 1997), there is still a wide latitude of permitted conduct that police may use in securing a confession.

Police are frequently trained to conduct investigations in accordance with the Reid technique, a police training method that provides a variety of physical and non-physical techniques for conducting an interrogation. (Inbau, Reid, Buckley, & Jayne, 2001). Inbau and colleagues (2001) suggested nine criminal interrogation steps: (1)

confronting the suspect with a statement of guilt; (2) developing and expressing to the suspect a potential moral excuse for having committed the crime; (3) discouraging a suspect's repeated denials of guilt; (4) overcoming a suspect's explanations for why he did not commit the crime, including economic, religious, or moral reasons; (5) maintaining the suspect's full attention; (6) recognizing the suspect's passive mood; (7) using alternative forced choice questions about the crime to allow the suspect to choose the answer which is most "acceptable," even though each choice is incriminating; (8) having the suspect give an account of the crime, including details, such as where the weapon was discarded or where the money was hidden, which can later be used in establishing legal guilt; and (9) converting an oral confession into a written confession. In addition to these nine steps, Inbau and colleagues (2001) also suggested physical aspects of the interrogation to promote confessions, such as making the interview room's surroundings look less like a police detention facility, using straight-back chairs arranged in a particular way aimed at increasing the suspect's level of tension and diminishing his/her sense of control, and having the interrogators dress in civilian clothing. They also suggested invading the suspect's physical space by gradually decreasing the distance between the interrogator and the suspect during questioning. There is also evidence to suggest that, although police recognize developmental differences between youth and adults, they continue to treat youth the same as they do adults in the interrogation context (Meyer & Reppucci, 2007).

The focus of these common high pressure tactics is to obtain confessions, and these interrogation methods have been criticized for leading to unreliable confessions. Critics have suggested that the tactics used during police interrogations result in an

increased rate of false confessions (e.g., see Gudjonsson, 2003; Kassin, 1997). Gudjonsson (1991b) summarized four types of false confessions: voluntary, coerced-compliant, coerced-internalized, and coerced-reactive. Voluntary confessions are elicited without external pressure. Gudjonsson suggested that personality disorders and mental illness are frequently associated with this type of confession (Gudjonsson, 2003). Coerced-compliant confessions generally occur with some form of pressure and the belief that a false confession will result in an immediate gain (Gudjonsson & MacKeith, 1990). Coerced-internalized confessions occur when a suspect, during the interrogation process, actually becomes persuaded to believe that he or she committed a crime (Gudjonsson & MacKeith, 1990). Coerced-reactive confessions are given when the individual is pressured to falsely confess by someone other than the police (McCann, 1998). In a study examining the frequency with which false confessions occur, a large majority (93%) of false confessions, which were alleged by prison inmates, were characterized as coerced-compliant (Gudjonsson & Sigurdsson, 1994).

Because of ethical constraints and methodological difficulties, few studies have been able to empirically study false confessions. In a non-forensic/correctional study, which has been replicated several times with modifications, neutral peer confederates accused college students of crashing a computer (Kassin & Kiechel, 1996). In this study, students suffered no negative consequences by signing a false confession, and 69% of those accused were still willing to sign a false confession. The study was replicated with two major changes to make the scenario more closely resemble a police interrogation situation: (1) incriminating evidence was provided by an authority figure, rather than a neutral peer; and (2) students were told they would suffer negative

consequences, in the form of financial loss, if they signed a false confession (Horselenberg, Merckelbach, & Josephs, 2003). Even with these changes, findings were similar to those of the original study. More recently, the paradigm was modified to include manipulations of minimization and maximization interrogation techniques as well as high and low plausibility of the alleged typing mistake (Klaver, Lee, & Rose, 2008). Maximization techniques were used to intimidate the suspect (i.e., making false claims regarding evidence obtained against the suspect) and minimization techniques were used to give the suspect a false sense of security (i.e., conceptualizing the crime as being accidental). Overall, 43% of the participants falsely confessed and confessions were most likely to occur when the plausibility of the typing mistake was high and minimization techniques were used.

A recent study used a novel paradigm to examine actual true and false confessions among undergraduate students (Russano, Meissner, Narchet, & Kassin, 2005). Participants were paired with confederates and were instructed to solve some problems individually and some together. Left alone, the confederate then asked the participant for help on a problem that was to be solved individually. Participants who helped the confederate were “guilty” and those who did not were “innocent.” Participants were then asked to sign a confession after being “interrogated” by experimenters using various interrogation techniques, including minimization and offering leniency. Results of the study indicated that both minimization and offers of leniency were effective in eliciting increased true and false confessions (Russano et al., 2005).

It would be nearly impossible to conduct research on actual false confessions in the forensic context. First, there is no documented reliable method for determining whether an alleged confession is, in fact, false. Second, there are serious ethical concerns associated with falsely accusing an individual of an actual crime to determine whether they will offer a false confession. Because of these limitations, studies with this population must rely on self reports. The revised version of the instruments for assessing *Miranda* comprehension includes a new measure, *Perceptions of Coercion during the Holding and Interrogation Process (P-CHIP)*, to assess self-reported likelihood of offering false confessions in hypothetical interrogation scenarios (Condie et al., in preparation). Although the original instruments focused on the knowing and intelligent aspects of a *Miranda* waiver, the *P-CHIP* offers a first attempt at assessing the voluntary aspect of the waiver (Goldstein, Condie, et al., 2003). Preliminary findings using this tool suggest that self-reported likelihood of offering a false confession is independently associated with age but not with *Miranda* comprehension or IQ. When *Miranda* comprehension, age, and IQ were regressed on self-reported likelihood of offering false confessions, only age was a significant predictor (Goldstein, Condie, et al., 2003).

1.3 Suggestibility

Foster, in 1969, stated that interrogations “can produce a trance-like state of heightened suggestibility” so that “truth and falsehood become hopelessly confused in the suspect’s mind.” Because false confessions do occur, it is important to determine which individuals are more likely to offer false confessions. A large body of research has discussed the role of suggestibility in the interrogation process and its relationship

with false confessions. Generally, research, much of which has been conducted by Gudjonsson, has suggested that suggestibility is positively associated with false confessions (Gudjonsson, 1990; Gudjonsson, 1991a), although the relationship between these variables is unclear and appears complex. For example, Forrest, Wadkins, and Larson (2006) found that, among university students, only one aspect of suggestibility (e.g., the tendency to yield to misleading questions) was associated with an individual's willingness to confess to something they did not do. Gudjonsson developed the *Gudjonsson Suggestibility Scale (GSS)* in order to measure an individual's tendency to yield to leading questions and to change answers in response to criticism or negative feedback. Gudjonsson and Clark (1986), in describing their model of interrogative suggestibility, defined interrogative suggestibility as "the extent to which, within a closed social interaction, people come to accept messages communicated during formal questioning, as the result of which their subsequent behavioural response is affected." According to Gudjonsson and Clark (1986), this concept of interrogative suggestibility is comprised of five interrelated components: (1) the nature of the social interaction; (2) a questioning procedure involving two or more participants; (3) a suggestive stimulus; (4) some form of acceptance of the stimulus question; and (5) a behavioral response.

The Gudjonsson and Clark (1986) model proposes that interrogative suggestibility results from the existence of a relationship between an individual, the environment, and significant others within that environment. The model incorporates the ideas of leading questions and negative feedback that are often present in police interrogations. The model is based on the premise that suggestibility depends, in large part, on how individuals employ coping strategies, which are either resistant or

suggestible, when faced with the uncertainty and expectations of an interrogation. Individuals with resistant coping strategies critically analyze the situation they are in and employ a facilitative problem-solving approach (i.e., “trying to think clearly and objectively, not committing oneself to an answer unless absolutely sure of the facts”), whereas individuals with suggestible coping strategies are less likely to critically evaluate the situation by using “cognitive avoidance” (i.e., “unrealistic appraisal of the situation, not accepting that one’s memory is fallible, believing that one must always provide definite answers”) (Gudjonsson & Clark, 1986). As a result, individuals employing resistant coping strategies are more likely to be “resistant to the suggestibility process.” According to the model, individuals may react differently to police interrogation situations, even when characteristics of the interrogation remain unchanged (Gudjonsson, 1991b).

1.3.1 Suggestibility and Miranda Comprehension

Recently, suggestibility was found to be related to *Miranda* comprehension (Redlich, Silverman, & Steiner, 2003). Researchers administered the *GSS* (Gudjonsson, 1997) and Grisso’s (1998) *Miranda* measures, along with other instruments. Findings revealed that suggestibility was significantly associated with *Miranda* comprehension, although the relationship between the two variables appeared to be complex. As expected, suggestibility, measured by participants shifting their responses following negative feedback, was associated with lower levels of *Miranda* comprehension. However, heightened suggestibility, measured by yielding to misleading questions, was associated with higher levels of *Miranda* comprehension. The authors reported that this finding was unusual and that the relationship between yielding to misleading questions

and *Miranda* comprehension needed additional research before an explanation of these findings could be offered. It should be noted, however, that the sample in this study was comprised of adolescents and young adults recruited from the community and, therefore, the results may not be generalizable to forensic populations.

1.3.2 Suggestibility and Intelligence

Several studies have examined suggestibility and its relationship with various cognitive characteristics. A large body of research has focused specifically on the relationship between intelligence and suggestibility, with findings that suggestibility was negatively correlated with intelligence (Gudjonsson, 1983; Polczyk, 2005).

Clare and Gudjonsson (1993) studied interrogative suggestibility, confabulation, and acquiescence in people with mild learning disabilities (mean IQ = 65) by comparing them with individuals of average intellectual abilities (mean IQ = 99). Results revealed that individuals with mild learning disabilities were more suggestible, confabulated more, and acquiesced more than their average ability counterparts. In a later study, Clare and Gudjonsson (1995) examined how individuals with mild learning disabilities perceived the implications of offering a false confession. Results indicated that people with mild learning disabilities tended to believe that a false confession could be retracted at a later date and that, even if the false confession was admitted into court, it could not be used as evidence of guilt. In addition, when compared with individuals with average intellectual abilities, those with intellectual deficits were more likely to believe that a suspect could go home after confessing. In contrast, one study examining the relationship between intelligence and suggestibility in young children (ages 7-9) found that, although the children with mild learning

disabilities scored higher on the suggestibility measures than did children of average ability, these differences were not significant (Robinson & McGuire, 2006). However, in this study, there were only 20 participants in each group. It is possible that a larger sample size might yield significant results.

Research has also examined suggestibility among individuals with mental retardation. Individuals with mental retardation were more likely to submit to pressure when compared to people of average intelligence (Ellis & Luckasson, 1985). Later research found that, compared with normal adjudicated adults, adjudicated adults with mental retardation were more likely to respond to coercion and, also, were more likely to “shift” their responses following negative feedback (Everington & Fulero, 1999). Recently, research focused on how individuals with mild mental retardation responded to different forms of feedback, and found that individuals with mild mental retardation were more likely to change their responses following friendly feedback, as opposed to unfriendly or neutral feedback (O’Connell et al., 2005).

Although intelligence has been associated with suggestibility, there is evidence that suggestibility may not be explained entirely by intelligence. Gudjonsson (1991a) examined differences in suggestibility among three groups of individuals: (1) individuals who claimed to have offered a false confession; (2) suspects who had provided confessions but had not retracted them; and (3) individuals who had never confessed (i.e., those who “resisted” interrogation pressures), but were convicted of a crime. Gudjonsson (1991a) found significant differences in suggestibility between groups when intelligence and memory were controlled for, suggesting that

suggestibility may predict individual behavior during police interrogations independently of intelligence and memory.

1.3.3 Suggestibility and Mental Health

There have been very few studies examining the relationship between suggestibility and mental illness, and the scope of these extant studies has been limited. In two experiments, Young, Bentall, Slade, and Dewey (1987) examined suggestibility in hallucinating patients and individuals predisposed to hallucinations and found no relationship between hallucinations and suggestibility. The authors suggested that, although the individuals in these studies were more likely to report imaginary events as real, this tendency was not related to suggestibility (Young et al., 1987). Smith and Gudjonsson (1995) essentially sought to replicate the Young et al. (1987) study by examining suggestibility and reality monitoring in psychiatric patients residing on a secure unit. Smith and Gudjonsson (1995) also found no relationship between suggestibility and hallucinations.

Sigurdsson, Gudjonsson, Kolbeinsson, and Petursson (1994) found no relationships between electroconvulsive therapy (ECT), depression, and suggestibility. However, all participants with depression received antidepressant medication (and most received other psychotropic medications, as well), limiting the interpretability of the findings. In discussing the forensic implications of their study, the authors stated that “it appears that depressed patients receiving antidepressant treatment can be interviewed without leading questions and confabulation unduly affecting the reliability of their verbal accounts” (Sigurdsson et al., 1994). Furthermore, although the Sigurdsson et al. (1994) study examined the relationship between depression and

suggestibility, these results may not accurately be generalized to medicated or unmedicated juvenile populations.

Although there is little research examining the relationship between diagnosable mental illness and suggestibility, some research is available on the relationship between suggestibility and various mental health symptoms that may be associated with mental illness. For example, the relationship between anxiety symptoms and suggestibility has been examined, yielding mixed results. Gudjonsson (1983) found that suggestibility correlated positively with neuroticism (described as trait anxiety in this study) and social desirability. Gudjonsson (1988) also found that suggestibility correlated with state anxiety. In contrast, a later study found that, although a relationship existed between suggestibility and trait anxiety, no relationship was found between suggestibility and state anxiety (Gudjonsson, Rutter, & Clare, 1995). The authors attributed these inconsistent findings to the complex nature of the relationship between anxiety and suggestibility, and stated that the effects of anxiety on suggestibility may, in part, depend on the context and individual circumstances of a particular situation and that these circumstances may not have been present in the study (Gudjonsson et al., 1995). Gudjonsson (2003) pointed out that, in the aforementioned study (Gudjonsson et al., 1995), anxiety was measured before the interrogation questions and negative feedback were administered, and anxiety *prior* to this simulated interrogation may be less relevant to suggestibility than anxiety *during* the interrogation. A more recent study (Roos & Gow, 2007) also failed to find a relationship between suggestibility and emotional arousal (induced through the use of a video) among university students. The authors attribute these findings to methodological issues, including using a group

format which “may not have sustained the levels of uncertainty, trust, and expectations necessary to influence participants, regardless of their levels of arousal” (Roos & Gow, 2007).

In another study, suggestibility was also related to self-esteem (Singh & Gudjonsson, 1984). Because this study also examined the effects of memory on suggestibility, two interrogation sessions were conducted one week apart. The correlation between suggestibility and self-esteem was higher during the first session, suggesting that an individual’s self-esteem may affect suggestibility more when the individual is less familiar with the procedures.

Finally, several studies have examined the relationship between suggestibility and alcohol use. Santtila, Ekholm, and Niemi (1999) discussed two alternative possible relationships: (1) alcohol use would decrease anxiety, which would, in turn, lead to a decrease in suggestibility; and (2) alcohol use would affect cognitive abilities, which would, in turn, lead to an increase in suggestibility. The authors found that high doses of alcohol were related to decreased levels of suggestibility among university student volunteers, supporting the first proposed relationship. In another article using the same information, Santtila, Ekholm, and Niemi (1998) examined whether personality variables and emotional experiences would moderate the relationship between the effects of alcohol and suggestibility. The authors found that increased alcohol use was more likely to be associated with decreased suggestibility when individuals scored high on ratings of anger and guilt. Santtila and colleagues (1999) caution that their study dealt specifically with intoxication during the interrogation and did not address how intoxication at the time of the crime may affect suggestibility. The authors suggest that

individuals intoxicated at the time of the crime may be more suggestible as a result of memory problems associated with coding of the event (Santtila et al., 1999).

The previous study was conducted with a non-forensic population, and similar studies have not been conducted with correctional populations. However, there has been research examining self-reports of alcohol use and false confessions (Sigurdsson & Gudjonsson, 1994). In this study, 36% of the adult participants in an Icelandic prison indicated that they were intoxicated during police interrogation. Similar to the non-forensic sample, Sigurdsson and Gudjonsson (1994) found that alcohol did not seem to interfere with coping abilities during the interrogation. However, the results did suggest that alcohol may increase an individual's confusion, thus impairing his ability to think and make rational decisions.

1.4 Juvenile Suggestibility

Although most of the research on suggestibility and false confessions has been conducted with adult populations, some research has found heightened levels of suggestibility among adolescents in both community and forensic contexts. An adaptation of the Kassin and Kiechel (1996) study, in which participants were accused of crashing a computer, was also conducted examining suggestibility in an adolescent non-forensic population (Redlich & Goodman, 2003). Most importantly, this study extended the sample to include participants with ages ranging from 12 to 26 years. Similar to Kassin and Kiechel's (1996) findings, 69% of participants "falsely confessed." With respect to suggestibility, individuals who were more likely to yield to leading questions were also more likely to comply with requests (e.g., sign a confession). In addition, younger children (i.e., ages 12-13 and 15-16) were more likely

to sign a false confession than were adults, and this difference was especially pronounced when the participant was presented with false evidence.

1.4.1 Juvenile versus Adult Suggestibility

Research examining adolescents in non-forensic contexts has found that adolescents are more suggestible than adults. For example, Warren, Hulse-Trotter, and Tubbs (1991) found that younger children (age 7) yielded to leading questions and shifted their responses following negative feedback more than older children (age 12) and adults; older children also changed their answers following feedback more than adults. In contrast, research also exists indicating no differences in suggestibility between preadolescents (ages 12-13), adolescents (ages 15-16) and young adults (ages 18-26) in a non-forensic/non-correctional population (Redlich, 2000).

Research examining the suggestibility of adolescent offenders has been consistent in demonstrating that adolescents are more suggestible than their adult counterparts after receiving negative feedback. Although delinquent adolescent boys performed similarly to adults in their tendencies to yield to misleading questions, delinquent boys were more suggestible than adults following negative feedback, suggesting that “shift” scores are related to how delinquent boys respond to authority figures (Gudjonsson & Singh, 1984a). The same findings have been found among serious juvenile offenders who also were more likely to shift their responses following negative feedback, but were not more likely than adult offenders to yield to misleading questions (Richardson, Gudjonsson, & Kelly, 1995).

