

**ADOLESCENT RIGHTS COMPREHENSION: THE INFLUENCE OF AGE,
INTELLIGENCE, AND INTERROGATIVE SUGGESTIBILITY**

by

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ABSTRACT

Research demonstrates that many adolescents show poor comprehension of their legal arrest rights. This finding is concerning given recent trends towards the increased availability of severe punishments for youths convicted of serious crimes. This study investigates the relationship between age, intellectual ability, interrogative suggestibility and arrest rights comprehension in a Canadian sample of 94 adolescents 12 to 19 years of age. Participants completed the Wechsler Abbreviated Scale of Intelligence, Grisso's Instruments for Assessing Understanding and Appreciation of *Miranda* Rights, and the Gudjonsson Suggestibility Scales. Results showed that age and IQ significantly and independently predicted rights comprehension. Younger adolescents did not understand their rights as well as older adolescents, and youths with lower intellectual ability levels also demonstrated more impaired comprehension of their rights. Interrogative suggestibility was inversely related to rights comprehension, and this relationship was mediated by IQ, but not moderated by age. The implications of these findings are discussed.

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Introduction

In both Canadian and U.S. juvenile justice systems, an important philosophical shift has taken place, moving from a benevolent and rehabilitation focused approach to a model emphasizing accountability and punishment (Redding, Goldstein, & Heilbrun, 2005). Provisions under Canada's *Youth Criminal Justice Act (YCJA, 2002)* underscore recent trends towards the increased availability of severe punishments for young persons convicted of serious crimes. Young offenders ages 14 years and older can face adult penalties for serious offenses under the *YCJA*. In the U.S., more youths are being transferred to adult criminal court, and sentenced to prison rather than juvenile facilities (Penney & Moretti, 2005; Salekin, Yff, Neumann, Leistico, & Zalot, 2002). This shift calls attention to the importance of ensuring that young persons are able to understand and make informed decisions regarding their legal rights (Grisso, 1997).

In 1966, the U.S. Supreme Court handed down a crucial decision concerning procedural justice for adults. In *Miranda v. Arizona* (1966) the Court ruled that arrested individuals cannot be forced to answer questions and recognized the act of making a statement in response to interrogation as an act of self-incrimination. In an effort to strengthen individuals' protection against self-incrimination during a police interrogation, the *Miranda* Court outlined new procedural protections that mandated police to warn suspects prior to interrogation of several rights, including: their right to remain silent, that anything they say can be used against them in a court of law, the right to the presence of an attorney, and the right to free counsel if they cannot afford the cost of an attorney. Soon after, the rights provided to adults in *Miranda* were extended to juveniles in the cases of *Kent v. U.S.* (1966) and *In Re Gault* (1967). In *Gault* (1967), the Court

importantly recognized the inherent vulnerability and immaturity of adolescents, and noted that because of these disadvantages, special caution was required in circumstances relating to admissions and confessions. However, a seemingly straightforward extension of rights from adult to juvenile courts has not been easily implemented in practice, due largely to important developmental differences in cognitive and decision making capacities of youth compared to adults.

Canadian policy makers and researchers have also acknowledged the prevailing view that young people require greater protection under the law given their developmental status and relative immaturity (Peterson-Badali, Abramovitch, Koegl, & Ruck, 1999, *YCJA*). The *YCJA* preamble outlines the importance of the enhanced procedural safeguards for young persons deemed necessary to ensure that their rights are protected (s.3(1)(b)(iii)). Unlike the U.S. where the arrest rights afforded to individuals were decided by the courts, Canadian arrest rights are outlined in various bodies of legislation. The specific rights guaranteed to young persons in the context of a police investigation are outlined in section 10(b) of the *Canadian Charter of Rights and Freedoms* (*Charter*, 1982), and sections 25 and 146 of the *YCJA*, as well as in common law decisions. Young people share the rights afforded to all Canadians under the *Charter*, including the right to silence, and the right to a consult with counsel. Section 146 of the *YCJA* also extends young people the right to consult with a parent or other appropriate adult at any point during the legal process. It is required that these rights are clearly explained to the young person, in language appropriate to his or her age and understanding. Section 25(2) of the *YCJA* requires that the officer in charge advise the youth of his or her rights, as well as provide an opportunity to invoke those rights (e.g.,

explaining how to contact a duty-free lawyer). Further complicating matters, youths who are at risk of receiving an adult sentence may be warned of this possibility during the general arrest rights warning made by police officers if they are being charged with certain serious offenses.