1.4.2 Juvenile Suggestibility and Intelligence

The relationship between intelligence and suggestibility has also been examined in juvenile populations. Although relationships have been found between intelligence and suggestibility, correlations were described as “modest” in an adolescent population with no criminal convictions (Singh & Gudjonsson, 1992). Similar to what was found in studies conducted with adult forensic populations, memory and intelligence correlated negatively with suggestibility in the juvenile justice population (Richardson & Kelly, 1995; Muris, Meesters, & Merckelbach, 2004). Although intelligence and suggestibility were correlated, Singh and Gudjonsson (1992) found a stronger relationship between memory and suggestibility, suggesting that in adolescent boys, levels of suggestibility may be a function of how much they remember of their rights.

1.4.3 Juvenile Suggestibility and Mental Health

To date, no studies have directly examined the relationship between diagnosable mental illness and suggestibility in a juvenile population. However, similar to the adult context, the relationship between suggestibility and certain mental health symptoms which may be associated with mental illness have been examined. For example, recent research examining suggestibility in male adolescent offenders revealed a relationship between suggestibility and social desirability (i.e., the degree to which individuals attempt to present themselves in a favorable light) (Richardson & Kelly, 2004). Contradicting findings with adults, suggestibility was not related to neuroticism (trait anxiety) in adolescent offenders in this study. Another recent study examined the relationship between suggestibility and measures of Social Desirability, Social Inadequacy, and Fantasy Proneness and failed to find a relationship between any of these characteristics and suggestibility (Muris et al., 2004).

Singh and Gudjonsson (1992) examined the relationship between suggestibility and hostility and negative attitudes towards authority figures. Although no relationship was found, all of the boys in this study were recruited from Youth Clubs, had no history of prior convictions, and were described as cooperative and friendly. Such a population is different from that typically found in the forensic context. It is possible that increased levels of hostility and negative attitudes not present in this study would, in fact, heighten suggestibility.

1.4.4 Additional Factors Related to Juvenile Suggestibility

There is evidence to suggest that suggestibility may be affected, in part, by a juvenile's number of prior arrests. The degree to which delinquent boys resisted interpersonal pressure correlated with their number of previous criminal convictions (i.e., the more previous convictions they had, the more resistant they were to interpersonal pressure) (Gudjonsson & Singh, 1984b). Gudjonsson and Singh (1984b) offered two explanations for this finding: (1) individuals with experience may learn to resist interrogative pressures; and (2) individuals who recidivate may be more prone to resisting interrogative pressures. Research conducted with adults generally supports Gudjonsson and Singh's (1984b) findings that *shift* suggestibility scores, as measured by an individual's changing responses following negative feedback, correlate negatively with number of previous convictions (Sharrock & Gudjonsson, 1993). However, Sharrock and Gudjonsson (1993) suggested that, in an adult population, more criminal convictions are associated with less *overall* suggestibility (i.e., yielding to misleading questions in addition to changing responses following negative feedback), and not merely in the presence of interpersonal pressure (i.e., negative feedback), as

was found with a juvenile population (Sharrock & Gudjonsson, 1993). The differences in the results may be attributable to the differences in the populations examined (i.e., juvenile versus adult).

1.5 Gender Differences

1.5.1 Gender Differences in False Confessions

Although no study has examined gender differences in false confessions in a juvenile forensic population, there was a recent study conducted with adolescents and young adults in a non-forensic context, and females in this study were generally less likely to sign a false confession (Redlich, 2000).

Research using the Kassin and Kiechel paradigm discussed above with undergraduate students found a tendency for females to falsely confess more than males, although this difference was not significant (Klaver et al., 2008). However, when the plausibility of the alleged mistake was high (e.g., greater likelihood that the mistake could have accidentally occurred), females falsely confessed at a much higher rate than male; 65% versus 31%, respectively (Klaver et al., 2008). The authors suggest that these differences may be attributed to “gender differences in coping strategies used in stressful situations” and indicate that the relationship between gender and false confessions is likely to be complex and could be further explained by interactions between gender and additional variables, including gender of the interrogator and personality variables.

Research conducted in a forensic setting focused on gender differences among convicted adult offenders, revealing that females seemed more likely to have offered false confessions (Gudjonsson & Sigurdsson, 1994). Eleven percent of males in this

study claimed to have, at some point in their lives, made a false confession, whereas 31% of females claimed to have offered a false confession. Although the percentages differ dramatically, the number of women in this study was too small ($N_{\text{male}} = 216$; $N_{\text{female}} = 13$) to produce adequate statistical power, and statistical analyses were not significant. Another study also found that adult female inmates were more likely to offer false confessions, although these findings were not significant either ($N_{\text{male}} = 466$; $N_{\text{female}} = 43$) (Sigurdsson & Gudjonsson, 1996). Although both of these studies examined gender differences within forensic populations, the participants in the studies were adults. No study has examined false confessions with a juvenile forensic population.

1.5.2 Gender Differences in Suggestibility

Very little research has examined gender differences in interrogative suggestibility with either adult or adolescent populations (Calicchia & Santostefano, 2004). Further, the little research on gender differences in suggestibility has yielded mixed results.

In an adult population, females were found to be less suggestible and more accurate than males in recalling events in an eyewitness context (Lipton, 1977). Other research with an adult population has suggested that gender differences in suggestibility vary depending on the context. According to Powers, Andriks, and Loftus (1979), females were less suggestible about “female-oriented” details, such as women’s clothing, and males were less suggestible about “male-oriented” details, such as surroundings of the offense. The gender orientation of the details was determined by

using a preliminary procedure designed to measure which details men and women were more likely to notice.

Some very early research examining children's gender differences in suggestibility in non-interrogative contexts indicated that females were more suggestible than males (Stern, 1910). Research conducted with preschool aged children found that boys displayed more aggressive and oppositional behaviors than did girls, and the researchers proposed that, as a result, boys may cooperate less with or be less likely to "please" authority figures than girls. (McFarlane, Powell, & Dudgeon, 2002). Recently, Calicchia and Santostefano (2004) looked at gender differences in suggestibility while varying modes of perception of a stimulus (i.e., auditory, visual, and multimodal), finding that girls were more suggestible only when 10 to 12 year old participants viewed a video (multimodal perception). No gender differences were apparent when either a verbal stimulus or a visual stimulus was used.

Other studies indicated that girls are less suggestible than boys. For example, Redlich (2000) found that females (ages 12-13, 15-16, and 18-26) were generally less suggestible than their male counterparts in an experiment in which participants were accused of crashing a computer. These results are particularly interesting in light of the previous research that either found no gender differences in suggestibility or that females were more suggestible than males.

It is important to note that none of these studies, whether conducted with adults or with children, examined individuals in a forensic/correctional population.

1.5.3 Gender Differences in the Juvenile Justice System

Increased involvement of girls in the juvenile justice system. The lack of research on females and gender differences within the juvenile justice system is not unique to the areas of suggestibility and false confessions. Nonetheless, recent statistics indicate an increase in the number of adolescent female offenders in the juvenile system. Over one-quarter (29%) of juvenile arrests in 2002 involved a female offender (Office of Juvenile Justice and Delinquency Prevention [OJJDP], 2004), compared with 19% in 1988 (Scahill, 2000). Between 1988 and 1997, the number of delinquency cases involving girls increased 83% and has continued to rise since then (Scahill, 2000).

Adolescent girls represent the fastest growing population in the justice system (Scahill, 2000). Between 1980 and 2000, the male juvenile Property Crime Arrest Rate Index (includes offenses of burglary, larceny-theft, motor-vehicle theft, and arson) decreased 46%, while the female juvenile rate increased 3% (OJJDP, 2002a). The 2000 Violent Crime Arrest Rate Index (includes offenses of murder, nonnegligent manslaughter, forcible rape, robbery, and aggravated assault) for female youth was 66% above where it was in 1980; the 2000 rate for male youth was 16% below where it was in 1980 (OJJDP, 2002b). Arrest rates for girls increased by 18.8% between 1992 and 2001, while it decreased by 9.2% for males (Federal Bureau of Investigation, 2001). This increase in arrest rates is especially significant to this proposed study because the time of arrest is when *Miranda* waivers and false confessions are likely to occur. These statistics illustrate the increased involvement of girls in the juvenile justice system over recent years. The alarming rate at which girls have become increasingly involved in the justice system, in comparison to boys, suggests the need to address potential gender differences in adolescents entering the juvenile justice system.

Gender differences in mental health symptoms. Prevalence rates of mental disorders in the female juvenile justice population range across studies, from 50% (Wasserman, McReynolds, Ko, Katz, & Carpenter, 2005) to 100% (Myers, Burket, Lyles, Stone, & Kempf, 1990). Recently, Goldstein, Arnold, and colleagues (2003) reported that girls in the justice system most often exhibit depression, anxiety, substance abuse, suicide ideation and self-mutilation, conduct disorder, and oppositional defiant disorder.

Adolescent female offenders differ from their male counterparts, and one of the most noteworthy differences is that girls in the juvenile justice system display significantly more mental health problems than do boys (Timmons-Mitchell et al., 1997). In addition, girls are more often diagnosed with comorbid mental health problems (Grisso, 1999).

Several recent studies have examined the differences in mental health problems experienced by boys and girls in the juvenile justice system. Teplin, Abram, McClelland, Dulcan, and Mericle (2002) examined gender differences in mental health in a large sample (N = 1,829) of male and female youth (ages 10-18) at intake into a detention center. Overall, nearly three-quarters of females met criteria for at least one disorder, whereas two-thirds of males met criteria for at least one disorder. Females were more likely than males to meet diagnostic criteria for the following disorders: major depressive episode, dysthymia, panic disorder, separation anxiety disorder, overanxious disorder, generalized anxiety disorder, obsessive-compulsive disorder, attention-deficit/hyperactivity disorder [ADHD], oppositional-defiant disorder, conduct disorder, alcohol use disorder, and “other” substance use disorder, which included

substance use other than alcohol and marijuana. Teplin and colleagues (2002) further stated that the rates of mental health symptoms reported in the study may underestimate the actual rates for several reasons: the sample did not include youth who had been released, youth who had been diverted to the mental health system, and youth who had been charged with less serious offenses not requiring detention. In addition, the authors indicated the likelihood that youth often underreport symptoms.

Wasserman and colleagues (2005) considered gender differences among youth (ages 10-17) who had been referred to probation. Boys and girls reported similar levels of symptoms of disruptive behavior disorders and substance use disorders. However, within the disruptive disorder and substance use disorder clusters, girls were more likely to report symptoms of oppositional defiant disorder, alcohol dependence, other substance abuse (other than alcohol and marijuana), and other substance dependence (other than alcohol and marijuana). Regarding the anxiety and affective disorder clusters, females were significantly more likely than males to report symptoms of anxiety disorders (i.e., agoraphobia, obsessive-compulsive disorder, panic disorder, posttraumatic stress disorder [PTSD], social phobia, specific phobia, and separation anxiety) and affective disorders (i.e., hypomanic episode, major depressive disorder, and dysthymic disorder). Wasserman and colleagues (2005) also reported that females who were charged with a violent offense (i.e., rape, assault, robbery, arson, homicide, and all weapons charges) were three to five times more likely than males to report symptoms of anxiety.

Abram, Teplin, McClelland, and Dulcan (2003) focused specifically on gender differences in comorbidity among juvenile offenders by examining youth (ages 10-18)

during intake at a detention center. More females than males met criteria for two or more disorders, including major depressive, dysthymic, manic, psychotic, panic, separation anxiety, overanxious, generalized anxiety, obsessive-compulsive, attention-deficit/hyperactivity, conduct, oppositional defiant, alcohol, marijuana, and other substance. Because conduct disorder and substance use disorder are so prevalent in the juvenile justice population, the authors examined comorbidity when these two disorders were excluded and still found that significantly more females (33.6%) than males (24.2%) were likely to have two or more disorders (Abram et al., 2003).

In addition to these broad studies that have focused on gender differences in mental health symptoms, several studies have also reported prevalence rates of specific disorders. Prevalence rates of anxiety range between 29% (Wasserman et al., 2005) and 72% (Timmons-Mitchell et al., 1997) in this population, depending on how anxiety is defined in the study. In addition, prevalence rates of depression range between 21.6% (Teplin et al., 2002) and 70% (Timmons-Mitchell et al., 1997) in this population. Goldstein, Arnold, et al. (2003) indicated that the estimates produced by most studies fall in the upper end of these ranges.

In the female juvenile justice population, substance abuse commonly plays a major role in the commitment of crimes, as well as in mental health issues. For example, 60% to 70% of girls aged 15 to 20 tested positive for drugs at the time of their arrest (National Institute of Justice, 1998). Further, Prescott (1998) indicated that 60% to 87% of girls in the system were in need of substance abuse treatment. One study found that 63.6% of girls in the juvenile justice system met criteria for alcohol dependence, compared with 31.6% of boys (Ulzen & Hamilton, 1998). Girls using

substances were more likely to engage in risky behaviors, including gang participation, unsafe sexual practices, and truancy (Acoca & Dedel, 1998), all of which are likely to lead to arrest. In addition, continued use of substances has been associated with higher rates of recidivism (e.g., see Roy, 1995).

A large number of girls in this population also met criteria for attention deficit/hyperactivity disorder (ADHD) (e.g., see Teplin, 2002), which is more prevalent among girls than boys in the juvenile justice system, and may also heighten suggestibility. Teplin et al. (2002) found that 21.4% of female juveniles met criteria for ADHD, compared with 16.6% of male juveniles.

Finally, abuse history is prevalent among girls in the juvenile justice system and may be a contributing factor to heightened suggestibility. In a recent survey of adolescents who were placed in detention, 68% of girls reported a history of sexual abuse (versus 9.9% of boys) and 73% reported a history of physical abuse (versus 46.8% of boys) (Acoca & Dedel, 1998). Research has suggested that a history of abuse is correlated with other mental illness (Ackerman, Newton, McPherson, Jones, & Dykman, 1998), and Goldstein, Arnold, and colleagues (2003) found that girls commonly suffer from problems related to histories of sexual and physical abuse. For example, the high rates of trauma and the frequency of abuse experienced by this population place these girls at increased risk for developing PTSD (Goguen, 2001; Ariga, Uehara, Takeuchi, Ishige, Nakano, & Mikuni, 2008).

Gender differences in IQ. A recent study examining gender differences in IQ found that girls in the juvenile justice system had significantly lower IQ scores than did boys (Bove, Goldstein, Appleton, & Thomson, 2003). These findings were based on

data collected from 4,951 (4,647 males, 304 females) delinquent youth (ages 10-21) entering the juvenile justice system in Philadelphia between 1994 and 2001. In contrast, Viljoen and Roesch (2005) found that girls in the juvenile justice system had higher IQ scores than did boys (J. L. Viljoen [personal communication, April 22, 2005]). The 152 (79 males, 73 females) youth (ages 11-17) in this sample were obtained from a detention facility in the state of Washington. The two studies produced IQ scores that varied by three and six points respectively.

CHAPTER 2: THE CURRENT STUDY

Previous research has found no gender differences among adolescents' *Miranda* comprehension (Grisso, 1981). However, there is some evidence to suggest that there may be differences in interrogative suggestibility, which may, in turn, lead to differences in false confessions. To date, there has been no research examining gender differences in suggestibility among adolescent offenders.

Although research examining gender differences among non-offending adolescents suggested that males are more suggestible than females (Redlich, 2000), these findings may not be applicable to forensic populations. Girls involved in the justice system differ substantially from both girls in the community and boys in the juvenile justice system. For example, compared with girls in the general population and boys in both the general and juvenile justice populations, girls in the juvenile justice system tend to show more mental illness (e.g., see Coccozza & Skowrya, 2000; Teplin et al., 2002) and may have lower IQ scores (Bove et al., 2003). Given these gender differences, null findings of gender differences in suggestibility obtained in the general adolescent population may not generalize to youth involved with the legal system.

Two studies did suggest the possibility of gender differences in false confession rates with an adult criminal population (Gudjonsson & Sigurdsson, 1994; Sigurdsson & Gudjonsson, 1996). However, the small sample of women in these studies resulted in statistical power too low for meaningful analyses of gender differences.

Similarly, there has been no empirical examination of the role of mental health in suggestibility or in its relationship with youth offering false confessions.

In the last decade, there has been a significant increase in girls' involvement in the juvenile justice system. This increased involvement has prompted researchers to focus more attention on the female juvenile offender population. Research findings suggest that adolescent female offenders differ from their male counterparts, and several factors that have been associated with heightened suggestibility have been found at higher rates among girls in the juvenile justice system than among boys.

Research examining the relationship between suggestibility and intelligence has consistently demonstrated a negative correlation between these two characteristics (see e.g., see Gudjonsson, 1983; Clare & Gudjonsson, 1993). However, there is conflicting research regarding gender differences in IQ among juvenile justice youth (Bove et al., 2003; Viljoen & Roesch, 2005; J. L. Viljoen [personal communication, April 22, 2005]). To determine the applicability of those IQ-related findings to the proposed participants, we examined the quality of the samples and the similarity between those samples and our own.

First, the study by Bove and colleagues (2003) used a sample of 4,951 youth, with 304 girls. In contrast, the study by Viljoen and Roesch (2005) examined data from only 152 youth, with 73 girls. Thus, if all other sample characteristics were equal, the former study should have greater external validity. Furthermore, all other sample characteristics were not equal; ethnicity of youth in the Bove et al. (2003) study was much more similar to youth in the current study. The sample was 89% minority, whereas the Viljoen and Roesch sample (2005) was only 40% minority; our anticipated sample was largely minority, as well. Finally, the use of a Philadelphia juvenile justice sample in the Bove et al. (2003) study improves the generalizability of findings to the

current study, which also took place in juvenile justice facilities in Philadelphia. The Viljoen and Roesch study took place in a detention facility in Washington State, with a more rural, higher SES population based on available U.S. Census Bureau data (U.S. Census Bureau, 2000a; U.S. Census Bureau, 2000b). In sum, in light of the larger sample size, greater ethnic similarity, and identical location of the Bove et al. (2003) study and the current study, the findings by Bove and colleagues should better generalize to the current sample. Therefore, it was expected that girls will have lower IQs than do boys. Because lower intelligence has been correlated with heightened suggestibility, the anticipated lower IQ of girls in the juvenile justice system suggests that girls in the juvenile justice system may be more suggestible than boys.

In addition to gender differences in intelligence, research has focused on gender differences in mental health symptoms in the juvenile justice system. For example, Teplin and colleagues (2002) and Wasserman and colleagues (2005) recently found that girls were more likely to report anxiety-related symptoms. Prevalence rates of anxiety among girls in the juvenile justice system have ranged from 29% (Wasserman et al., 2005) through 72% (Timmons-Mitchell et al., 1997). Furthermore, it is likely that levels of anxiety are higher during interrogations than during research studies, and research suggests that heightened levels of stress may exacerbate mental health symptoms (Deardorff, Gonzales, & Sandler, 2003). A positive relationship was found between anxiety and suggestibility (Gudjonsson, 1983; Gudjonsson, 1988), making girls more likely to be suggestible than boys.

Females in the juvenile justice system also reported more symptoms associated with alcohol use and dependence than did their male counterparts (e.g., see Teplin et

al., 2002; Wasserman et al., 2005) and the relationship between suggestibility and alcohol use has been studied. Santtila and colleagues (1999) found that high alcohol doses during interrogations correlated with decreased suggestibility, in terms of yielding to leading questions. Santtila et al. (1999) suggested that one possible explanation for this relationship was that alcohol decreased levels of anxiety during interrogation which, in turn, decreased levels of suggestibility. However, the authors cautioned that intoxication during interrogation may not yield the same results as would intoxication during the time when the offense occurred. Therefore, the study does not address levels of interrogative suggestibility in relation to either alcohol use at the time of the offense or to symptoms of chronic alcohol use.

Furthermore, the findings of the effects of alcohol in an adult non-forensic sample may not necessarily translate directly to a juvenile justice population. The relationship between suggestibility and substance use is not absolutely clear, and there are several factors related to substance use to consider. Substance use is likely to impair judgment (Wierson, Forehand, & Frame, 1992). According to the Gudjonsson and Clark (1986) model of interrogative suggestibility, individuals who are more likely to employ resistant coping strategies by critically analyzing the situation during an interrogation are less likely to be suggestible. Sigurdsson and Gudjonsson (1994) suggested that alcohol may increase an individual's confusion during a police interrogation, which could impair her ability to think and make rational decisions. Therefore, if an individual's judgment is impaired due to substance use, it is likely that her level of suggestibility will be increased. Because girls in the juvenile justice system

are more likely than boys in the system to report alcohol use (Teplin et al., 2002; Wasserman et al., 2005), they may also be at greater risk for heightened suggestibility.

Depression is the most frequently diagnosed psychiatric disorder in the female juvenile justice population (Timmons-Mitchell et al., 1997). Depressed adolescents often exhibit impaired cognitive processes (Weiss & Garber, 2003), which are likely to heighten levels of suggestibility, according to Gudjonsson and Clark's (1986) model of interrogative suggestibility, which indicates that an ability to critically analyze a situation is associated with lower suggestibility. In addition, depressed youth are more likely than non-depressed youth to exhibit greater levels of impulsivity (Wierson et al., 1992). Gudjonsson (1984) found a positive relationship between impulsivity and increased suggestibility following negative pressure. Only one study has directly examined the relationship between suggestibility and depression, but this study focused on depressed adults currently under the effects of medication (Sigurdsson et al., 1994); therefore, the findings do not necessarily translate to a juvenile population. The authors also discuss the theoretical relationship between depression and decreased memory capacity and suggest that, because suggestibility is related to poor memory recall (Gudjonsson, 1983), depression and suggestibility should also be related.

The relationship between impulsivity and suggestibility is also significant given the number of girls who meet diagnostic criteria for ADHD in the juvenile justice system. According to the *Diagnostic and Statistical Manual of Mental Disorders*, inattention, hyperactivity, and/or impulsivity are all characteristic of ADHD (American Psychiatric Association, 1994). Lueger and Gill (1990) found that impairments associated with ADHD included difficulty with various problem-solving tasks, and

Goldstein, Olubadewo, Redding, and Lexcen (2005) also suggested that ADHD is associated with problems in cognitive functioning. These cognitive impairments associated with ADHD, which is more common among female juveniles than their male counterparts (Teplin et al., 2002), may also place girls at risk for heightened suggestibility.

Low self-esteem is also more prevalent among girls than boys in the juvenile justice system (Acocha & Dedel, 1998). Increased problems associated with self-esteem are also likely to contribute to girls' heightened suggestibility, given the positive relationship between self-esteem and suggestibility (Singh & Gudjonsson, 1984).

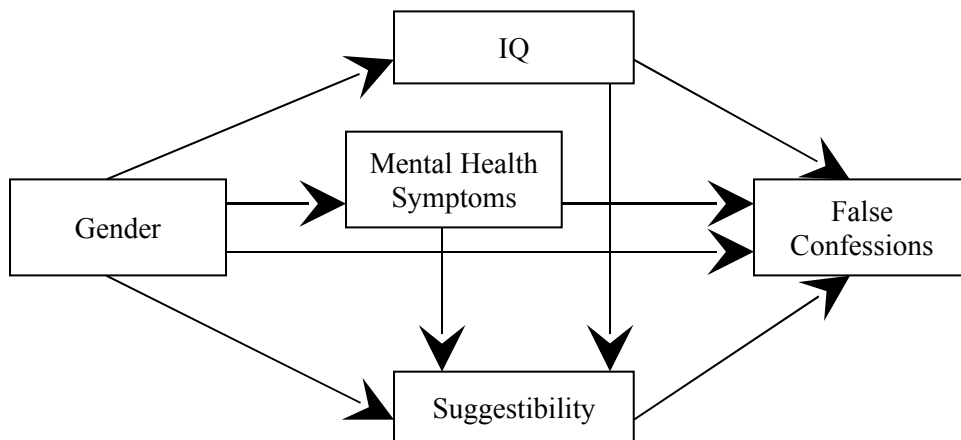
The current study examined gender differences in suggestibility among adolescent offenders. Because there is evidence to suggest a relationship between suggestibility and the offering of false confessions (Gudjonsson, 1991a), this study also examined the relationship between suggestibility and self-reported likelihood of adolescent offenders offering false confessions in hypothetical interrogative situations.

2.1 Hypotheses

2.1.1 Primary Research Question

Although there will be no gender differences in *Miranda* comprehension, girls will be more likely to say that they would offer false confessions. Suggestibility will mediate the relationships between: (1) gender and self-reported likelihood of offering false confessions; (2) mental health symptoms and false confessions; and (3) IQ and false confessions. Mental health symptoms and IQ will each mediate the relationships

between gender and suggestibility and between gender and false confessions.



2.1.2 Preliminary Hypotheses.

1. There will be no gender differences in *Miranda* comprehension.
2. There will be gender differences in mental health symptoms, with girls having more severe depressed-anxious and alcohol/drug use symptoms than boys.
3. There will be gender differences in IQ, with girls having lower IQs than boys.
4. There will be gender differences in suggestibility, with girls being more suggestible than boys.
5. There will be gender differences in self-reported likelihood of offering false confessions, with girls reporting greater false confession likelihoods.

2.1.3 Primary Hypotheses.

1. Mental health symptoms (specifically, depressed-anxious and alcohol/drug use) will mediate the relationship between gender and suggestibility.
2. IQ will mediate the relationship between gender and suggestibility.
3. Suggestibility will mediate the relationship between gender and self-reported likelihood of offering false confessions.
4. Suggestibility will mediate the relationship between mental health symptoms (specifically, depressed-anxious and alcohol/drug use) and self-reported likelihood of offering false confessions.
5. Suggestibility will mediate the relationship between IQ and self-reported likelihood of offering false confessions.
6. Mental health symptoms (specifically, depressed-anxious and alcohol/drug use) will mediate the relationship between gender and self-reported likelihood of offering false confessions.
7. IQ will mediate the relationship between gender and self-reported likelihood of offering false confessions.

CHAPTER 3: METHOD

The current study is part of a larger study conducted in Philadelphia, PA and Worcester, MA.

3.1 Participants

Data for the larger study was collected from 139 boys and 44 girls in pre- and post-adjudication facilities in PA and MA. The current study used the data only from those youth who have completed the *Gudjonsson Suggestibility Scale*, resulting in a sample of 80 participants (54 boys, 26 girls), all from PA. Participants ranged in age from 13 to 19 years (see Figure 3). The sample was ethnically and racially diverse (70% African American; 10% Caucasian; 15% Hispanic; and 3.8% other [includes bi-racial]). The study was conducted with adolescents housed in Philadelphia's juvenile detention (N = 71) center and those attending a post-adjudication residential program in Coatesville, PA (N = 9). To be included in the study, participants were referred by the Defender Association. Although participants as young as 11 were sought, only participants between the ages of 13 and 19 were included in this study. Individuals ages 18 and 19 were required to consent to participating in the study. Parental/guardian consent was sought for youth under the age of 18. If written parental consent was obtained, youth assent was sought. If a parent/guardian was unable to be reached, parental consent was waived, and the youth could assent to participating in the study in the presence of a "participant advocate," an interested facility staff member who documented that assent appeared voluntary and uncoerced, and that the youth seemed to understand the assent procedures.

Individuals were excluded from the study if they refused to participate, did not speak English fluently, or were experiencing florid psychotic symptoms at the time of consent/assent or assessment. Additionally, individuals who had open cases dealing with confessions or *Miranda* waivers were excluded from the study.

3.2 Measures

3.2.1 Demographic Questionnaire

A brief demographic questionnaire was administered. Participants were asked to provide certain information about themselves, such as age, number of parents living at home, history of arrest and detention, and recollection of the *Miranda* warning.

3.2.2 Gudjonsson Suggestibility Scale

The *Gudjonsson Suggestibility Scale (GSS)* was used to measure an individual's susceptibility to suggestions. Specifically, the *GSS* measures individuals' tendencies to yield to misleading questions and to change answers in response to negative feedback. There are two parallel forms of the *GSS* (*GSSI* and *GSS2*): the two forms are identical in terms of format, administration, and scoring, but the *GSSI* is more appropriate for British participants and the *GSS2* is more appropriate for American participants. The present study used the *GSS2*.

To administer the *GSS2*, a story is read to the participant about a couple saving a boy from a bicycle accident. After the story is read, the participant is asked to recall as much of the story as he can remember, and the investigator writes down the recollection verbatim. This measure of immediate recall serves as an indicator of the participant's memory, attention, and concentration. There are a total of 40 "distinct

ideas” that can be recalled, and one point is given for each idea that is accurately recalled, resulting in a total possible immediate recall score of 40.

Following the immediate recall task, there is a delay of approximately 50 minutes before participants are once again asked to recall details of the story. Again, the investigator writes down the participant’s recollection verbatim. On the delayed recall task, one point is given for each distinct idea recalled, for a total possible score of 40.

After delayed recall, the participant is asked a series of 20 questions about the story, 15 of which are subtly misleading. The Yield 1 score is obtained by adding the number of questions that the participant yielded to by giving in to the leading questions presented. The possible total score is 15.

Regardless of how the participant answers the 20 questions, he/she is then given the following negative feedback: “You have made a number of errors. It is therefore necessary to go through the questions once more, and this time try to be more accurate.” The same 20 questions are then asked a second time. A Yield 2 score is obtained by adding the number of questions the participant yielded to during the second round of questioning, resulting in a possible total score of 15. Yield 2 scores may be useful in providing the investigator with information regarding the types of changes that have occurred following the negative feedback.

A Shift score is also calculated after the 20 questions are re-administered. The Shift score represents the number of items on which the participant changed answers following the negative feedback, with a possible total score of 20.

The Yield 1 and Shift scores can be combined to produce a Total score, which is supposed to indicate a participant's overall level of suggestibility. A Total score may range from 0 to 35.

Interrater reliability is excellent for the *GSS2* (Clare, Gudjonsson, Rutter, & Cross, 1994), with the following intraclass correlation coefficients (ICC): Yield 1 (.996); Yield 2 (.993); Shift (.989); and Total (.993).

Construct validity has been established with correlations between suggestibility, as measured by the *GSS*, and constructs with which suggestibility is theoretically associated (Gudjonsson, 1997). The strongest relationships were found between intelligence and memory, in both children and adults (Gudjonsson, 1997). The *GSS* has also demonstrated predictive validity. "Resisters" and "false confessors" were compared and "false confessors" scored significantly higher than "resisters" on the suggestibility measures (Gudjonsson, 1991a).

3.2.3 Miranda Rights Comprehension Instruments – II

The *Instruments for Assessing Understanding and Appreciation of Miranda Rights* were originally developed for research and public policy purposes, to examine youths' capacities to understand and appreciate *Miranda* rights, and to compare these abilities to those of adult offenders (Grisso, 1998). Despite the original intention of the instruments, they have been adopted for and used widely as clinical tools in psychological evaluations conducted to determine both youths' and adults' capacities to waive their *Miranda* rights (Grisso, 1998).

The *Miranda Rights Comprehension Instruments – II (MRCI-II)* (Goldstein, Condie, & Grisso, in preparation) are an updated version of the earlier measures

(Grisso, 1998). Although the original instruments (Grisso, 1998) are widely recommended in assessing capacity to waive *Miranda* rights (Lally, 2003), Condie et al. (in preparation) recently revised the instruments in order to maintain their applicability in the 21st century. Several changes are reflected in the revised instruments. First, the language used in the instruments was updated to reflect language more commonly used in jurisdictions throughout the U.S. today rather than the more complicated version of the warning used in St. Louis County, Missouri, in the 1970s, the place and time Grisso developed the original instruments. Second, a fifth *Miranda* prong was added to the relevant instruments. When the original instruments were developed, a typical *Miranda* warning contained four prongs. The fifth prong, included in *Miranda* warnings in most jurisdictions today, states that a suspect may stop questioning at any time to request an attorney (Oberlander, 1998). Third, a fifth instrument, *Perceptions of Coercion during the Holding and Interrogation Process (P-CHIP)*, was added to examine a juvenile's self-reported likelihood of offering a false confession in response to police interrogation strategies. The *MRCI-II* is comprised of the following five measures:

(a) *Comprehension of Miranda Rights – II*. The *Comprehension of Miranda Rights – II (CMR-II)* assesses a participant's general understanding of the five individual prongs of the *Miranda* warning. Individuals are asked to paraphrase each of the five *Miranda* warnings. Responses are scored as 0 (inadequate response), 1 (questionable response), or 2 (adequate response) points per item, for a total possible score ranging from 0 to 10 points.

(b) *Comprehension of Miranda Rights – Recognition – II*. The *Comprehension of Miranda Rights – Recognition – II (CMR-R-II)* also assesses general understanding of the five *Miranda* prongs, but this measure relies on recognition, a task that does not require verbal expressive abilities. In this section, individuals are asked to compare three pre-constructed sentences to the individual *Miranda* warnings and to indicate whether each sentence has the same meaning as a designated warning statement. Participants receive 1 point for a correct response or 0 points for an incorrect response, for a possible total score of 15.

(c) *Function of Rights in Interrogation*. The *Function of Rights in Interrogation (FRI)* assesses an individual's appreciation of the significance of the *Miranda* warnings in legal circumstances. The individual is shown a picture of a legal situation and given a brief description of the scenario, such as a picture of a boy sitting with his lawyer, and a brief statement about the boy being detained. The individual is then asked questions about the presented scenarios to assess his/her appreciation of the significance of the *Miranda* rights. Three areas of significance are assessed by the *FRI*: (1) nature of the interrogation; (2) right to counsel; and (3) right to silence. Responses are scored 0 (inadequate response), 1 (questionable response), or 2 (adequate response), with a possible total score ranging from 0 to 30. This instrument has not been modified from its original version.

(d) *Comprehension of Miranda Vocabulary – II*. The *Comprehension of Miranda Vocabulary – II (CMV-II)* assesses an individual's understanding of critical words used in typical *Miranda* warnings. Individuals are asked to define 18 words, and

responses are scored as 0 (inadequate response), 1 (questionable response), or 2 (adequate response), with a possible total score ranging from 0 to 36.

(e) *Perceptions of Coercion during the Holding and Interrogation Process*. The *Perceptions of Coercion during the Holding and Interrogation Process (P-CHIP)* assesses an individual's self-reported likelihood of providing information or offering false confessions in response to various hypothetical situations, based on common police practices, such as those suggested in *Criminal Interrogations and Confessions* (Inbau, Reid, and Buckley, 1986). Participants are read a story about a boy or a girl (matching gender to the individual being assessed), who is the same age as the individual being assessed, and is being questioned by police about a crime. The story serves as the foundation for 26 hypothetical interrogation techniques. The hypothetical situations presented to the individual contain several different types of pressure to confess: positive (e.g., "A police detective tells Joe/Joan he used to be just like Joe/Joan, having the same problems. A police detective acts very kindly towards Joe/Joan."), negative (e.g., "The police get in Joe/Joan's face when they question him/her. A police detective interrupts Joe/Joan every time s/he says s/he did not commit the crime."), and parental (e.g., "Joe/Joan's mother and father insist s/he tell the police what happened."). After each hypothetical situation is presented, three questions are asked. The first question asks the individual to imagine he or she is the juvenile in the story and is guilty of the crime and to indicate whether the juvenile should say nothing to the police, should talk to the police but not about the crime, or should talk to the police about the crime. These 26 questions form Part A (true confessions). Responses in this subscale are scored as follows: say nothing to the police

(2 points), talk to the police but not about the crime (1 point), or talk to the police about the crime (0 points), for a possible range of scores between 0 and 52. The second question after each hypothetical situation asks the individual to rate how stressed the juvenile in the hypothetical is feeling on a scale from 1 (*very relaxed*) to 6 (*very stressed*), for a possible range of scores from 26 to 156. These questions make up Part B (stress). The third question following each hypothetical asks individuals to assume the juvenile in the story did not commit the crime and to rate how likely he/she would be to falsely confess. Responses are based on a scale of 1 (*definitely no*) to 6 (*definitely yes*), for a possible range of scores from 26 to 156. This third set of questions makes up Part C (false confessions).

Test-retest reliability was established with 55 boys in a post-adjudication juvenile facility. The time period between the two tests ranged from 3 days to 1 month. Test-retest reliability for each of the *CMRI-II* instruments was: *CMR-II* ($r = .61, p < .01$); *CMR-R-II* ($r = .75, p < .01$); *FRI* ($r = .58, p < .01$); *CMV-II* ($r = .77, p < .01$); *P-CHIP*, Part A ($r = .76, p < .01$); *P-CHIP*, Part B ($r = .71, p < .01$); and *P-CHIP*, Part C ($r = .77, p < .01$) (Goldstein, Condie, Kalbeitzer, & Mesiarik, in preparation).