The specific rights guaranteed to suspects prior to arrest and interrogation are outlined in Canadian legislation and the U.S. *Miranda* ruling, however the specific wording and language employed in rights warnings varies between jurisdictions and police forces. Research conducted in the U.S. has demonstrated significant variability in the language, readability, and semantic content included in arrest rights warnings across states. For example, Helms (2003) investigated the readability of adult and juvenile *Miranda* warning cards carried by police officers and waiver forms employed across most U.S. states. In his analyses, Helms (2003) determined that the Flesch-Kincaid grade reading levels of protocols obtained at the state level ranged substantially, from 4.0 in South Dakota, to 9.9 for forms used by the Bureau of Alcohol, Tobacco, and Firearms. Similar research has not been conducted in Canada, but it seems reasonable to assume that the same might be true, given the fact that Canadian jurisdictions employ a large number of different police forces and organizations. An example rights warning employed by the municipal police force in Newmarket, Ontario requires officers to read the following information to youths upon arrest:

You have been arrested for _____ (briefly describe reasons for arrest).

Do you understand the reason for your arrest?

It is my duty to tell you that you do not have to tell me anything about this unless you want to. Do you understand?

It is also my duty to tell you that whatever you say will be taken down in writing and may be used in proceedings against you. Do you understand?

I must also tell you that you have the right to call and consult with a lawyer, or your parents, or some adult relative, or some other adult if your parents or adult relatives are not available. Do you understand?

You have the right to telephone any lawyer you wish without delay. Do you understand?

You also have the right to free legal advice from a legal aid lawyer. Do you understand?

If you are charged with an offence you may apply to the Ontario Legal Aid Plan for legal assistance. Do you understand?

1-800-265-0451 & 1-800-561-2561 are toll free numbers that now will put you in contact with a legal aid lawyer for free legal aid rights. Do you wish to call a lawyer now?

You have the right to have a lawyer and your parent, or an adult relative or another appropriate adult present here with you if you want. Do you want someone here with you?

If you have spoken to any Police Officer or to anyone in authority, or if any such person has spoken to you in connection with this case, I want it clearly understood that I do not want it to influence you in making any statement. Do you understand?

This warning has a Flesch-Kincaid reading grade level of 8, meaning that the average 8th grader would be able to read this form. This suggests that an average 6th or 7th grade student (age 12) may have difficulty understanding some parts of this warning.

A key assumption underlying extended procedural safeguards such as rights warning procedures is that young people are able to make informed use of them. Canadian courts have variously interpreted the appropriate standard for rights waiver as encompassing both an understanding of the right, as well as appreciation of the consequences of waiving that right. Specifically, comprehension refers to a young

person's simple understanding of their rights, while appreciating the significance of a right goes beyond simple understanding and requires an individual to understand why they are important. For example, a young person may clearly understand a statement informing him or her of the rights to consult with a lawyer prior to interrogation, but without an appreciation that the lawyer's role is to serve as an advocate, this understanding is rendered meaningless (Grisso, 1998).

The Supreme Court of Canada has commented on the enhanced procedural protections allotted to young persons under the *YCJA*'s predecessor (s. 56(2) of the *Young Offender's Act, YOA*) noting "a young person is usually far more easily impressed and influenced by authoritarian figures...it is unlikely that they will appreciate their legal rights in a general sense or the consequences of oral statements made to persons in authority; certainly they would not appreciate the nature of their rights to the same extent as would most adults" (*R. v. J. (J. T.)*, (1990), at 766-767 per Cory, J.).

Canadian courts have variously interpreted the conditions that must be present in order for a young person to legally waive their arrest rights. The Supreme Court of Canada stipulated that a person waiving a given right must be doing so with full knowledge of that right's protection and of the effect the waiver will have on that right (*Korponay v. Attorney General of Canada*, 1982; *R. v. Evans*, 1991). In *R. v. Evans* (1991) the Supreme Court ruled that in order for a person to exercise his or her arrest rights, s. 10(b) of the *Charter* requires that a person must be able to understand those rights. Where an individual's understanding of his or her rights is in doubt, these provisions lay a positive duty on police to take steps to facilitate that understanding. In *Clarkson v. The Queen* (1986) Wilson, J. outlined that in order for a waiver of rights to be

valid it must be premised on a true appreciation of the consequences of giving up the right. The Supreme Court of Canada has broadly ruled that when determining the validity of a rights waiver, the emphasis should be on the reality of the total situation as it impacts on the understanding of the accused, rather than on the technical detail of what the accused may or may not have been told (*R. v. Smith*, 1991).