Interrater reliability was determined for the *CMR-II*, *CMV-II*, and *FRI*, which are the only instruments that require subjective scoring (Goldstein, Condie, Kalbeitzer, et al., in preparation). For the *CMR-II*, an ICC of .97 was obtained, and the average Kappa coefficient for the individual *CMR-II* items was .95. For the *CMV-II*, an ICC of .98 was obtained, and the average Kappa coefficient for the *CMV-II* items was .93. For the *FRI*, an ICC of .99 was obtained, and the average Kappa coefficients for the individual *FRI* items was .98 (Goldstein, Condie, Kalbeitzer, et al., in preparation).

Content validity was based on the concept that the wording in the instruments parallels common versions of the Miranda warnings used throughout the country and hypothetical situations presented are based on actual situations that potentially arise (Goldstein, Condie, Kalbeitzer, et al., in preparation). Construct validity can be established by the relationship between *Miranda* comprehension and intelligence and age (Goldstein, Condie, et al., 2003), constructs with which comprehension should be somewhat, but not entirely, associated. Regression analyses indicated that verbal IQ and age independently predicted *Miranda* comprehension ($b_{age} = .07, SE_{age} = .02, p < .01$; $b_{VIQ} = .01, SE_{VIQ} = .002, p < .01$). █

3.2.4 Massachusetts Youth Screening Instrument – Second Version

The *Massachusetts Youth Screening Instrument – Second Version (MAYSI-2)* (Grisso & Barnum, 2000) is a 52-item self-report questionnaire designed to quickly identify potential mental health problems. The questionnaire was designed for use with adolescents between the ages of 12 and 17, who are entering a juvenile justice facility. The *MAYSI-2* is a paper-and-pencil questionnaire that asks juveniles to circle “yes” or “no” to indicate whether an item has been true for them “within the past few months.” The *MAYSI-2* can be administered by non-clinical staff and takes approximately 10 minutes to administer. In the present study, the *MAYSI-2* questionnaires were administered by the detention center staff as part of standard intake procedures. *MAYSI-2* results were provided to the researchers by facility staff.

Scoring is completed by totaling the number of positively endorsed items on each of the *MAYSI-2* scales. For clinical purposes, each scale receives a separate score, and there is no total score. The *MAYSI-2* includes the following scales: Alcohol/Drug

Use (frequent use of alcohol/drugs; risk of substance abuse), Anger-Irritable (experiences frustration, lasting anger, moodiness; risk of angry reaction, fighting, aggressive behavior), Depressed-Anxious (experiences depressed and anxious feelings; risk of depression or anxiety disorders), Somatic Complaints (experiences bodily aches/pains associated with distress; risk of psychological distress not otherwise evident), Suicide Ideation (thoughts and intentions to harm oneself; risk of suicide attempts or gestures), Thought Disturbance (for use only with boys; unusual beliefs and perceptions; risk of thought disorder), and Traumatic Experiences (questions refer youths to "ever in the past," not "in the past few months"; lifetime exposure to traumatic experiences, such as abuse, rape, and observed murder). Scores on each of the scales, except for Traumatic Experiences, are compared to the cut-off scores provided in the manual to determine whether scale scores fall in either the "caution" or "warning" range. Scores higher than the "caution" cut-off indicate that the individual scored higher than approximately two-thirds of the juvenile justice youth in the normative data set. The "warning" range includes scores higher than the cut-off score, scores at which 5-15% of youths in the normative juvenile justice system data set scored. Cut-off scores are used to alert staff of potential problems that are in need of follow-up.

Grisso, Barnum, Fletcher, Cauffman, and Peuschold (2001) assessed the test-retest reliability of the *MAYSI-2*. Overall, ICCs were strong for the subscales, ranging from .73 to .89, although they were somewhat weaker for others (Somatic Complaints, .53 for boys and .66 for girls; Angry-Irritable, .64 for girls; and Thought Disturbance, .67 for boys). However, Grisso and colleagues (2001) noted that average ICCs for the

MAYSI-2 were .74, which is comparable to other measures of adolescent clinical symptoms.

Grisso and colleagues (2001) assessed concurrent validity of the *MAYSI-2* by calculating correlations between the *MAYSI-2* scales and the clinical scales of the *Millon Adolescent Clinical Inventory (MACI)* (Millon, 1993), a measure of clinical symptoms and personality characteristics, and the clinical scales of the *Child Behavior Checklist – Youth Self-Report (YSR)* (Achenbach, 1991), a measure of various problem areas. Overall, the *MAYSI-2* scales correlated with their conceptually parallel scales on both the *MACI* and the *YSR* (Grisso et al., 2001).

3.2.5 Wechsler Abbreviated Scale of Intelligence

The *Wechsler Abbreviated Scale of Intelligence (WASI)* is a standardized measure of intellectual functioning (The Psychological Corporation, 1999), which measures both Verbal IQ and Performance IQ. Only the verbal scale, comprised of the Vocabulary and Similarities subsections, was used in this study because it is predictive of general cognitive abilities and is capable of providing a Verbal IQ, which is of primary importance in this study because it assesses skills which are theoretically related to *Miranda* comprehension. The Vocabulary subsection measures an individual's expressive vocabulary, verbal knowledge, and fund of information, and the Similarities subsection measures an individual's verbal concept formation, abstract reasoning ability, and general intellectual ability (The Psychological Corporation, 1999).

Interrater reliability of the *WASI* verbal scales is excellent: Vocabulary, $r = .98$; Similarities, $r = .99$ (The Psychological Corporation, 1999). Test-retest reliability is also strong for *WASI* Verbal IQ ($r = .92$) (The Psychological Corporation, 1999).

Content validity was established by calculating correlations between the *WASI* Verbal IQ with Verbal IQ scores produced by the *Wechsler Intelligence Scale for Children – Third Edition (WISC-III)* (The Psychological Corporation, 1991) ($r = .82$) and by the *Wechsler Adult Intelligence Scale – Third Edition (WAIS-III)* (The Psychological Corporation, 1997) ($r = .88$) (Psychological Corporation, 1999).

Construct validity was determined by examining correlations between the individual *WASI* subtests and the IQ scales. Correlations between the Similarities and Vocabulary subsections were high ($r = .75$). Similarly, correlations between the Similarities subsection and Verbal IQ ($r = .93$) and between the Vocabulary subsection and Verbal IQ ($r = .94$) were also high (The Psychological Corporation, 1999).

3.2.6 Measures Administered but Not Used in the Proposed Study

In addition to the measures described in this section, participants were also given selected portions of the *Wechsler Individual Achievement Test – Second Edition (WIAT-II)*, which is a standardized measure of achievement skills (The Psychological Corporation, 2001). However, this measure was used for the larger study and will not be addressed in any detail.

3.3 Procedures

The measures were administered to participants over the course of two sessions. Each session was approximately one-and-a-half hours long. There was a break between

sessions, and additional breaks were provided if requested by the participant. The two sessions could be administered on the same day or on two separate days. The entire length of assessment was approximately three hours. Participants were given a \$15 gift certificate to a local music store for participating in the study, whether or not they chose to complete the entire study.

During session 1, participants first completed the *MRCI-II*, including the five instruments (*CMR-II*, *CMR-R-II*, *FRI*, *CMV-II*, and the *P-CHIP*). Participants then provided information to complete the *Demographics Questionnaire*. The *Demographic Questionnaire* was administered following the *MRCI-II* to avoid educating participants about their *Miranda* rights prior to their completing the *MRCI-II*. Finally, participants were given the two verbal subtests of the *WASI* (Vocabulary and Similarities).

During session 2, participants completed the first portion of the *GSS*. Approximately 50 minutes must pass before administering the second portion of the *GSS*. Therefore, following the first portion of the *GSS*, the verbal *WIAT-II* items (Basic Reading, Spelling, Reading Comprehension, Listening Comprehension, Oral Expression, and Written Expression) were administered. Finally, participants completed the second portion of the *GSS*.

All youth entering juvenile justice facilities in Philadelphia complete the *MAYSI-2* upon admission. Results of the *MAYSI-2* were provided by the juvenile justice facility.

CHAPTER 4: METHOD OF ANALYSIS

4.1 Preparatory Analyses

Prior to evaluating the primary hypotheses, descriptive statistics were run to examine the characteristics of the sample. Correlations between age and the variables of primary importance in this study (gender, verbal IQ, mental health symptoms, suggestibility, and self-reported false confessions) were also examined. Given the strong relationships between age and suggestibility (e.g., see Richardson, Gudjonsson et al., 1995) and age and self-reported likelihood of offering false confessions (Goldstein, Condie, et al., 2003) that have been repeatedly identified in previous research, age was controlled for in all analyses.

Because regression results are only interpretable within the context of interactions and non-linear relationships, the data were checked for interactions and non-linear relationships prior to running all regression analyses. No interactions or non-linear relationships were found. Assumptions of linear regression (e.g., heteroskedasticity, multicollinearity, normality of error distribution) and assumptions of t-tests (e.g., normal distribution of means, homogeneity of variance) were also checked for. Only violations of the assumptions will be reported.

4.2 Preliminary Hypotheses

Independent samples t-tests were used to evaluate all preliminary hypotheses to check for differences between groups. Specifically, an independent samples t-test was used for each of the following preliminary analyses, with gender serving as the grouping variable and alpha set at .05. It was predicted that:

1. There would be no gender differences in *Miranda* comprehension.

Consistent with prior research examining Miranda comprehension (Goldstein, Condie, et al., 2003), all analyses were conducted using an overall *Miranda* comprehension score, which is a weighted average of the *CMR-II*, *CMR-R-II*, and *FRI*, the instruments that focus on general understanding of *Miranda*. Although *Miranda* instrument scores are not supposed to be aggregated for clinical use (because each instrument measures a different aspect of understanding and appreciation of rights), they may be combined for research purposes (Goldstein, Condie, et al., 2003). However, to be consistent with clinical applications, gender differences on each individual instrument were examined, as well.

2. There would be gender differences in mental health symptoms, with girls having more severe symptoms on the *MAYSI-2* depressed-anxious and alcohol/drug use scales than boys.

Boys' and girls' average scores on the *MAYSI-2* depressed-anxious and alcohol/drug use scales were compared.

3. There would be gender differences in verbal IQ, with girls having lower verbal IQ scores than boys.

Boys' and girls' verbal IQ scores from the *WASI* were compared.

4. There would be gender differences in suggestibility, with girls being more suggestible than boys.

Total suggestibility scores were compared, and three supplemental analyses were conducted to examine gender differences in specific types of suggestibility (shift, yield 1, and yield 2 scores). All suggestibility scores were obtained using the *GSS2*.

5. There would be gender differences in *P-CHIP* scores of self-reported likelihood of offering false confessions, with girls reporting greater false confession likelihood.

Boys' and girls' average scores on Part C of the *P-CHIP* were compared.

4.2.1 Power Analysis for the Preliminary Hypotheses.

For the preliminary hypotheses, with 54 boys and 26 girls (and only 24 boys and 6 girls for analyses with *MAYSI-2* scores), an alpha of .05, and effect sizes ranging from 0 to 0.75, power ranged between .05 and .78. Because of the insufficient power for these analyses, interpretation of results relied on effect size estimates and, although significance is reported for completeness, discussion will focus on effect sizes.

4.3 Primary Hypotheses

In the primary hypotheses of the current study, mental health symptoms, verbal IQ, and suggestibility were all expected to function as mediators of the relationships between several variables (gender, mental health symptoms, verbal IQ, suggestibility, and likelihood of offering false confessions).¹ Because only six girls completed the *MAYSI-2*, analyses of gender differences in mental health symptoms as measured by the *MAYSI-2* should not be interpreted, but may be used as bases for future hypotheses.

Baron and Kenny's (1986) four-step approach to test for mediation, using a series of regression analyses, was used. Age was controlled for in each step of each mediation analysis. It was predicted that:

1

All analyses were repeated using only the participants from the primary detention facility to determine if the results from the participants at the secondary facility affected the overall findings. In addition, analyses were also run excluding participants whose IQ scores were in the mentally retarded range ($IQ \leq 70$). However, because neither set of additional analyses affected the overall results, results were reported for the larger sample including participants from both facilities and regardless of IQ.

1. Mental health symptoms (specifically, *MAYSI-2* depressed-anxious and alcohol/drug use scores) would mediate the relationship between gender and suggestibility.

Evaluation of this primary hypothesis involved two sets of mediational analyses: one set to test whether *MAYSI-2* depressed-anxious scores mediated the relationship between gender and suggestibility and another set to test whether *MAYSI-2* alcohol/drug use scores mediated the relationship.

2. Verbal IQ would mediate the relationship between gender and suggestibility.

Evaluation of this primary hypothesis involved four sets of analyses in order to examine *GSS2* total suggestibility, yield 1, yield 2, and shift scores as mediators.

3. Suggestibility would mediate the relationship between gender and self-reported likelihood of offering false confessions.

Evaluation of this primary hypothesis involved four sets of analyses in order to examine *GSS2* total suggestibility, yield 1, yield 2, and shift scores as mediators.

4. Suggestibility would mediate the relationship between mental health symptoms (specifically, *MAYSI-2* depressed-anxious and alcohol/drug use scores) and self-reported likelihood of offering false confessions.

Evaluation of this primary hypothesis involved two sets of mediational analyses: one set for *MAYSI-2* depressed-anxious scores and another set for *MAYSI-2* alcohol/drug use scores.

5. Suggestibility would mediate the relationship between verbal IQ and self-reported likelihood of offering false confessions.

Evaluation of this primary hypothesis involved four sets of analyses in order to examine *GSS2* total suggestibility, yield 1, yield 2, and shift scores as mediators.

6. Mental health symptoms (specifically, *MAYSI-2* depressed-anxious and alcohol/drug use scores) would mediate the relationship between gender and self-reported likelihood of offering false confessions.

Evaluation of this primary hypothesis involved two sets of mediational analyses: one set for *MAYSI-2* depressed-anxious scores and another set for *MAYSI-2* alcohol/drug use scores.

7. Verbal IQ would mediate the relationship between gender and self-reported likelihood of offering false confessions.

4.3.1 Power Analysis for the Primary Hypotheses.

For the primary hypotheses, with 54 boys and 26 girls (and only 24 boys and 6 girls for analyses with *MAYSI-2* scores), an alpha of .05, and effect sizes ranging from 0 to 0.15, power ranged between .05 and .87, with power greater than .69 for only one analysis (the relationship between yield 1 and verbal IQ). Because of insufficient power, interpretation of results relied on effect size estimates and, although significance is reported for completeness, discussion will focus on effect sizes.

4.4 Exploratory Analyses

The hypothetical situations used in the *P-CHIP* involve four different types of pressures to confess: positive police pressure, negative police pressure, parental pressure, and negative physical environment. The methods of analysis used for the primary hypotheses were also used to examine the relationships between mental health symptoms, verbal IQ, and suggestibility in response to each of the four sources of

pressure included in the *P-CHIP*. In addition, a repeated measures analysis of covariance (ANCOVA) was used to examine the relationships between gender and the four types of pressure, while controlling for age. These additional analyses allowed for an exploration of how and why youth say they would respond to different types of interrogative pressure, rather than just viewing the false confession likelihood construct globally.

Although this study focused on the alcohol/drug use and depressed-anxious scales of the *MAYSI-2*, the other scales were also examined (anger-irritable, somatic complaints, suicide ideation, and traumatic experiences). The same statistical analyses used to examine the preliminary and primary hypotheses conducted with the *MAYSI-2* alcohol/drug use and depressed-anxious scales were used to examine the additional *MAYSI-2* scales. Gender differences in thought disturbance were not examined, as the scale is only appropriate for use with boys (Grisso & Barnum, 2000).

CHAPTER 5: RESULTS

5.1 Preparatory Analyses

The mean verbal IQ score for youth in this study was 81 (SD = 12.1), with scores ranging from 55 to 106. Mean suggestibility scores were 12.3 for total suggestibility (SD = 5.2, range = 1 to 23), 6.6 for yield 1 (SD = 3.5, range = 0 to 15), 8.5 for yield 2 (SD = 3.5, range = 0 to 15), and 5.7 for shift (SD = 3.4, range = 0 to 14). Mean overall *Miranda* comprehension was 1.47 (SD = .29), ranging from .73 to 1.96 (see Table 1).

Correlations were examined between age and all variables of primary interest in this study. Age was only significantly associated with verbal IQ, with older youth obtaining lower verbal IQ scores. When controlling for IQ, age was also related to overall *Miranda* comprehension (see Table 2).

5.2 Preliminary Hypotheses

As expected, no gender differences in overall *Miranda* comprehension were found. Given that the analysis proposed the null hypothesis of no gender differences in overall *Miranda* comprehension, support of no meaningful difference was determined by finding a small effect size ($d = 0.28$) (Cohen, 1988). Although we predicted that there would be gender differences in several variables of interest (mental health symptoms, verbal IQ, suggestibility, and self-reported likelihood of offering false confessions), significant differences were only found for self-reported likelihood of offering false confessions (see Figure 1), with girls reporting a greater likelihood of offering false confessions (see Table 1 for data and results on all preliminary analyses). Because the Levene's test for equality of variance was significant for the analysis of

gender differences in self-reported likelihood of offering false confessions, the assumption of equal variance in the *P-CHIP* scores for boys and girls was violated.

In examining effect sizes (*d*), Cohen's (1992) classification into small (0.2), medium (0.5), and large (0.8) was used. For the preliminary hypotheses, medium effect sizes were predicted in examining gender differences in mental health symptoms, verbal IQ, and suggestibility, and were found for shift suggestibility, self-reported likelihood of offering false confessions, and the *MAYSI-2* depressed-anxious scale. In addition, gender differences in yield 1, yield 2, total suggestibility, and verbal IQ produced small effect sizes, while gender differences in the *MAYSI-2* alcohol/drug use scale produced a large effect size. Additional effect sizes that were not predicted by the preliminary hypotheses are also reported (see Table 1 for results).

5.3 Primary Hypotheses

Each primary hypothesis predicted that the relationship between predictor and outcome variables would be mediated by a third variable. If no relationship was found between a set of predictor and outcome variables, then it was unnecessary to examine the role of a third variable in the relationship. See Tables 3, 4, and 5 for results documenting the non-significant relationships and small and sub-small effect sizes between the predictor and outcome variables in the proposed relationships.