Provincial trial and appellate courts have also proposed that police officers have a positive obligation to ensure that these rights are communicated to a young person in language they can understand. The British Columbia Court of Appeal in *R. v. M.A.M.* (1986) found that merely reading a rights waiver form listing available options to a young offender was inconsistent with *YOA* provisions and that further clarification and explanation in language appropriate to the young person's age and understanding was required. It has also been found that police officers must take the further step of "learn[ing] something about the educational level of the child, the language and vocabulary skills of the child, his faculties of understanding, his emotion state at the time" to ensure understanding (*Queen v. G.Q. and T.B.*, No.1 1989 at p. 396). The courts have supported the broader scope of other procedural safeguards provided to young offenders including the right to consultation. In *R. v. B.C.W.* (1986) the Manitoba Court of Appeal stated that the right to consult with a parent is not restricted to situations where the young person takes the initiative to call the parent, but that the police must facilitate the consultation arguing that "the young person's right to consultation is not a technical one to be recognized in form alone" (at p. 527).

As outlined, the courts have determined that law enforcement officers must exercise due diligence by taking extra measures to ensure that these standards are met

when interrogating juvenile suspects. Canadian provincial courts are now beginning to hear cases relating to young persons' understanding and waiver of their arrest rights under the *YCJA*. Unfortunately, it appears that current practice does not reflect these legislative and common law standards. In October, 2005, Sulyma J. of the Alberta Court of Queen's Bench ruled to exclude confession evidence elicited from a young person by police during questioning (*R. v. B. (S.M.)*, 2005). In this case, RCMP officers repeatedly questioned a 13-year-old boy being held in custody, and eventually obtained a signed confession from him. Despite multiple refusals to make a statement, many requests to have his lawyer present during questioning and to speak with his parents, RCMP Constables continued questioning him and testified that their actions constituted normal practice. Sulyma J. agreed with forensic examiners who testified that the accused did not understand his rights or the consequences of waiver. She found that the rights waiver form employed by the RCMP was confusing and that extra care should have been taken to determine his capacity to understand, especially after he reported that he could not read. The facts of this case are particularly concerning given that legislative and common law protections for juvenile arrest rights have been in place for more than a decade in Canada.

As outlined, young people must know that they are entitled to certain rights, understand the protections these rights afford them, and understand the consequences of exercising or waiving these rights in order to benefit from legal natural justice extensions. (Abramovitch, Higgins-Biss & Biss, 1993). It is promising to note that Canadian courts have recognized the fact that important developmental factors must be taken into consideration when dealing with adolescents. Research demonstrates that there are

several important developmental differences between younger adolescents and adults that may impact understanding and appreciation of their arrest rights. According to Steinberg and Schwartz (2000) “other than infancy, there is probably no period of human development characterized by more rapid or pervasive transformations in individual competencies” (p. 23). Adolescents are at a transitional stage in development where they are still undergoing important maturational changes. This developmental period is marked by significant physical changes, budding sexuality, heightened awareness and sensitivity towards peers, and an increased desire for independence and identity development, to name only a few (Kazdin, 2000). Changes in their physical, intellectual, emotional and social capabilities are rapid and dramatic (Steinberg & Schwartz, 2000).

Young persons, especially individuals under the age of 15, generally show poor comprehension of their arrest rights (Abramovitch et al., 1993; Abramovitch, Peterson-Badali, & Rohan, 1995; Colwell et al., 2005; Goldstein, Condie, Kalbeitzer, Osman, & Geier, 2003; Grisso 1980; Redlich, Silverman, & Steiner, 2003; Viljoen & Roesch, 2005). One compelling explanation for the differences in understanding between adolescents and adults is that the cognitive capacities of adolescents are simply underdeveloped. Empirical evidence demonstrates that cognitive development continues throughout adolescence, and that it is only by age 17 that adolescents’ raw cognitive abilities are comparable to those of adults. Neuroimaging research shows that brain structures continue to develop during adolescence, particularly in the frontal lobes, an area that controls executive functions of the brain related to decision-making (Giedd et al., 1999). Similarly, researchers have demonstrated that performance on cognitive measures improves with age (Davies & Rose, 1999).