For each of three primary hypotheses, a relationship was detected between the predictor variable and the outcome variable; therefore, three sets of mediation analyses were warranted. Specifically, a relationship was found between gender (predictor variable) and self-reported likelihood of offering false confessions (outcome variable), and suggestibility, verbal IQ, and mental health symptoms (depressed-anxious and

alcohol/drug use) were examined as potential mediating variables. There were no significant mediating relationships and, using Cohen's (1992) classification of effect sizes (f^2) into small (0.02), medium (0.15), and large (0.35) in examining the primary hypotheses, only three mediational analyses produced a medium effect size (self-reported likelihood of offering false confessions and *MAYSI-2* depressed-anxious scale, yield 1 and verbal IQ, and yield 2 and *MAYSI-2* alcohol/drug use). All other mediational analyses produced small or sub-small effect sizes. Additional effect sizes that were not predicted by the primary hypotheses are also reported (see Tables 3, 4, and 5 for results).

5.4 Full Model Evaluation

A path analysis was going to be conducted to examine the proposed model as a whole and to identify the magnitude and significance of the hypothesized relationships between the variables in this study (e.g., see Klem, 1995). However, because of the limited number of significant relationships in this study, a path analysis was inappropriate and not conducted.

5.5 Exploratory Analyses

As with the findings regarding gender differences in the variables of primary interest in this study, exploratory analyses failed to detect any significant gender differences among the remaining four *MAYSI-2* sub-scales (Anger-Irritable, Somatic Complaints, Suicide Ideation, and Traumatic Experiences) (see Table 1).

Because there were gender differences in overall self-reported likelihood of offering false confessions, exploratory analyses examined gender differences among the different types of pressure included in the *P-CHIP* by using a 2x4 repeated

measures ANCOVA, controlling for age, with gender as the between subjects factor and source of pressure as the within subjects factor, with four levels (positive police pressure, negative police pressure, parental pressure, and negative physical environment). Because Mauchly's test of sphericity was less than .05, the assumption of equal variances was violated. To correct for the violation of equal variances, we used the multivariate tests and found no main effects for pressure ($F(3, 74) = 1.78, p = .158$, partial $\eta^2 = .067$) or interactions between gender and pressure ($F(3, 74) = 1.21, p = .314$, partial $\eta^2 = .047$). However, there was a significant main effect of gender with girls being more likely than boys to report that they would falsely confess across all four types of pressure $F(1, 76) = 7.73, p = .007$, partial $\eta^2 = .092$ (see Figure 2).

Because of the absence of gender differences in most exploratory analyses, mediation analyses were only conducted on the relationship between gender and the type of pressure on the *P-CHIP*. However, because there were no gender differences in suggestibility, *MAYSI-2* scores, or verbal IQ, no mediators were identified (see Tables 3, 4, and 5 for results).

CHAPTER 6: DISCUSSION

6.1 Discussion of Findings

As expected, evaluation of the preliminary hypotheses found no gender differences in overall Miranda comprehension, supporting earlier research (Grisso, 1981). No gender differences were found in either suggestibility or mental health symptoms. As previously discussed, the few studies examining the relationship between gender and suggestibility in children have yielded mixed results, with some studies finding that males were more suggestible (e.g., see Redlich, 2000) and other studies finding that females were more suggestible (e.g., see Stern, 1910). These previous studies were not conducted with a juvenile justice population, and it was hypothesized in the current study that certain characteristics, such as lower verbal IQ and increased mental health symptoms, would result in girls in the juvenile justice system scoring higher on the suggestibility measures. However, using two *MAYSI-2* scales (depressed-anxious and alcohol/drug use), no gender differences were detected in juvenile endorsement of mental health symptoms. This finding was unexpected given the significant body of research findings that girls in the juvenile justice system do, in fact, display significantly more mental health problems than do boys (e.g., see Teplin et al., 2002). The lack of significant findings in the current study may be explained by methodological issues, which are discussed below.

In addition, no gender differences were found in verbal IQ. As discussed earlier, several recent studies examined gender differences in verbal IQ among adolescents in the juvenile justice system. While Bove et al.(2003) found that girls in the juvenile justice system had significantly lower verbal IQ scores than did boys, a study

conducted by Viljoen and Roesch (2005) found that girls in the juvenile justice system had higher verbal IQ scores than did boys. Although it was expected that results would confirm the Bove et al. (2003) study based on the presence of similar sample characteristics, the differences in findings may be explained by methodological differences between the two studies, including different measures and drastically different sample sizes.

Although verbal IQ was not associated with gender in the current study, verbal IQ was significantly related to age, with older participants having lower verbal IQs than younger participants. Although, in the general population, age and IQ are not related (e.g., see Moffitt, Caspi, Harkness, & Silva, 1993), there are several possible explanations for this relationship within a juvenile justice sample. It is possible that older adolescents with higher verbal IQ scores were diverted from the judicial process to a diversion program or, alternatively, transferred to the adult system based on lack of amenability to treatment or rehabilitation. If placed elsewhere, these individuals were not eligible to participate in the current study. Another possibility is that, as adolescents age, those with higher verbal IQ scores may be less likely to become involved in the justice system. One explanation for this theory is that higher cognitive functioning leads to greater academic achievement and to a decrease in behavioral deviance (e.g., White, Moffitt & Silva, 1989).

Perhaps the most important finding of the current study was that, as expected, there were gender differences in self-reported likelihood of offering false confessions, with girls being more likely to say they would falsely confess. These results extend findings of earlier studies that suggested the possibility of gender differences in false

confession rates with an adult criminal population (Gudjonsson & Sigurdsson, 1994; Sigurdsson & Gudjonsson, 1996). In addition, because the *P-CHIP* examines different types of pressure to confess (negative police, positive police, parental, and negative environment), exploratory analyses were also able to identify gender differences across the four types of pressure, with girls being more likely than boys to say they would falsely confess, regardless of the source of the pressure.

The primary hypotheses aimed at explaining gender differences in self-reported likelihood of offering false confessions through a series of mediational analyses. However, results suggest that the mediation hypotheses were unsupported. Specifically, the relationship between self-reported likelihood of offering false confessions and gender was not mediated by mental health symptoms, verbal IQ, or suggestibility, as measured in the current study. Furthermore, analysis of the primary hypotheses found generally small effect sizes, with few exceptions. The expected medium effect sizes were found in only three mediational analyses (self-reported likelihood of offering false confessions and *MAYSI-2* depressed-anxious, yield 1 and verbal IQ, and yield 2 and *MAYSI-2* alcohol/drug use). Other mediational analyses produced small or sub-small effect sizes which supports the finding of no mediating relationships.

The finding that girls were more likely to report that they would falsely confess is especially notable given that, as expected, there were no gender differences in Miranda comprehension. Although boys and girls showed comparable levels of Miranda comprehension, girls were still more likely to say they would falsely confess, suggesting that false confessions may occur more frequently with girls than boys regardless of whether or not they understood their Miranda rights or validly waived

their rights. While safeguards have been developed to diminish the frequency of invalid Miranda waivers among juveniles (see *In re Gault*, 1967), it is unclear whether these safeguards also protect against false confessions. The results of the current study suggest that the construct of false confessions, as measured by the *P-CHIP*, is separate from Miranda comprehension and, consequently, Miranda waivers. The implication is that, even if a valid Miranda waiver is obtained, a false confession may still occur, although the reasons why remain unclear.

The results of the current study support earlier research findings of relationships between suggestibility and IQ (e.g., see Gudjonsson, 1983; Polczyk, 2005) and between yield and false confessions (Forrest et al., 2006). Although no mediating relationships were found, which was the primary focus of the current study, relationships were found between yield and verbal IQ and between yield and self-reported likelihood of offering false confessions, with individuals with lower verbal IQ scores having higher yield scores and individuals with higher yield scores being more likely to report that they would offer a false confession. Although all aspects of suggestibility were analyzed, significant relationships between suggestibility and verbal IQ and self-reported likelihood of offering false confessions were only found for an individual's tendency to yield to leading questions, not his/her tendency to change a response following negative feedback. These findings suggest that, even without negative police feedback during an interrogation, there is still a concern that individuals (especially those with lower IQs) are at risk for false confessions, although the relationship between these variables remains unclear.

6.2 Limitations

The sample size obtained resulted in insufficient power for some of the analyses. Although data from the *MRCI-II*, *WASI*, and *GSS2* were available for 80 participants, the *MAYSI-2* data was only available for 30 participants, of whom only six were girls. Therefore, although power was sufficient for the analyses examining self-reported likelihood of offering false confessions, verbal IQ, and suggestibility, power was very low for analyses examining mental health data. Because of insufficient power, effect sizes were examined. Medium or large effect sizes were found for gender differences in total suggestibility, shift, and the *MAYSI-2* depressed-anxious and alcohol/drug use scales. Despite reliance on effect sizes, these findings should not be interpreted, given the small number of girls. These findings should be considered only as a basis for future hypotheses. It is possible that a larger sample might yield significant results. The relatively small sample size also limits the generalizability of findings. Furthermore, the *P-CHIP* is currently an instrument in development and findings should be interpreted with caution until the psychometric properties of the *P-CHIP* have been further evaluated.

In addition to a small sample size, there are several other limitations to the current study. Although I would, ideally, have liked to examine the relationship between suggestibility and actual false confessions in the forensic context, it is not feasible to obtain data about actual false confessions. First, after a confession has been made to police, it is, generally, impossible to determine, reliably, the accuracy of the confession. Second, it would be unethical to devise an experiment in which adolescents were deceived about being accused of a crime and exposed to mock police interrogations. For these reasons, this study examined self-perceived likelihood of

offering false confessions, by asking participants to respond to questions involving various hypothetical situations and, therefore, it did not examine internalized confessions in which individuals come to believe that they have committed a crime. Although self-reports are often relied upon by social science researchers (e.g., see Craik, 1986), research indicates that self-predictions of behavior may be inaccurate because of people's assumption that they will act in a "socially desirable manner" (Sherman, 1980). Although individuals may assume and report that they will act in a socially desirable manner, this is not always true (e.g., Milgram, 1965). Given that people think they are less likely than they actually are to submit to authority figures (e.g., see Milgram, 1965) and that people are more suggestible during times of stress (and that a research study is far less stressful than an actual interrogation) (e.g., see Gudjonsson, 1988; Gudjonsson, 2003), *P-CHIP* scores are probably an underestimate of how many participants would actually falsely confess. Nevertheless, all conclusions based on analyses of *P-CHIP* scores must be made with caution. In addition, given the significant findings of the current study that girls were more likely than boys to report that they would falsely confess, it is recommended that the Kassin and Kiechel (1996) computer crash model be used to examine actual false confessions with a similar population.

Another limitation of this study is that the *MAYSI-2* does not measure symptoms of ADHD. There is evidence to suggest that ADHD may be diagnosable more often in girls than boys in the juvenile justice system (Teplin et al., 2002). Because ADHD is associated with various cognitive impairments (Goldstein et al., 2005), it is possible that increased symptoms associated with ADHD may contribute to

higher levels of suggestibility in girls than in boys in the juvenile justice system.

Although one study failed to find higher suggestibility among adults diagnosed with ADHD (Gudjonsson, Young, & Bramham, 2007), these findings may not extend to the juvenile justice population. Because the *MAYSI-2* does not measure symptoms of ADHD, no information about ADHD was available for the current study.

In addition to the lack of information concerning ADHD, it is also important to note that, because the *MAYSI-2* was designed as a screening tool to quickly identify potential mental health problems in adolescents entering the juvenile justice system, the instrument does not provide mental health diagnoses. Although the *MAYSI-2* does address a wide range of symptoms, no relationships were found between these symptoms and the variables of interest in the proposed study (gender, suggestibility, verbal IQ, and likelihood of offering false confessions); future research can focus on the relationships between these variables and specific mental health diagnoses, rather than the results of a screening instrument. The use of a diagnostic interview, such as the Diagnostic Interview Schedule for Children (DISC), would be useful in providing specific diagnoses to further evaluate the relationship between mental health and the self-reported likelihood of offering false confessions.

There are additional limitations associated with the measures used in the current study. The *MRCI-II* measures Miranda comprehension at the time of testing, not at the time of arrest and interrogation. Therefore, it is possible that juveniles who have met with their attorneys and, possibly, discussed their Miranda rights, score higher on measures of comprehension. In 2005, Viljoen and Roesch found that the amount of time juvenile defendants spent with their attorney predicted their understanding of

rights during interrogation. Furthermore, the *MRCI-II* assesses maximal understanding of Miranda rights in a setting that is very different from that of an actual arrest and interrogation. Similar considerations apply to the *GSS2*. Suggestibility was measured at the time of testing under circumstances that differ greatly from an actual police interrogation. Key variables such as stress and extent of prior legal experience may affect how individuals respond to measures of Miranda comprehension and suggestibility.

Finally, there are additional variables, which were not considered in the current study. Because juveniles in the current study were already asked to complete a long battery of tests, it was not feasible to add additional measures. Although it was beyond the scope of the current study to examine additional factors, such as stress, specific mental health diagnoses, and interactions between gender of the interrogator and of the suspect, future research should examine variables such as these.

6.3 Research and Policy Implications

Courts have considered a variety of factors in their “totality of circumstances” approach to determining whether a juvenile’s waiver is valid. The current study supports research findings that age and IQ are two important factors in determining whether or not a juvenile has validly waived his or her Miranda rights. Of particular interest to the current study is the waiver of the right to silence, as it is at this point that a false confession is likely to occur. Results of the current study found that, although there were no gender differences in comprehension of Miranda, there were gender differences in self-reported likelihood of offering false confessions. Therefore, even if girls and boys had comparable levels of Miranda comprehension, girls were still more

likely to say they would falsely confess. These findings suggest that additional precautions may be necessary to prevent false confessions. However, the current study did not shed light on which constructs may be related to increased self-reported likelihood of offering false confessions. Specifically, verbal IQ, mental health symptoms, as measured by the *MAYSI-2* depressed-anxious and alcohol/drug use scales, and suggestibility were not found to mediate the relationship between gender and self-reported likelihood of offering false confessions, suggesting that additional factors may play more significant roles in mediating this relationship.

Several studies have examined the relationships of certain factors to false confessions, but the research and findings have been inconsistent. Furthermore, the studies have not been conducted with a juvenile forensic population and have not focused on gender differences. Nonetheless, it is useful to consider these studies because they examine variables that may be relevant to future research focusing on gender differences in rates of false confessions. In addition, future research with non-delinquent samples may also be useful in explaining false confession behaviors. Research in the general population may yield significant findings that may not have been found in the current study due to the IQ discrepancy between younger and older adolescents.

The results of the current study support findings of another recent study which found that yield was related to false confessions, whereas shift and total suggestibility were not (Forrest et al., 2006). Forrest et al. (2006) also looked at authoritarianism (defined as “one’s willingness to accept authority”) and locus of control (conceptualized as an individual’s perception of being in control of his/her

environment) in relation to false confessions using the Kassin and Kiechel (1996) paradigm with undergraduate students. Although authoritarianism and locus of control were not associated with false confessions, they differed as a function of internalization. In other words, of the participants who falsely confessed, those who internalized responsibility scored higher on the authoritarianism scale (suggesting “greater respect for authority”) and those who did not internalize responsibility scored higher on the measure of internal locus of control (suggesting that they knew they were in control and not responsible for the error they were accused of making). In addition, results from the Forrest et al. (2006) study suggest that individuals who have “greater respect for authority” were more likely to yield to misleading questions and more likely to change their responses after receiving negative feedback. Although the current study did not examine authoritarianism, results support the finding by Forrest et al. (2006) of a relationship between yield and false confessions. Therefore, how individuals perceive and respond to authority figures may have a significant impact on the interrogation process; although the relationship does not appear to be straightforward.

Another construct that has been examined in an effort to understand false confessions is compliance. Results of studies examining the relationship between compliance and false confessions have been inconsistent. For example, Sigurdsson and Gudjonsson (1996) found that higher scores on the Gudjonsson Compliance Scale (Gudjonsson, 1989), which is a self-report measure examining how individuals deal with conflicts and confrontation, correlated with increased reports of false confessions among prison inmates. In contrast, Horselenberg et al. (2003), in a replication of the familiar Kassin and Kiechel (1996) paradigm, found that compliance did not predict

susceptibility to false confessions in a sample of college students. Neither of these studies was conducted with a juvenile justice population and compliance is another factor to be considered in trying to clarify the source of gender differences in juveniles' self-reported likelihood of offering false confessions.

Because the current study relied on self-reports of likelihood of offering false confessions, it is also important to consider factors that may explain why girls would report greater likelihoods than boys in a research setting. For example, it is possible that girls show greater self-awareness and are better able to predict how they might act in an interrogation. In looking at differences between actual IQ and estimated IQ, Reilly and Mulhern (1995) found that males tended to significantly overestimate their IQ scores, whereas females were more likely to slightly underestimate their IQ scores, although not significantly. Alternatively, it is possible that boys are less willing to report that they would offer false confessions. In examining suggestibility in delinquent boys, Gudjonsson and Singh (1984a) found that, although delinquent boys were generally more suggestible than adults, there were several who strongly resisted the suggestive pressure and even became "verbally aggressive" following the negative feedback. The authors suggested that delinquent boys may be more "resistant" than non-delinquent boys. The same may hold true for false confessions where boys may be uncomfortable admitting in a research setting that they might offer a false confession under certain circumstances.

A recent study examined several factors in relation to false confessions and found that compliance, self-esteem, and locus of control were unrelated to false confessions, as measured within the Kassin and Kiechel paradigm with an

undergraduate student sample (Klaver et al., 2008). However, Klaver et al. (2008) did find that females were more likely to sign a false confession than males when the plausibility of the error they were accused of was high. The authors attributed the gender differences in false confession to the possibility of gender differences in coping strategies in stressful situations. In discussing the complex nature of the relationship between gender and false confessions, Klaver et al. (2008) also discussed the possibility that the gender of both the interrogator and the suspect may play a role in whether or not individuals offer false confessions. The interaction between gender of the interrogator and of the suspect is another area warranting future research, and an area that should be looked at in combination with authoritarianism and compliance.