In their research Viljoen and Roesch (2005) demonstrated that important cognitive abilities including general intellectual ability, verbal ability, attention, and executive functioning continue to develop during adolescence. They also found that cognitive ability was an important predictor of legal capacities, particularly the understanding of interrogation warnings. For this reason, Steinberg and Schwartz (2000) argue that it is critical to distinguish between younger and older adolescents when dealing with the general question of competence. Findings from the arrest rights comprehension literature complement this distinction, generally showing that older adolescents demonstrate a level of understanding that is comparable to adults (Grisso, 2003).

In addition to developmental differences in cognitive factors, research shows that adolescents differ in other important ways relevant to legal competencies. Particularly, adolescents differ in their level of psycho-social maturity and in the way that they reason and make decisions. Steinberg and Schwartz (2000) suggested that younger adolescents with intellectual abilities comparable to those of adults have less life experience to draw on, which may influence their reasoning and decision making processes. Younger children and adolescents are generally less likely to think strategically about their decisions (Peterson-Badali & Abramovitch, 1993). Adolescents are less future oriented, less likely to weigh the consequences of their decisions, and often act impulsively (Cauffman & Sternberg, 2000; Halpern-Felsher & Cauffman, 2001). Thus, even if a young person adequately understands the meaning of a *Miranda* warning, his or her appreciation of the consequences of the decision to waive or exercise that right may suffer given his or her relative level of maturity and development. It is perhaps not surprising, then, that research demonstrates that the majority of young persons opt to

waive their rights when being questioned by police (Grisso, 1981; Grisso & Pomicter, 1977; Peterson-Badali et al., 1999). Interestingly, results from Canadian and U.S. studies have shown that with increased rights understanding, young persons are more likely to refuse to waive their rights in the context of a criminal investigation (Abramovitch et al., 1993; Viljoen & Roesch, 2005).

These findings highlight the need to disentangle the various factors influencing rights comprehension and rights waiver. In evaluating the validity of a rights waiver, courts must consider a variety of situational and individual difference variables in order to reach a decision regarding the total circumstances surrounding the waiver. For this reason, further evaluation of the various factors influencing rights comprehension represents an important area of social scientific research. The present study does not attempt to answer questions related to all aspects of rights waiver validity (e.g., situational variables such as coercive police behaviour and custodial conditions, or decision-making relevant to waiver), but will specifically aim to provide a better understanding of certain factors that may be related to rights comprehension and appreciation for young persons.

Factors Influencing Rights Comprehension

Researchers have investigated the influence of numerous factors on juvenile rights comprehension, including age, IQ, ethnicity, prior police contact, legal experience, socio-economic status, psychopathology and symptoms, special education classes, psychosocial maturity and interrogative suggestibility (Abramovitch et al., 1993; Abramovitch et al., 1995; Colwell et al., 2005; Ferguson & Douglas, 1970; Goldstein, et al., 2003; Peterson-Badali et al., 1999; Redlich et al., 2003; Viljoen & Roesch, 2005).

Results from these studies consistently indicate that rights comprehension is significantly more impaired for younger adolescents compared with older adolescents and adults. Further, comprehension is most impaired among younger adolescents with lower IQ. Results from studies evaluating the influence of the other factors have been less clear.

Abramovitch et al. (1993, 1995) first investigated young people's understanding and assertion of their rights to silence and legal counsel in a Canadian context. They found that few adolescents fully understood their rights or the implications of waiving those rights. They asked adolescents to imagine that the police suspected them of a crime. Interviewers then read them their arrest rights and presented them with a waiver form that they were asked to sign. While the majority (71.7%) refused to sign the form, more than one-quarter (28.3%) agreed to sign the form. They also found a significant association between comprehension and the likelihood of participants agreeing to sign the waiver form. Of the youths who demonstrated adequate understanding, 89.5% refused to sign, whereas 64.9% of participants who did not understand the form agreed to sign it. In their later study, they found that 80-90% of adolescents over the age of 16 adequately paraphrase their arrest rights, while only a third of the youngest participants (ages 12 to 14) were able to do so. Findings from these Canadian studies demonstrate that similar to their U.S. counterparts, some younger Canadian adolescents struggle to understand their arrest rights. It is particularly concerning that those youth who demonstrated poor understanding were also more likely to waive their rights.

Peterson-Badali et al. (1999) also investigated the adolescents' reasoning concerning the decision to invoke or waive their arrest rights in a sample of 50 Canadian adolescents involved in the criminal justice system. While the authors did not directly

assess comprehension, they asked participants to describe the reasoning underlying their decisions. They found that youths often provided reasons that suggested a fair degree of misunderstanding and failure to appreciate the significance of their rights. For example, one participant reported that he was aware of his right to silence, but proceeded to make a statement because he did not realize that this right applied to his interactions with police. Investigators also questioned participants about their most recent involvement in the criminal justice system in terms of their recollection of the rights warning procedure. A substantial proportion of participants reported that they remembered being told about certain rights but did not assert them at the time of police questioning.

A recent example of research using a U.S. sample of adolescents was carried out by Viljoen and Roesch (2005). They administered Grisso's (1998) *Instruments for Assessing Understanding and Appreciation of Miranda Rights* to 152 male and female defendants aged 11 to 17 in a detention centre in Washington State. These instruments provide a standardized method for assessing understanding and appreciation of rights warnings. They found that age significantly predicted overall rights comprehension, with younger adolescents demonstrating more impaired comprehension than older adolescents. They also found that cognitive development partially explained age-based differences in legal capacities. Research has generally found that an arrest history or previous experience with the criminal justice system does not strongly predict performance on *Miranda* rights comprehension (Grisso, 1997). Similarly, Viljoen and Roesch (2005) found that a history of previous arrests was associated with higher scores only on a single subscale of one of Grisso's four *Miranda* instruments. Participants from low socioeconomic backgrounds scored significantly lower on measures of arrest rights

comprehension, even after cognitive abilities were controlled. They failed to find any relationship between rights comprehension and psychological symptoms including depression, anxiety, and behaviour problems. These results are consistent with other findings in the literature (e.g., Grisso et al., 2003).

The choice to waive or exercise arrest rights represents the first step in a series of difficult decision points that individuals face when undergoing a police investigation. In addition to investigating the factors influencing arrest rights comprehension and waiver, researchers have examined the relationship between arrest rights comprehension and other possible outcomes arising from police interrogations. For example, researchers have begun to examine poor arrest rights comprehension as a possible predictor of both the decision to waive arrest rights and submit to police interrogation without assistance or advice, as well as a predictor in the likelihood of offering a false confession (Goldstein et al., 2003).

In their study, Goldstein et al. (2003) examined whether age, IQ, and a history of special education predicted *Miranda* rights comprehension in a sample of 55 delinquent boys in Massachusetts. Consistent with the literature, they found a significant negative association between age and IQ and *Miranda* comprehension: younger adolescents and those with lower IQ demonstrated more impaired understanding. They also investigated possible differences in *Miranda* rights comprehension based on individual difference variables, including ethnicity, and special education history. They found no overall significant differences in understanding based on ethnicity. Youths who reported having participated in special education classes demonstrated poorer comprehension, however the authors did not report testing for the extent to which IQ accounted for this difference.

As part of the same study, they assessed examinees' self-reported likelihood of offering a false confession in response to a series of hypothetical vignettes. In their sample, *Miranda* comprehension correlated negatively with false confessions (better comprehension meant less likelihood of offering a false confession) but found that only age, and not *Miranda* comprehension or IQ served as an independent predictor.

Interrogative Suggestibility. An interesting, and less well developed line of inquiry, has examined the relationship between interrogative suggestibility and rights comprehension in adolescents. Researchers have hypothesized that suggestibility may be related to both arrest rights comprehension, as well as false confessions (Everington & Fulero, 1999; Goldstein et al., 2006; O'Connell, Garmoe, & Goldstein, 2005; Redlich et al., 2003; Sigurdsson & Gudjonsson, 1996); however few studies have been published in this area. Gudjonsson and Clark (1986) 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 behavioral response is affected" (p. 86). They developed a theoretical model of interrogative suggestibility combining two distinct aspects of suggestibility relevant to police questioning. The first reflects the extent to which individuals tend to give into leading questions (yield), and the second refers to individuals' tendency to shift responses under conditions of interpersonal pressure (shift) (Gudjonsson, 1984). The *Gudjonsson Suggestibility Scales* (GSS, Gudjonsson, 1997) were developed to assess individuals' suggestibility according to this theoretical model and have been widely used in research examining interrogative suggestibility.