It is also important to consider situational factors that could affect an individual's self-reported likelihood of offering false confessions. For example, the style used by the interrogator may have an impact on how an individual responds to questioning. In a study examining interviewer style, Baxter, Boon, and Marley (2006) examined how college students performed in an interview while varying the interviewer's approach to questioning. Baxter et al. (2006) found that participants were more likely to change their initial responses to minimally leading questions when the interviewer took on a firm demeanor, as compared to a friendly demeanor. Although this study did not consider false confessions, it is possible that similar results would be found in an interrogation paradigm aimed at obtaining a confession.

An area that has not been addressed by the current study is the potential role of neuropsychological mechanisms in false confessions and suggestibility. For example, research has been conducted examining the relationship between false recollection and

frontal lobe damage (e.g., Parkin, 1997). Research has also found that suggestibility and memory capacity are negatively correlated (e.g., Gudjonsson, 2003), and these findings may extend to false confessions. It is possible that internalized confessions may be more closely related to memory functioning than are predictions of behaviors by participants in a research study. Despite this distinction, the focus of this study was on self-reported likelihood of offering false confession, not on internalized confessions.

The research examining false confessions has yielded certain mixed results, especially concerning individual factors that may contribute to differences in likelihood of offering false confessions. Of significance is the fact that very few studies have been conducted with a juvenile justice population, and it is uncertain that findings from an undergraduate student sample or from an adult prison sample would generalize to youth in the justice system. Nonetheless, this discussion has provided some suggestions for future research in an effort to clarify the complex dynamics that could result in false confessions.

Although it is premature to make specific policy recommendations based on the findings of the current study, a discussion of some potential precautions may be useful. It is likely that false confessions are the result of both individual and situational factors, but the contribution of each remains unclear. If situational factors are found to be significantly related to false confessions, such findings would support policy reform in the way in which interrogations are conducted. For example, taping all interrogations from start to finish may help to improve the uniformity and quality of interrogations and could also provide researchers with the opportunity to study actual confessions in forensic settings. In Britain, legislation known as the Police and Criminal Evidence Act

(PACE) was implemented to govern the investigation of crimes and interrogation of suspects. Under PACE, it became mandatory that tape recordings be made of all interrogations and, since PACE was implemented, research has found an overall decrease in the use of coercive interrogation techniques (Gudjonsson, 2003).

Additional precautions may be warranted based on findings of future research. For example, anxiety has been associated with heightened suggestibility (Gudjonsson, 1988) and, if stress was also related to a heightened risk for false confession, policy reform may focus on ways of minimizing stress in interrogative situations. Another precaution may be to focus on interviewer style, with an emphasis on decreasing the use of coercive pressure. One potential method of minimizing stress and increasing the reliability of information obtained from an adolescent suspect could be to mandate that an adult be present during the entire interrogation, regardless of whether or not *Miranda* rights had been waived. Although the adult could be a parent, there is evidence to suggest that having a parent present during interrogation may not necessarily benefit the child. Factors such as a parent's emotional reaction to his child's arrest or lack of legal understanding may actually have detrimental effects on the interrogation process (e.g., Feld, 2000). Consultation with an unbiased and informed adult may be more beneficial to youth undergoing interrogation.

Several potential precautions to minimize false confessions have been proposed. However, the appropriateness of these precautions will depend on the findings of future research that might better explain the reasons why individuals offer false confessions. The current study found that girls were more likely to say that they would offer a false confession in various hypothetical situations. However, mental

health symptoms, IQ, and suggestibility, as measured by the current study, did not explain this gender discrepancy. Specific policy recommendations should be based on the findings of future research that will, hopefully, identify additional factors that lead youth, especially girls, to say that they would falsely confess.

List of References

1. Abram, K. M., Teplin, L. A., McClelland, G. M., & Dulcan, M. K. (2003). Comorbid psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry*, *60*(11), 1097-1108.
2. Achenbach, T. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington: University of Vermont Department of Psychiatry.
3. Ackerman, P. T., Newton, J. E. O., McPherson, W. B., Jones, J. G., & Dykman, R. A. (1998). Prevalence of post traumatic stress disorder and other psychiatric diagnoses in three groups of abused children (sexual, physical, and both). *Child Abuse and Neglect*, *22*, 759-774.
4. Acoca, L., & Dedel, K. (1998). *No place to hide: Understanding and meeting the needs of girls in the California juvenile justice system*. San Francisco, CA: National Council on Crime and Delinquency.
5. American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders*. (4th ed.). Washington, DC: Author.
6. Ariga, M., Uehara, T., Takeuchi, K., Ishige, Y., Nakano, R., & Mikuni, M. (2008). Trauma exposure and posttraumatic stress disorder in delinquent female adolescents. *Journal of Child Psychology and Psychiatry*, *49*(1), 79-87.
7. *Arizona v. Fulminante*, 499 U.S. 279 (1991).
8. Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182.
9. Baxter, J. S., Boon, J. C. W., Marley, C. (2006). Interrogative pressure and responses to minimally leading questions. *Personality and Individual Differences*, *40*, 87-98.
10. Bove, A. W., Goldstein, N. E., Appleton, C., & Thomson, M. (2003). Gender differences in IQ among juvenile offenders. Paper presented at the annual conference of the *International Association of Forensic Mental Health Services*, Miami, FL.
11. Brodsky, S. L., & Bennett, A. D. (2005). Psychological assessments of confessions and suggestibility in mentally retarded suspects. *The Journal of Psychiatry & Law*, *33*, 359-366.

12. *Bruton v. United States*, 391 U.S. 123 (1968).
13. Calicchia, J. A., & Santostefano, S. (2004). The assessment of interrogative suggestibility in adolescents: Modalities, Gender, and Cognitive Control. *North American Journal of Psychology*, 6(1), 1-12.
14. Candel, I., Merckelbach, H., Loyen, S., Reyskens, H. (2005). "I hit the shift-key and then the computer crashed": Children and false admissions. *Personality and Individual Differences*, 38, 1381-1387.
15. *Chapman v. California*, 386 U.S. 18 (1967).
16. Clare, I. C. H., & Gudjonsson, G. H. (1993). Interrogative suggestibility, confabulation, and acquiescence in people with mild learning disabilities (mental handicap): Implications for reliability during police interrogations. *British Journal of Clinical Psychology*, 32, 295-301.
17. Clare, I. C. H., & Gudjonsson, G. H. (1995). The vulnerability of suspects with intellectual disabilities during police interviews: A review and experimental study of decision-making. *Mental Handicap Research*, 8(2), 110-128.
18. Clare, I. C. H., Gudjonsson, G. H., Rutter, S. C., Cross, P. (1994). The inter-rater reliability of the Gudjonsson Suggestibility Scale (Form 2). *British Journal of Clinical Psychology*, 33, 357-365.
19. Cocozza, J. J., & Skowrya, K. R. (2000). Youth with mental health disorders: Issues and emerging responses. *Juvenile Justice*, 7(1), 3-13.
20. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
21. Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.
22. *Columbe v. Connecticut*, 367 U.S. 568 (1961).
23. Condie, L., Goldstein, N. E., & Grisso, T. (in preparation). The *Miranda* Rights Comprehension Instrument – II: Instruments.
24. Craik, K. H. (1986). Personality research methods: An historical perspective. *Journal of Personality*, 54(1), 18-51.
25. Deardorff, J., Gonzales, N. A., & Sandler, I. W. (2003). Control beliefs as a mediator of the relation between stress and depressive symptoms among inner-city adolescents. *Journal of Abnormal Child Psychology*, 31(2), 205-217.

26. Drizin, S., & Leo, R. (2004). The problem of false confessions in the post-DNA world. *North Carolina Law Review*, 82, 891-1007.
27. Ellis, J., & Luckasson, R. A. (1985). Mentally retarded criminal defendants. *George Washington Law Review*, 53, 414-493.
28. Everington, C., & Fulero, S. M. (1999). Competence to confess: Measuring understanding and suggestibility of defendants with mental retardation. *Mental Retardation*, 37(3), 212-220.
29. *Fare v. Michael C.*, 442 U.S. 707 (1979).
30. Federal Bureau of Investigation (2001). *Crime in the United States*. Washington, D.C.: United States Government Printing Office.
31. Feld, B. C. (2000). Juveniles' waiver of legal rights: Confessions, *Miranda*, and the right to counsel. In T. Grisso & R. G. Schwartz (Eds.), *Youth on trial* (pp. 105-138). Chicago, IL: The University of Chicago Press.
32. Forrest, K. D., Wadkins, T. A., & Larson, B. A. (2006). Suspect personality, police interrogations, and false confessions: Maybe it is not just the situation. *Personality and Individual Differences*, 40, 621-628.
33. Foster, H. H. (1969). Confessions and the station house syndrome. *DePaul Law Review*, 18, 683-701.
34. Fulero, S. M., & Everington, C. (1995). Assessing competency to waive *Miranda* rights in defendants with mental retardation. *Law and Human Behavior*, 19, 533-543.
35. Goguen, C. (2001). *The effects of community violence on children and adolescents* [Online]. National Center for PTSD. Retrieved November 22, 2004, from http://www.ncptsd.org/facts/specific/fs_child_com_viol.html.
36. Goldstein, N. E., Arnold, D. H., Weil, J., Mesiarik, C., Peuschold, D., Grisso, T., & Osman, D. (2003). Comorbid symptom patterns in female juvenile offenders. *International Journal of Law and Psychiatry*, 26, 565-582.
37. Goldstein, N. E., Condie, L., & Grisso, T. (in preparation). The *Miranda* Rights Comprehension Instrument – II: Manual.
38. Goldstein, N. E., Condie, L. O., Kalbeitzler, R., & Mesiarik, C. (in preparation). Psychometric properties of the *Miranda* Rights Comprehension Instruments – II.

39. Goldstein, N. E. S., Condie, L. O., Kalbeitzer, R., Osman, D., & Geier, J. L. (2003). Juvenile offenders' *Miranda* rights comprehension and self-reported likelihood of offering false confessions. *Assessment, 10*(4), 359-369.
40. Goldstein, N. E. S., Kalbeitzer, R., Chulvick, S., & Condie, L. O. (2004). Comparison of juveniles' *Miranda* rights comprehension: 1970s v. today. Part of a symposium: The *Miranda* Rights Comprehension Instruments - II: Related Research and Policy Implications. Paper presented at the annual convention of the *American Psychology - Law Society*, Scottsdale, AZ.
41. Goldstein, N. E. S., Olubadewo, O., Redding, R. E., & Lexcen, F. (2005). Mental health disorders: The neglected risk factor in juvenile delinquency. In Heilbrun, K. S., Goldstein, N. E., & Redding, R. E. (Eds.). *Juvenile delinquency: Prevention, assessment, and intervention*. New York: Oxford University Press.
42. Grisso, T. (1980). Juveniles' capacities to waive *Miranda* rights: An empirical analysis, *California Law Review, 68*, 1134-1166.
43. Grisso, T. (1981). *Juveniles' waiver of rights: Legal and psychological competence*. New York: Plenum.
44. Grisso, T. (1998). *Assessing Understanding and Appreciation of Miranda Rights: Manual and Materials*. Sarasota, FL: Professional Resources.
45. Grisso, T. (1999). Juvenile offenders and mental illness. *Psychiatry, Psychology and Law, 6*(2), 143-151.
46. Grisso, T., & Barnum, R. (2000). *The Massachusetts Youth Screening Instrument – Second Version*. Sarasota, Florida: Professional Resource Press.
47. Grisso, T., Barnum, R., Fletcher, K., E., Cauffman, E., & Peuschold, D. (2001). Massachusetts Youth Screening Instrument for mental health needs of juvenile justice youths. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(5), 541-548.
48. Gudjonsson, G. H. (1983). Suggestibility, intelligence, memory recall and personality: An experimental study. *British Journal of Psychiatry, 142*, 35-37.
49. Gudjonsson, G. H. (1984). Interrogative suggestibility and perceptual motor performance. *Perceptual and Motor Skills, 58*, 671-672.
50. Gudjonsson, G. H. (1988). Interrogative suggestibility: Its relationship with assertiveness, social-evaluative anxiety, state anxiety and method of coping. *British Journal of Clinical Psychology, 27*, 159-166.

51. Gudjonsson, G. H. (1989). Compliance in an interrogation situation: A new scale. *Personality and Individual Differences, 10*, 535-540.
52. Gudjonsson, G. H. (1990). One hundred alleged false confession cases: Some normative data. *British Journal of Clinical Psychology, 29*, 249-250.
53. Gudjonsson, G. H. (1991a). Effects of intelligence and memory on group differences in suggestibility and compliance. *Personality and Individual Differences, 12*(5), 503-505.
54. Gudjonsson, G. H. (1991b). False confession. *The Psychologist, 14*(11), 588-591.
55. Gudjonsson, G. H. (1997). *The Gudjonsson Suggestibility Scale Manual*. Hove, East Sussex, UK: Psychology Press.
56. Gudjonsson, G. H. (2003). *The Psychology of Interrogations and Confessions: A Handbook*. England: Wiley.
57. Gudjonsson, G. H., & Clark, N. K. (1986). Suggestibility and police interrogation: A social psychological model. *Social Behaviour, 1*, 83-104.
58. Gudjonsson, G. H., & MacKeith, J. A. C. (1990). A proven case of false confession: Psychological aspects of the coerced-compliant types. *Medicine, Science and the Law, 30*, 329-335.
59. Gudjonsson, G. H., & Petursson (1991). Custodial interrogation: Why do suspects confess and how does it relate to their crime, attitude, and personality? *Personality and Individual Differences, 12*, 295-306.
60. Gudjonsson, G. H., Rutter, S. C., & Clare, I. C. H. (1995). The relationship between suggestibility and anxiety among suspects detained at police stations. *Psychological Medicine, 25*, 875-878.
61. Gudjonsson, G. H., & Sigurdsson, J. F. (1994). How frequently do false confessions occur? An empirical study among prison inmates. *Psychology, Crime, and Law, 1*, 21-26.
62. Gudjonsson, G. H., Sigurdsson, J. F., Asgeirsdottir, B. B., & Sigfusdottir, I. D. (2006). Custodial interrogation false confession and individual differences: A national study among Icelandic youth. *Personality and Individual Differences, 41*, 49-59.
63. Gudjonsson, G. H., & Singh, K. K. (1984a). Interrogative suggestibility and delinquent boys: An empirical validation study. *Personality and Individual Differences, 5*(4), 425-430.

64. Gudjonsson, G. H., & Singh, K. K. (1984b). The relationship between criminal conviction and interrogative suggestibility among delinquent boys. *Journal of Adolescence*, 7, 29-34.
65. Gudjonsson, G. H., Young, S., & Bramham, J. (2007). Interrogative suggestibility in adults diagnosed with attention-deficit hyperactivity disorder (ADHD). A potential vulnerability during police questioning. *Personality and Individual Differences*, 43, 737-745.
66. Horselenberg, R., Merckelbach, H., & Josephs, S. (2003). Individual differences and false confessions: A conceptual replication of Kassin and Kiechel (1996). *Psychology, Crime and Law*, 9, 1-8.
67. Inbau, F. E., Reid, J. E., & Buckley, J. P. (1986). *Criminal interrogation and confessions* (3rd ed.). Baltimore, MD: Williams and Wilkins.
68. Inbau, F. E., Reid, J. E., Buckley, J. P., & Jayne, B. C. (2001). *Criminal interrogation and confessions* (4th ed.). Gaithersburg, MD: Aspen.
69. *In re Gault*, 387 U.S. 1 (1967).
70. Kassin, S. M. (1997). The psychology of confession evidence. *American Psychologist*, 52(3), 221-233.
71. Kassin, S. M., & Kiechel, K. L. (1996). The social psychology of false confessions: Compliance, internalization, and confabulation. *Psychological Science*, 7, 125-128.
72. Kassin, S. M., & Neumann, K. (1997). On the power of confession evidence: An experimental test of the fundamental difference hypothesis. *Law and Human Behavior*, 21(5), 469-484.
73. Kassin, S. M., & Norwick, R. J. (2004). Why people waive their Miranda rights: The power of innocence. *Law and Human Behavior*, 28(2), 211-221.
74. Kassin, S. M., & Sukel, H. (1997). Coerced confessions and the jury: An experimental test of the "harmless error" rule. *Law and Human Behavior*, 21(1), 27-46.
75. *Kent v. U.S.*, 383 U.S. 541 (1966).
76. Klaver, J. R., Lee, Z., & Rose, V. G. (2008). Effects of personality, interrogation techniques and plausibility in an experimental false confession paradigm. *Legal and Criminological Psychology*, 13, 71-88.

77. Klem, L. (1995). Path analysis. In Grimm, L. G., & Yarnold, P. R. (Eds.). *Reading and understanding multivariate statistics*. Washington, D.C.: American Psychological Association.
78. Krzewinski, L. M. (2002). But I didn't do it: Protecting the rights of juveniles during interrogation. *Boston College Third World Law Journal*, 22, 355-387.
79. Lally, S. J. (2003). What tests are acceptable for use in forensic evaluations?: A survey of experts. *Professional Psychology: Research and Practice*, 34(5), 491-498.
80. Lipton, J. P. (1977). On the psychology of eyewitness testimony. *Journal of Applied Psychology*, 62, 90-95.
81. Lueger, R. J., & Gill, K. J. (1990). Frontal-lobe cognitive dysfunction in conduct disorder adolescents. *Journal of Clinical Psychology*, 46(6), 696-706.
82. McCann, (1998). A conceptual framework for identifying various types of confessions. *Behavioral Sciences and the Law*, 16, 441-453.
83. McFarlane, F., Powell, M. B., & Dudgeon, P. (2002). An examination of the degree to which IQ, memory performance, socio-economic status and gender predict young children's suggestibility. *Legal and Criminological Psychology*, 7, 227-239.
84. Meyer, J. R., & Reppucci, N. D. (2007). Police practices and perceptions regarding juvenile interrogation and interrogative suggestibility. *Behavioral Sciences and the Law*, 25, 757-780.
85. Milgram, S. (1965). Some conditions of obedience and disobedience to authority. *Human Relations*. 18(1), 57-76.
86. Millon, T. (1993). *Millon Adolescent Clinical Inventory: Manual*. Minneapolis: National Computer Systems.
87. *Miranda v. Arizona*, 384 U.S. 436 (1966).
88. Moffitt, T. E., Caspi, A., Harkness, A. R., Silva, P. A. (1993). The natural history of change in intellectual performance: Who changes? How much? Is it meaningful? *Journal of Child Psychology and Psychiatry*, 34(4), 455-506.
89. *Moran v. Burbine*, 475 U.S. 412 (1986).
90. Moston, S., Stephenson, G. M., & Williamson, T. M. (1992). The effects of case characteristics on suspect behavior during police questioning. *British Journal of Criminology*, 32, 23-40.

91. Muris, P., Meesters, C., & Merckelbach, H. (2004). Correlates of the Gudjonsson Suggestibility Scale in delinquent adolescents. *Psychological Reports, 94*, 264-266.
92. Myers, W. C., Burket, R. C., Lyles, W. B., Stone, L., & Kempf, J. P. (1990). DSM-III diagnoses and offenses in committed female juvenile delinquents. *Bulletin of the American Academy of Psychiatry and Law, 18*(1), 47-54.
93. National Institute of Justice (1998). *Arrestee drug abuse monitoring program: 1997 annual report*. Washington D.C.
94. New York Times (2006). DNA evidence frees a man imprisoned for half his life [Online]. Retrieved April 15, 2008, from <http://www.nytimes.com/2006/09/21/nyregion/21dna.html?ex=1316491200&en=7d32fec91134288a&ei=5088&partner=rssnyt&emc=rss>.
95. Oberlander, L. B. (1998). *Miranda* comprehension and confessional competence. *Expert Opinion, 2*, 11-12.
96. Oberlander, L. B., & Goldstein, N. E. (2001). A review and update of the practice of evaluating *Miranda* comprehension. *Behavioral Sciences and the Law, 19*, 453-471.
97. O'Connell, M. J., Garmoe, W., & Goldstein, N. (2005). *Miranda* comprehension in adults with mental retardation and the effects of feedback style on suggestibility. *Law and Human Behavior, 29*, 359-369.
98. Office of Juvenile Justice Delinquency and Prevention (2002a). *OJJDP Statistical Briefing Book* [Online]. Retrieved November 23, 2004, from <http://ojjdp.ncjrs.org/ojstatbb/html/qa254.html>.
99. Office of Juvenile Justice Delinquency and Prevention (2002b). *OJJDP Statistical Briefing Book* [Online]. Retrieved November 23, 2004, from <http://ojjdp.ncjrs.org/ojstatbb/html/qa253.html>.
100. Office of Juvenile Justice Delinquency and Prevention (2004). *OJJDP Statistical Briefing Book* [Online]. Retrieved November 23, 2004, from <http://www.ncjrs.org/html/ojjdp/204608/contents.html>.
101. Parkin, Alan J. (1997). The neuropsychology of false memory. *Learning and Individual Differences, 9*(4), 341-357.
102. Polczyk, R. (2005). Interrogative suggestibility: Cross-cultural stability of psychometric and correlational properties of the Gudjonsson Suggestibility Scales. *Personality and Individual Differences, 38*, 177-186.

103. Powers, P. A., Andriks, J. L., & Loftus, E. F. (1979). Eyewitness accounts of females and males. *Journal of Applied Psychology*, *64*, 339-347.
104. Prescott, L. (1998). *Improving policy and practice for adolescent girls with co-occurring disorders in the juvenile justice system*. GAINS Center: Delmar, NY.
105. Rattner, A. (1988). Convicted but innocent: Wrongful convictions and the criminal justice system. *Law and Human Behavior*, *12*, 283-293.
106. Redlich, A. D. (2000). False confessions: The influence of age, suggestibility, and maturity. *Dissertation Abstracts International: Section B: the Sciences & Engineering. Vol 60(10-B)*, May 2000, 5244, US: Univ Microfilms International.
107. Redlich, A. D. (2004). Mental illness, police interrogations, and the potential for false confession. *Psychiatric Services*, *55*(1), 19-21.
108. Redlich, A. D., & Goodman, G. S. (2003). Taking responsibility for an act not committed: The influence of age and suggestibility. *Law and Human Behavior*, *27*(2), 141-156.
109. Redlich, A. D., Silverman, M., & Steiner, H. (2003). Pre-adjudicative and adjudicative competence in juveniles and young adults. *Behavioral Sciences and the Law*, *21*, 393-410.
110. Reilly, J., & Mulhern, G. (1995). Gender differences in self-estimated IQ: The need for care in interpreting group data. *Personality and Individual Differences*, *18*, 189-192.
111. Richardson, G., Gudjonsson, G. H., & Kelly, T. P. (1995). Interrogative suggestibility in an adolescent forensic population. *Journal of Adolescence*, *18*, 211-216.
112. Richardson, G., & Kelly, T. P. (1995). The relationship between intelligence, memory and interrogative suggestibility in young offenders. *Psychology, Crime, and Law*, *1*, 283-290.
113. Richardson, G., & Kelly, T. P. (2004). A study in the relationship between interrogative suggestibility, compliance and social desirability in institutionalized adolescents. *Personality and Individual Differences*, *36*, 485-494.
114. Robinson, J., & McGuire, J. (2006). Suggestibility and children with mild learning disabilities: The use of the cognitive interview. *Psychology, Crime & Law*, *12*(5), 537-556.

115. Roos, C., & Gow, K. (2007). The effect of emotional arousal on recall and interrogative suggestibility. *Australian Journal of Clinical and Experimental Hypnosis*, 35(2), 150-168.
116. Roy, S. (1995). Juvenile restitution and recidivism in a Midwestern county, *Federal Probation*, 55-62.
117. Ruback, R. B., & Vardaman, P. J. (1997). Decision making in delinquency cases: The role of race and juveniles' admission/denial of the crime. *Law and Human Behavior*, 21, 47-69.
118. Russano, M. B., Meissner, C. A., Narchet, F. M., & Kassin, S. M. (2005). Investigating true and false confessions within a novel experimental paradigm. *Psychological Science*, 16(6), 481-486.
119. Santtila, P., Ekholm, M., & Niemi, P. (1998). Factors moderating the effects of alcohol on interrogative suggestibility. *Psychology, Crime & Law*, 4, 139-152.
120. Santtila, P., Ekholm, M., & Niemi, P. (1999). The effects of alcohol on interrogative suggestibility: The role of state-anxiety and mood states as mediating factors. *Legal and Criminological Psychology*, 4, 1-13.
121. Scahill, M. C. (2000). *Female delinquency cases, 1997* [Online]. Office of Juvenile Justice Delinquency and Prevention Fact Sheet, 16. Retrieved November 22, 2004, from <http://www.ncjrs.org/pdffiles1/ojjdp/fs200016.pdf>.
122. Sharrock, R., & Gudjonsson, G. H. (1993). Intelligence, previous convictions and interrogative suggestibility: A path analysis of alleged false-confession cases. *British Journal of Clinical Psychology*, 32, 169-175.
123. Sherman, S. J. (1980). On the self-erasing nature of errors of prediction. *Journal of Personality and Social Psychology*, 39, 211-221.
124. Sigurdsson, J. F., & Gudjonsson, G. H. (1994). Alcohol and drug intoxication during police interrogation and the reasons why suspects confess to the police. *Addiction*, 89, 985-997.
125. Sigurdsson, J. F., & Gudjonsson, G. H. (1996). The psychological characteristics of 'false confessors': A study among Icelandic prison inmates and juvenile offenders. *Personality and Individual Differences*, 20(3), 321-329.
126. Sigurdsson, J. F., Gudjonsson, G. H., Kolbeinsson, H., & Petursson, H. (1994). The effects of ECT and depression on confabulation, memory processing, and suggestibility. *Nordic Journal of Psychiatry*, 48, 443-451.

127. Singh, K. K., & Gudjonsson, G. H. (1984). Interrogative suggestibility, delayed memory and self-concept. *Personality and Individual Differences*, 5, 203-209.
128. Singh, K. K., & Gudjonsson, G. H. (1992). Interrogative suggestibility among adolescent boys and its relationship with intelligence, memory, and cognitive set. *Journal of Adolescence*, 15, 155-161.
129. Smith, P., & Gudjonsson, G. H. (1995). The relationship of mental disorder to suggestibility and confabulation among forensic inpatients. *The Journal of Forensic Psychiatry*, 6, 499-515.
130. Stern, W. (1910). Abstracts of lectures on the psychology of testimony and on the study of individuality. *American Journal of Psychology*, 21, 270-282.
131. Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. K., & Mericle, A. A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry*, 59, 1133-1143.
132. The Psychological Corporation (1991). *Wechsler Intelligence Scale for Children – Third Edition*. San Antonio, TX: Author
133. The Psychological Corporation (1997). *Wechsler Adult Intelligence Scale – Third Edition*. San Antonio, TX: Author
134. The Psychological Corporation (1999). *Wechsler Abbreviated Scale of Intelligence*. San Antonio, TX: Author.
135. The Psychological Corporation (2001). *Wechsler Individual Achievement Test – Second Edition*. San Antonio, TX: Author.
136. Timmons-Mitchell, J., Brown, C., Schulz, S.C., Webster, S.E., Underwood, L.A., & Semple, W.E. (1997). Comparing the mental health needs of female and male incarcerated juvenile delinquents. *Behavioral Sciences and the Law*, 15(2), 195-202.
137. Ulzen, T. P. M., & Hamilton, H. (1998). The nature and characteristics of psychiatric comorbidity in incarcerated adolescents. *Canadian Journal of Research*, 43, 57-63.
138. United States Census Bureau (2000a). *Fact Sheet: Philadelphia City, Pennsylvania* [Online]. Retrieved May 3, 2005, from http://factfinder.census.gov/servlet/SAFFFacts?_event=ChangeGeoContext&geo_id=16000US4260000&_geoContext=&_street=&_county=philadelphia&_cityTown=philadelphia&_state=04000US42&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=010.

139. United States Census Bureau (2000b). *Fact Sheet: Tacoma City, Washington* [Online]. Retrieved May 3, 2005, from http://factfinder.census.gov/servlet/SAFFacts?_event=Search&geo_id=16000US4260000&_geoContext=01000US%7C04000US42%7C16000US4260000&_street=&_county=tacoma&_cityTown=tacoma&_state=04000US53&_zip=&_lang=en&_sse=on&ActiveGeoDiv=geoSelect&_useEV=&pctxt=fph&pgsl=160.
140. Viljoen, J. L., Klaver, J., & Roesch, R. (2005). Legal decisions of preadolescent and adolescent defendants: Predictors of confessions, pleas, communication with attorneys, and appeals. *Law and Human Behavior, 29*(3), 253-277.
141. Viljoen, J. L. & Roesch, R. (2005). Competence to waive interrogation rights and adjudicative competence in adolescent defendants: Cognitive development, attorney contact, and psychological symptoms. *Law and Human Behavior, 29*(6), 723-742.
142. Warren, A., Hulse-Trotter, K., Tubbs, E. C. (1991). Inducing resistance to suggestibility. *Children, Law and Human Behavior, 15*, 273-285.
143. Wasserman, G. A., McReynolds, L. S., Ko, S. J., Katz, L. M., & Carpenter, J. R. (2005). Gender differences in psychiatric disorders at juvenile probation intake. *American Journal of Public Health, 95*(1), 131-137.
144. Weiss, B., & Garber, J. (2003). Developmental differences in the phenomenology of depression. *Development and Psychopathology, 15*(2), 403-430.
145. White, J. L., Moffitt, T. E., Silva, P. A. (1989). A prospective replication of the protective effects of IQ in subjects at high risk for juvenile delinquency. *Journal of Consulting and Clinical Psychology, 57*(6), 719-724.
146. Wiersma, M., Forehand, R. L., & Frame, C. L. (1992). Epidemiology and treatment of mental health problems in juvenile delinquents. *Advanced Behavioural Research and Therapy, 14*, 93-120.
147. Wrightsman, L. S., & Kassin, S. M. (1993). *Confessions in the courtroom*. Newbury Park: Sage.
148. *Yarborough v. Alvarado*, 124 S.Ct. 2140 (2004).
149. Young, H. F., Bentall, R. P., Slade, P. D., & Dewey, M. E. (1987). The role of brief instructions and suggestibility in the elicitation of auditory and visual hallucinations in normal and psychiatric subjects. *Journal of Nervous and Mental Disease, 175*, 41-48.

Table 1. Gender Differences in Verbal IQ, Miranda Comprehension, Suggestibility, and MAYSI-2 Scores.

	Total M (SD)	M _{Boys} (SD)	M _{Girls} (SD)	<i>t</i>	df	<i>d</i>
Verbal IQ	81.39(12.10)	80.69(12.63)	82.85(10.99)	-.75	78	.18
<i>CMRI-II</i>						
Overall Comprehension	1.47(.29)	1.44(.36)	1.33(.34)	1.24	77	.27
CMR-II	6.15(2.56)	6.30(2.57)	5.84(2.56)	.73	77	.18
CMR-R-II	11.86(2.04)	12.11(2.00)	11.32(2.08)	1.62	77	.39
FRI	23.97(3.74)	24.44(3.45)	22.96(4.20)	1.66	77	.39
CMV-II	23.49(5.80)	24.26(5.62)	21.84(5.96)	1.75	77	.42
<i>P-CHIP</i>						
False confessions* Pressures	23.15(32.56)	16.28(26.81)	38.00(39.02)	-2.52	34.9	.66
Parental *	2.10(1.61)	1.75(1.34)	2.87(1.88)	-2.68	35.7	.70
Positive Police*	1.97(1.39)	1.70(1.17)	2.54(1.66)	-2.29	35.4	.59
Negative Police*	2.06(1.53)	1.76(1.31)	2.71(1.78)	-2.38	36.6	.61
Negative Environment*	1.59(1.07)	1.40(.87)	2.01(1.35)	-2.07	33.6	.55
<i>GSS2</i>						
Total Suggestibility	12.34(5.20)	11.74(5.39)	13.58(4.64)	-1.49	78	.38
Yield 1	6.61(3.50)	6.50(3.70)	6.85(3.07)	-.41	78	.09
Yield 2	8.54(3.47)	8.50(3.70)	8.61(2.99)	-.14	78	.03
Shift	5.73(3.43)	5.24(3.40)	6.73(3.34)	-1.85	78	.45
<i>MAYSI-2</i>						
Alcohol/Drug Use	1.93(2.35)	2.21(2.50)	.83(1.17)	1.97	17.9	.75
Anger-Irritable	2.97(2.70)	2.71(2.51)	4.0(3.41)	-1.05	28	.44
Depressed-Anxious	1.90(2.02)	1.67(1.93)	2.83(2.32)	-1.28	28	.54
Somatic Complaints	2.47(1.96)	2.29(1.99)	3.17(1.84)	-.98	28	.46
Suicide Ideation	.67(1.35)	.67(1.47)	.67(.82)	.00	28	.00
Traumatic Experiences	1.70(1.60)	1.58(1.67)	2.17(1.33)	-.79	28	.39

* $p < .05$

Note that effect sizes were classified using Cohen's (1992) small (0.2), medium (0.5), and large (0.8) criteria.

Table 2. Relationships between Age and Variables of Primary Interest.

	Age	Age (controlling for IQ)
	<i>R</i>	<i>r</i>
IQ	-.273*	-
Depressed/Anxious	-.041	-.123
Alcohol/Drug Use	.241	.217
Total Suggestibility	-.049	-.052
Yield 1	-.071	-.152
Yield 2	.012	-.191
Shift	-.002	-.086
Average Miranda Comprehension	.123	.419*
Self-reported Likelihood of Offering False Confessions	.114	-.021

* $p < .05$

Table 3. Self-Reported Likelihood of Offering False Confessions as Outcome Variable with Gender, Verbal IQ, and Suggestibility Measures as Predictor Variables.

Outcome Variable	Predictor Variable	R ²	Age		Predictor		<i>f</i> ²
			b	SE _b	b	SE _b	
Self-reported likelihood of offering false confessions	Verbal IQ	.035	-2.80	2.06	-.42	.32	.02
	Gender**	.103	-1.29	1.91	21.05	7.63	.10
	Total Suggestibility	.034	-1.81	1.97	.91	.71	.02
	Yield 1*	.070	1.64	1.94	2.22	1.03	.06
	Yield 2	.028	-2.00	1.97	-1.13	1.06	.02
	Shift	.014	-2.00	1.99	-.23	1.09	.00
Parental Pressure	Verbal IQ	.048	-.19	.10	-.02	.02	.02
	Gender**	.124	-.12	.09	1.06	.37	.11
	Total Suggestibility	.054	-.14	.10	.05	.04	.02
	Yield 1*	.079	-.13	.10	.10	.05	.05
	Yield 2	.063	-.15	.10	.08	.05	.03
	Shift	.030	-.15	.10	.00	.05	.00
Negative Police Pressure	Verbal IQ	.017	-.11	.10	-.01	.02	.00
	Gender*	.089	-.06	.09	.91	.36	.08
	Total Suggestibility	.031	-.09	.09	.04	.03	.02
	Yield 1	.052	-.08	.09	.09	.05	.04
	Yield 2	.023	-.09	.09	.04	.05	.01
	Shift	.013	-.09	.09	.00	.05	.00
Positive Police Pressure	Verbal IQ	.042	-.14	.09	-.02	.01	.02
	Gender*	.092	-.08	.08	.80	.33	.08
	Total Suggestibility	.031	-.10	.08	.03	.03	.01
	Yield 1	.054	-.09	.08	.07	.04	.04
	Yield 2	.035	-.11	.08	.05	.05	.02
	Shift	.021	-.11	.09	-.01	.05	.00
Negative Physical Environment	Verbal IQ	.078	-.05	.07	-.03	.01	.08
	Gender*	.071	.02	.06	.62	.26	.08
	Total Suggestibility	.024	.00	.07	.03	.02	.02
	Yield 1	.091	.01	.06	.09	.03	.10
	Yield 2	.013	-.00	.07	.04	.04	.01
	Shift	.006	-.00	.07	-.02	.04	.01

* $p < .05$

** $p < .01$

Note that effect sizes were classified using Cohen's (1992) small (0.02), medium (0.15), and large (0.35) criteria.

Table 4. Self-Reported Likelihood of Offering False Confessions as Outcome Variable with *MAYSI-2* Mental Health Symptoms as Predictor Variables.