Results from the literature suggest that there are developmental differences in suggestibility. Children are more suggestible than adolescents and adults and suggestibility decreases steadily as age increases (Danielsdottir et al., 1993; Warren, Hulse-Trotter, & Tubbs, 1991). Researchers have investigated interrogative suggestibility in a variety of adolescent populations, including normal, offender, institutionalized, and forensic samples (Gudjonsson & Singh, 1984a; Gudjonsson & Singh, 1984b; Muris, Meesters, & Merckelbach, 2004; Redlich et al., 2003; Redlich & Goodman, 2003; Richardson, Gudjonsson & Kelly, 1995; Richardson & Kelly, 1995; Singh & Gudjonsson, 1992). Results generally indicate that when compared with adults, adolescents are no more likely to yield to leading questions posed during an interrogation. However, they do tend to be susceptible to interrogative pressure and are more likely to change their responses after receiving negative feedback in interrogation-like situations (Gudjonsson & Singh, 1984a; Richardson et al., 1995; Singh & Gudjonsson, 1992).

In addition to age, researchers have examined the relationship between suggestibility and a number of individual difference variables, including intelligence and gender. Results indicate that suggestibility is negatively correlated with IQ in both adults and adolescents (Muris et al., 2004; Polczyk, 2005; Pollard et al., 2004; Richardson & Kelly, 1995; Richardson et al., 1995; Singh & Gudjonsson, 1992). Gudjonsson (1990) found that the suggestibility-IQ relationship operates differently at different IQ ranges. He found a significant negative correlation between suggestibility and intelligence for individuals with below average IQ but no significant relationship for individuals with average and higher IQ. Richardson and Kelly found similar results in their 1995 study, but they caution that a small sample size limited the strength of this finding.

The suggestibility literature offers fewer studies examining gender differences in interrogative suggestibility. Suggestibility research conducted with children has yielded conflicting findings. McFarlane, Powell and Dugeon (2002) employed a video suggestibility scale modelled on the GSS scales, and found that 3- to 5- year-old girls were more suggestible (higher yield) than 3- to 5-year old boys in the sample. In their sample of fifth and sixth grade students, Calicchia and Santostefano (2004) also found that girls were significantly more likely to yield to misleading questions on both the GSS 2 (yield) and in response to questions about a video. Alternatively, Danielsdottier et al. (1993) provided evidence showing that boys (8 year olds) were more likely to yield to interviewers' suggestions (GSS yield) than girls. Pollard et al. (2004) found no significant gender differences in adults on the GSS 2 in a U.S. sample. This finding corresponds with an absence of gender differences reports in U.K. samples (Gudjonsson, 1997).

It is possible that some element of the maturation process affects suggestibility levels differently as boys and girls develop. For example, girls may be socialized to be more acquiescent and agreeable generally, and therefore less likely to disagree with the questions posed by examiners on the GSS. However, the trajectory of differential socialization processes for boys and girls as they may impact suggestibility remains unclear. This study further explored possible gender differences in interrogative suggestibility patterns in an adolescent sample in the hopes of clarifying this gap in the literature.

Few published studies have directly examined the relationship between adolescents' arrest rights comprehension and interrogative suggestibility. In their research, Redlich et al. (2003) investigated the relationship between *Miranda*

comprehension and suggestibility in a sample of 18 juveniles (14-17 years) and 17 young adults (18-25 years) recruited from various U.S. community settings. In keeping with previous findings, they found that in comparison to adults, adolescents demonstrated significantly worse comprehension of their rights. However, their findings with regard to suggestibility produced an interesting pattern of results. They found that higher suggestibility in terms of yielding to misleading questions significantly predicted increased comprehension and overall scores of rights understanding on Grisso's *Miranda* Scales. Conversely, they found that higher suggestibility in terms of shifting answers after receiving negative feedback was associated with lower comprehension and overall scores. They were unable to provide an explanation for this interesting pattern of results, and the findings are limited by a small sample size.

Goldstein et al. (2006) also investigated the relationship between interrogative suggestibility and rights comprehension in a larger sample ($N = 155$) of U.S. correctional youth. Like Redlich et al. (2003), they found that yield scores were significantly positively related to *Miranda* rights comprehension, even after controlling for age and IQ, and no significant association between shift scores and rights comprehension. They also found that total suggestibility scores were significantly related to participants' scores on a rights recognition measure, and suggested that youths with better abilities to recognize *Miranda* rights were less suggestible generally than those who did not understand the warnings.

Everington and Fulero (1999) investigated *Miranda* rights comprehension in a sample of adults with mental retardation. Results showed that they demonstrated poor rights comprehension generally, and were more susceptible to both the yield and shift

subtypes of suggestibility. Similarly, O'Connell, Garmoe, and Goldstein (2005) found that a sample of adults with mild mental retardation demonstrated significantly impaired comprehension of *Miranda* rights and increased overall suggestibility. Unlike Goldstein et al. (2006) and Redlich et al. (2003), who found a positive association between rights comprehension and the yield subtype of suggestibility, Everington and Fulero (1999) found a negative relationship between rights comprehension and yield suggestibility scores, and did not find a significant relationship between rights comprehension and shift scores. The pattern of results concerning suggestibility and rights comprehension in adolescent and adult populations has varied from study to study, and therefore requires further investigation before conclusions can be drawn regarding relationships between these variables.

Gudjonsson (1990, 1991) first suggested a possible relationship between interrogative suggestibility and false confessions in his research conducted with adults. Redlich and Goodman (2003) demonstrated that younger and more suggestible adolescent participants were more likely to falsely take responsibility for crashing a computer in an experimental paradigm than young adults. Interestingly, they found that the tendency to yield to misleading questions was related to an increased likelihood of complying with an experimenter's request to (falsely) sign a confession form. Alternatively, the tendency to shift responses in response to negative pressure was unrelated to confession. It is troubling to consider the implications of this study in light of the negative association between suggestibility and young people's understanding of their arrest rights demonstrated in some studies. Taking into consideration the fact that young age, high suggestibility, and low intelligence are all negatively associated with rights

comprehension, Redlich et al. (2003) identified the presence of a possibly dangerous cycle. Once in police contact a young person's chances of being interrogated by police are heightened along with the opportunity to receive an arrest rights warning by police. Poor rights comprehension has been identified as an important factor that may contribute to a young person's decision to then waive those rights, which, in combination with high suggestibility, increases the chances of self-incrimination, false confession, and the possibility of prosecution (Muris et al., 2004; Redlich et al., 2003; Richardson et al., 1995).

The Present Study

The courts must wrestle with a variety of factors related to rights comprehension when evaluating the legality of a young person's arrest rights waiver. Social scientific research has demonstrated that age and intellectual ability are important factors related to arrest rights comprehension in the U.S., but little research has been conducted with Canadian adolescents. Furthermore, research concerning other factors and individual difference variables has yielded unclear and often conflictual findings. Research conducted in Canada over 10 years ago demonstrated that few adolescents fully understood their arrest rights or appreciated the consequences associated with waiver decisions (Abramovitch et al., 1993, 1995). However, further research in this area using structured assessment measures and evaluating a contemporary group of Canadian adolescents is greatly needed.

This study investigates the relationship between age, intellectual ability, interrogative suggestibility and arrest rights comprehension in a community sample of Canadian adolescents 12 to 19 years of age. Juvenile rights comprehension studies

conducted in the U.S. have typically focused on samples of incarcerated youth, or adolescents currently involved in the criminal justice system in some way. Other studies have examined rights comprehension in school samples. Participants from the present study were selected from a community group of adolescents, attending recreational drop in centres in two Canadian cities. This sample is expected to differ from previously studied youth populations in several ways. First, it is expected that this group will perform better on measures of intellectual ability, and will yield a greater range in overall IQ compared to previously studied U.S. juvenile populations. This will also provide the opportunity to examine the relationship between intellectual ability and arrest rights comprehension in a more 'average' sample of adolescents. While most samples studied in the U.S. have had some, if not a fair amount of experience with police and the criminal justice system, the youths in this sample may or may not have ever come into contact with police officers in the context of a criminal investigation. This difference will allow indirect comparisons to be drawn between youth with and without previous police contact in terms of its impact on overall rights understanding.

A series of hypotheses and research questions were investigated. It was hypothesized that younger age, lower IQ, and higher suggestibility would be associated with decreased rights comprehension. The following research questions regarding possible mediation and moderation of these factors' relationship with comprehension were investigated:

1. Does age moderate the relationship between IQ and comprehension?
2. Does IQ mediate or account for the relationship between age and comprehension?
3. Does age moderate the relationship between suggestibility and comprehension?
4. Does IQ mediate or account for the relationship between suggestibility and comprehension?