Outcome Variable	Predictor Variable	R ²	Age		Predictor		f ²
			b	SE _b	b	SE _b	
Self-reported likelihood of offering false confessions	Alcohol/Drug Use	.009	1.52	3.37	-.78	2.60	.00
	Anger-Irritable	.014	1.90	3.50	1.14	2.34	.01
	Depression	.129	1.52	3.07	5.35	2.74	.14
	Somatic Complaints	.053	1.44	3.20	3.45	2.95	.05
	Suicide Ideation	.012	1.12	3.29	1.85	4.41	.01
	Thought Disturbance	.054	1.37	3.20	6.00	5.08	.05
	Traumatic Experience	.114	.78	3.11	6.37	3.50	.12
Parental Pressure	Alcohol/Drug Use	.010	.06	.14	.02	.11	.00
	Anger-Irritable	.022	.10	.14	.06	.10	.01
	Depression	.130	.08	.13	.22	.11	.14
	Somatic Complaints	.024	.07	.13	.08	.12	.02
	Suicide Ideation	.038	.05	.13	.16	.18	.03
	Thought Disturbance	.074	.07	.13	.29	.21	.07
	Traumatic Experience	.083	.05	.13	.22	.15	.08
Negative Police Pressure	Alcohol/Drug Use	.005	.03	.16	-.04	.12	.00
	Anger-Irritable	.002	.03	.16	.02	.11	.00
	Depression	.082	.03	.15	.20	.13	.09
	Somatic Complaints	.048	.03	.15	.16	.14	.05
	Suicide Ideation	.004	.02	.15	.06	.21	.00
	Thought Disturbance	.026	.03	.15	.20	.24	.03
	Traumatic Experience*	.160	-.01	.14	.36	.16	.19
Positive Police Pressure	Alcohol/Drug Use	.001	.02	.14	-.00	.11	.00
	Anger-Irritable	.028	.06	.14	.08	.10	.03
	Depression	.115	.03	.13	.21	.11	.13
	Somatic Complaints	.036	.02	.13	.12	.12	.04
	Suicide Ideation	.003	.02	.14	.04	.18	.00
	Thought Disturbance	.050	.02	.13	.25	.21	.05
	Traumatic Experience	.074	.00	.13	.21	.15	.08
Negative Physical Environment	Alcohol/Drug Use	.034	.13	.13	-.01	.10	.00
	Anger-Irritable	.039	.15	.14	.04	.09	.01
	Depression*	.202	.14	.12	.25	.11	.21
	Somatic Complaints	.110	.13	.13	.18	.12	.09
	Suicide Ideation	.064	.11	.13	.16	.17	.03
	Thought Disturbance	.111	.13	.12	.30	.20	.09
	Traumatic Experience	.097	.11	.13	.20	.14	.07

*p < .05

Note that effect sizes were classified using Cohen's (1992) small (0.02), medium (0.15), and large (0.35) criteria.

Table 5. Suggestibility Measures as Outcome Variables with Verbal IQ, Gender, and *MAYSI-2* Mental Health Symptoms as Predictor Variables.

Outcome Variable	Predictor Variable	R ²	Age		Predictor		f ²
			b	SE _b	b	SE _b	
Total Suggestibility	Gender	.029	-.09	.31	1.80	1.25	.03
	Verbal IQ	.037	-.28	.32	-.08	.05	.04
	Alcohol/Drug Use	.047	-.13	.54	.48	.42	.05
	Anger-Irritable	.051	-.23	.56	-.45	.38	.05
	Depression	.030	.00	.53	-.43	.47	.03
	Somatic Complaints	.056	-.01	.52	-.61	.48	.06
	Suicide Ideation	.037	.08	.53	-.72	.71	.04
	Thought Disturbance	.001	.02	.54	-.13	.85	.00
	Traumatic Experience	.016	-.01	.54	.40	.60	.02
Yield 1	Gender	.007	-.12	.21	.29	.85	.00
	Verbal IQ*	.132	-.32	.21	-.11	.03	.15
	Alcohol/Drug Use	.015	-.12	.41	.20	.32	.01
	Anger-Irritable	.055	-.24	.42	-.35	.28	.06
	Depression	.002	-.06	.40	-.06	.36	.00
	Somatic Complaints	.050	-.07	.39	-.43	.36	.05
	Suicide Ideation	.001	-.08	.41	.05	.54	.00
	Thought Disturbance	.002	-.05	.40	.11	.64	.00
	Traumatic Experience	.003	-.06	.40	.12	.46	.00
Yield 2	Gender	.000	.03	.21	.13	.84	.00
	Verbal IQ	.048	-.09	.21	-.07	.03	.05
	Alcohol/Drug Use	.103	-.33	.33	.42	.26	.10
	Anger-Irritable	.032	-.29	.36	-.18	.24	.02
	Depression	.013	-.19	.34	-.05	.30	.00
	Somatic Complaints	.037	-.20	.33	-.23	.31	.03
	Suicide Ideation	.020	-.17	.34	-.22	.45	.01
	Thought Disturbance	.033	-.19	.34	.41	.53	.02
	Traumatic Experience	.016	-.20	.34	.14	.38	.00
Shift	Gender	.042	.04	.21	1.51	.82	.04
	Verbal IQ	.006	.04	.22	.02	.03	.01
	Alcohol/Drug Use	.037	-.02	.36	.28	.28	.04
	Anger-Irritable	.007	.02	.38	-.10	.26	.01
	Depression	.051	.06	.35	-.37	.31	.05
	Somatic Complaints	.012	.06	.36	-.18	.33	.01
	Suicide Ideation	.095	.14	.34	-.77	.46	.10
	Thought Disturbance	.008	.07	.36	-.24	.57	.01
	Traumatic Experience	.019	.05	.36	.28	.40	.02

*p < .01

Note that effect sizes were classified using Cohen's (1992) small (0.02), medium (0.15), and large (0.35) criteria.

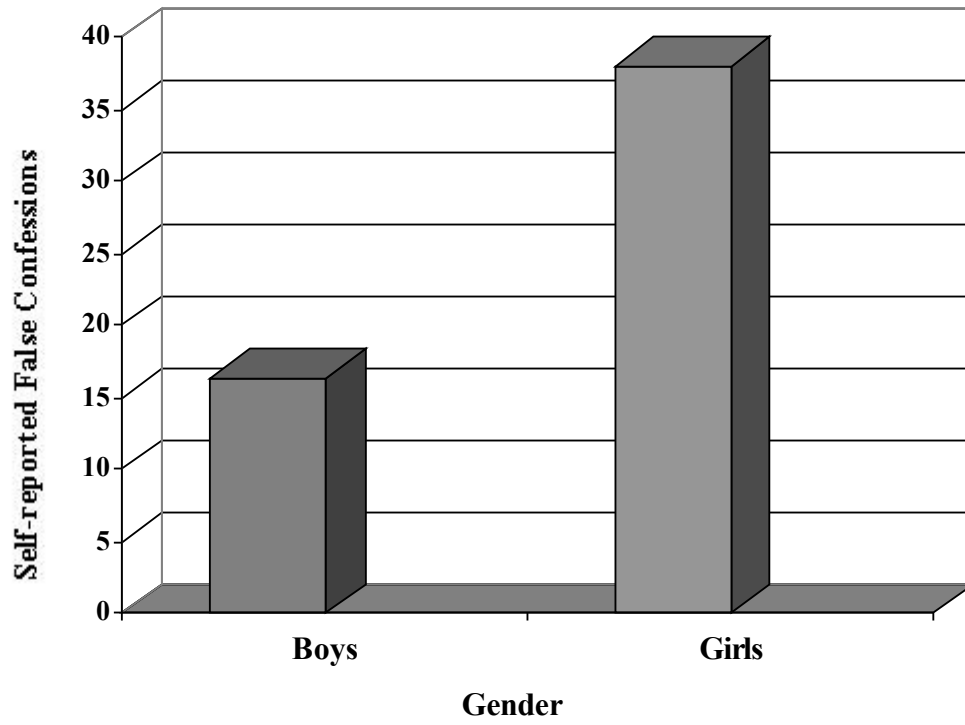


Figure 1. Gender Differences in Total *P-CHIP* False Confession Scores.

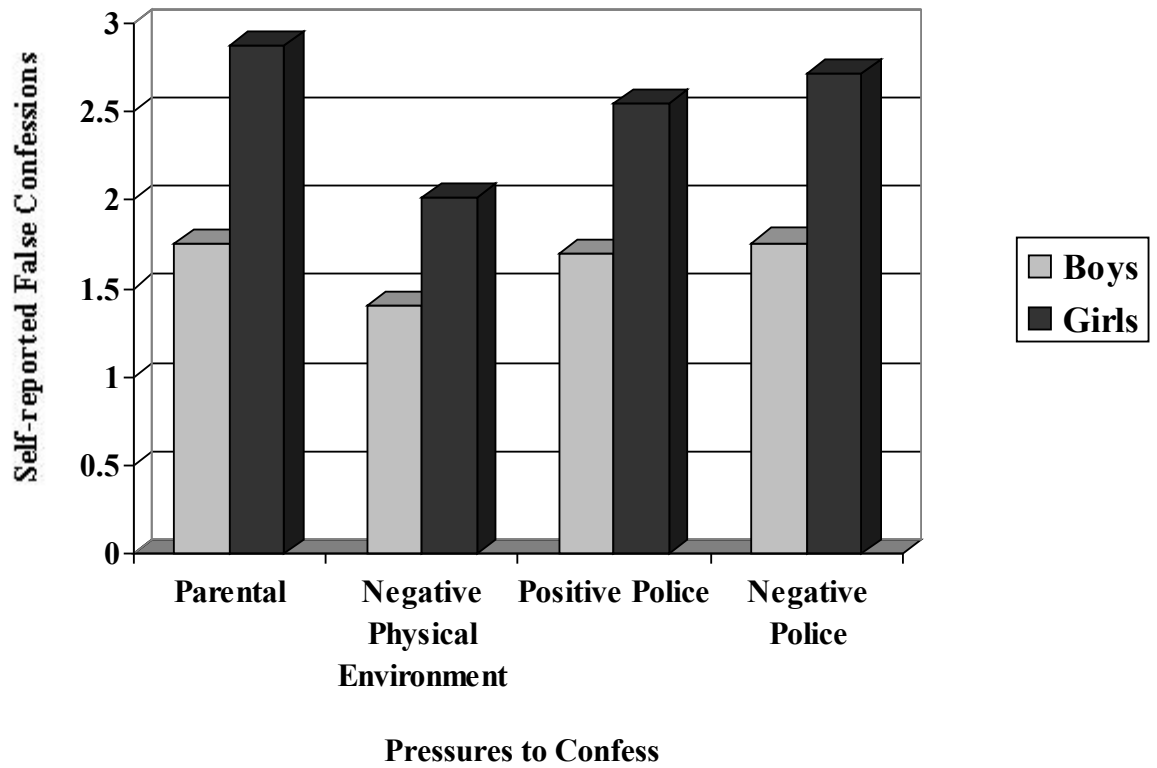


Figure 2. Gender Differences in Self-reported False Confessions: Average Item Scores By Types of Pressure.

Vita

Constance M. Mesiarik, J.D., M.A.

e-mail: cmesiarik@comcast.net

Education

Ph.D. in Clinical Psychology, July 2008 (Drexel University: Philadelphia, PA)

J.D., May 2006 (Villanova University School of Law: Villanova, PA)

M.A. in Psychology, August 2002 (MCP Hahnemann University: Philadelphia, PA)

B.S. in Psychology, May 1998 (University of Florida: Gainesville, FL)

Work Experience

Psychological Intern, Terry Children's Psychiatric Center, New Castle, DE (August 2006-July 2007).

Therapist, Devereux Foundation, Glenmoore, PA (July 2005-October 2005).

Forensic Evaluator, Philadelphia, PA (June 2004-August 2005).

Legal Intern, Defender Association of Philadelphia, Capital Habeas Corpus Unit, Philadelphia, PA (January 2005-May 2005).

Therapist, Drexel University Student Counseling Center, Philadelphia, PA (September 2003-June 2004).

Therapist and Ethical Policy Director, Congreso de Latinos Unidos, Inc., Girls' Treatment Center, Philadelphia, PA (August 2001-June 2002).

Legal Intern, American Psychological Association, Practice Directorate, Legal and Regulatory Affairs, Washington D.C. (May 2001-August 2001).

Editor, University of Florida Institutional Review Board, Gainesville, FL (August 1998 – May 1999).

Presentations

Kalbeitzer, R., Goldstein, N.E., Riggs Romaine, C.L., Mesiarik, C., & Zelle, H. (March 2008). Reliability and Validity of the Miranda Rights Comprehension Instruments –II . Part of a symposium: The Miranda Rights Comprehension Instruments-II. Presented at the annual conference of the American Psychology- Law Society, Jacksonville, Florida.

Goldstein, N. E., Mesiarik, C., Chulvik, S., Zelle, H., & Kayser, K. (March 2005). Why juveniles are at risk in the interrogation room. Part of a symposium: Police Interrogations and Confessions. Presented at the annual conference of the *American Psychology-Law Society* (Division 41 of the American Psychological Association), La Jolla, CA.

Mesiarik, C., Goldstein, N. E., & Dovidio, A. (March 2004). Assessing Miranda rights: Policy implications and future research. Part of a symposium: The Miranda Rights Comprehension Instruments-II: Related Research and Policy Implications. Presented at the annual conference of the *American Psychology-Law Society* (Division 41 of the American Psychological Association), Scottsdale, AZ.

Kalbeitzler, R., Strachan, M., Goldstein, N. E., Mesiarik, C., & Oberlander, L. (March 2004). The psychometric properties of the Miranda Rights Comprehension Instruments-II. Part of a symposium: The Miranda Rights Comprehension Instruments-II: Related Research and Policy Implications. Presented at the annual conference of the *American Psychology-Law Society* (Division 41 of the American Psychological Association), Scottsdale, AZ.

Mesiarik, C., Goldstein, N. E., & Strachan, M. (August 2002). Depression treatment adapted for girls in the juvenile justice system. Part of a symposium: Adapting Mental Health Treatments for Female Juvenile Offenders. Presented at the annual convention of the *American Psychological Association*, Chicago, IL.

Strachan, M., Goldstein, N. E., Spielman, D., Osman, D., Appleton, C., Thomson, M., Mesiarik, C., Weil, J., Olubadewo, O., & Picarello, K. (August 2002). Developing community-based treatment programs for female juvenile offenders. Paper presented at the annual convention of the *American Psychological Association*, Chicago, IL.

Mesiarik, C., Goldstein, N. E., & Thomson, M. (March 2002). Validity of the Miranda Rights Comprehension Instruments-II scoring criteria and attorneys' perceptions of adequate Miranda comprehension. Part of a symposium: The Miranda Rights Comprehension Instruments-II and Adolescent Offenders' Miranda Comprehension. Presented at the biennial conference of the *American Psychology-Law Society* (Division 41 of the American Psychological Association), Austin, TX.

Mesiarik, C., Goldstein, N. E., & Picarello, K. (March 2002). Status of girls in the U.S. justice system. Part of a symposium: Developing, Implementing, and Empirically Evaluating a Court-Mandated Treatment Program for Female Juvenile Offenders. Presented at the biennial conference of the *American Psychology-Law Society* (Division 41 of the American Psychological Association), Austin, TX.

Mesiarik, C. M., Goldstein, N. E., Weil, J., Strachan, M., Thomson, M., Osman, D., Appleton, C., Olubadewo, O., Picarello, K. A., & Spielman, D. (November 2001). Treating depression in adolescent female offenders. Presented at the annual conference of the *Association for Advancement of Behavior Therapy*, Philadelphia, PA.

Strachan, M., Goldstein, N. E., Spielman, D., Osman, D., Appleton, C., Thomson, M., Mesiarik, C. M., Weil, J., Olubadewo, O., Picarello, K. A. (November 2001). Collaborating with community-based organizations to meet treatment needs of adolescent female offenders. Presented at the annual conference of the *Association for Advancement of Behavior Therapy*, Philadelphia, PA.

Thomson, M. R., Goldstein, N. E., Mesiarik, C., Osman, D., Weil, J., Strachan, M., Picarello, K. A., Olubadewo, O., Appleton, C., & Spielman, D. (November 2001). Treating self-mutilation in female juvenile offenders. Presented at the annual conference of the *Association for Advancement of Behavior Therapy*, Philadelphia, PA.

Goldstein, N. E., Mesiarik, C., & Osman, D. (August 2001). Who cares about girls? Developing gender-specific programs for female juvenile offenders. Part of a symposium: Juvenile Forensic Research: False Confessions, Treatment, and Prediction of Recidivism. Presented at the annual convention of the *American Psychological Association*, San Francisco, CA.

Goldstein, N. E., Olubadewo, O., Osman, D., Thomson, M., Appleton, C., Mesiarik, C., Oberlander, L., & Geier, J. (2001). Risk factors for false confessions in

adolescent offenders. Paper presented at the *European Conference of Psychology and Law*, Lisbon, Portugal.

Goldstein, N. E., Spielman, D., Osman, D., Olubadewo, O., & Mesiarik, C. (2001). Using multifaceted treatment programs to prevent adolescent female recidivism through community collaboration. Paper presented at the founding conference of the *International Association of Forensic Mental Health Services*, Vancouver, British Columbia, Canada.

Fondacaro, M. R., Jackson, S. L., & Howell, C. M. (August 1998). Family justice and psychosocial functioning among adolescents. Paper presented at the annual convention of the *American Psychological Association*, San Francisco, CA.

Publications

Goldstein, N. E., Thomson, M., Mesiarik, C., Appleton, C., Weil, J., Osman, D., Strachan, M., Olubadewo, O., Picarello, K., Kalbeitzer, R., Necowitz, B. A., & Lucks, D. (under review). The Delinquency Intervention and Assessment (DIA) program for girls: An empirically-based, court-mandated treatment for female juvenile offenders. *Behavioral Sciences and the Law*.

Goldstein, N. E., Arnold, D. H., Weil, J., Mesiarik, C., Peuschold, D., Grisso, T., & Osman, D. (2003). Comorbid symptom patterns in female juvenile offenders. *International Journal of Law and Psychiatry*, 26, 565-582.

Helweg-Larsen, M., & Howell, C. (2000). Effects of erotophobia on the persuasiveness of condom advertisements containing strong or weak arguments. *Basic and Applied Social Psychology*, 22(2), 111-117. (*Undergraduate Senior Thesis*).