Specifically, it was expected that age would significantly moderate the relationship between IQ and rights understanding, as well as the relationship between suggestibility and comprehension. It was hypothesized that IQ and suggestibility would serve as particularly important predictors of comprehension for younger adolescents. Expectations regarding these patterns of results were based on the findings from similar analyses conducted by Viljoen and Roesch (2005) and on previously established associations in the literature. It was unclear as to whether IQ would partially account for the relationships between age and comprehension and suggestibility and comprehension. Finally, the relationship between rights understanding and other individual difference variables from the literature that are theoretically related to rights comprehension were evaluated in a Canadian context, including previous police experience, socioeconomic status, gender, ethnicity and ESL status.

Method

Participants

Participants were recruited from municipal youth recreation centres in Ontario and British Columbia (B.C.). The Ontario participants were members of the Newmarket Youth and Recreation Centre in Ontario, Canada. Visitors to this municipal recreation facility include young persons between the ages of 12 to 19 years who live in the town of Newmarket and neighbouring communities. The B.C. participants were recruited from six smaller municipal youth centres across the lower mainland. Visitors to these centres live in the lower mainland communities of Burnaby and Coquitlam, and ranged in age from 12 to 19 years. In both provinces youths can attend the centres without cost.

Participants were recruited via flyers posted in the facility and visitors were randomly approached and invited to participate by researchers over a nine month period. Research assistants visited the youth centres during a variety of days and times. These occasions were largely determined by youth centre programming and efforts were made to avoid disrupting centre operations. On a given visit, all youths present at the centre were approached and invited to participate in the study. Approximately one-third of the youths approached agreed to participate in the study. Of those who declined, most explained that they did not have enough time to participate in the 90 minute protocol.

Characteristics from the Ontario and B.C. samples are presented in Table 1.

Participants from the two samples differed significantly with respect to age, $t(92) = -3.37$, $p = .001$, gender, $\chi^2(1, N = 94) = 11.03$, $p = .001$, ethnicity (Caucasian v. other ethnicity), $\chi^2(1, N = 94) = 21.60$, $p < .001$, and ESL status (English v. other first language), $\chi^2(1, N =$

94) = 21.67, $p < .001$. From the Ontario centre, 41 youths participated in the study (19 females and 22 males), and ranged in age from 12 to 19 years ($M = 14.4$, $SD = 2.26$). Participants from the B.C. centres included 53 youths, (8 females and 45 males), and ranged in age from 12 to 19 years ($M = 15.77$, $SD = 1.58$). From the Ontario sample, 85.4% of participants ($n = 35$) were Caucasian, 2.4% ($n = 1$) were Hispanic, 2.4% ($n = 1$) were Aboriginal, and 9.8% ($n = 4$) described themselves as coming from other ethnic backgrounds. From the B.C. sample, 37.7% ($n = 20$) were Caucasian, 18.9% ($n = 10$) were African Canadian, 1.9% ($n = 1$) were Hispanic, 11.3% ($n = 6$) were Asian, 1.9% ($n = 1$) were Aboriginal and 28.3% ($n = 15$) described themselves as coming from other ethnic backgrounds. The two samples did not differ significantly in IQ, socioeconomic status, or self-reported previous police contact. The average IQ of participants from the combined sample was 95.24 ($SD = 14.5$). The average socioeconomic status score (SES) of participants from both samples was calculated using Blishen, Carroll, and Moore's Socioeconomic Index for Occupations (1987), and was 40.91 ($SD = 12.62$) for both samples. A score of 40 corresponds with professions such as accountants and motor vehicle mechanics.

From the two samples, 29.8% ($n = 28$) reported having been talked to by the police about a crime that they may have been involved in. Together, this group of youth reported 50 separate incidents for which they were questioned (formally or informally) by the police, including fights and/or assaults (30%, $n = 15$), and thefts and/or break-and-enters (30%, $n = 15$), mischief and/or vandalism (22%, $n = 11$), and illegal use of drugs and/or alcohol (16%, $n = 8$). One youth reported having committed a sexual assault. The majority of adolescents with previous police contact reported that they were not charged

for the crime they were suspected of having committed. Of the 50 overlapping incidents, they reported having been charged for only 15 incidents (30%) and convicted of only 12 (24%).

Independent Variables

Demographic Variables

Participant information on age, gender, ethnicity, SES, first language status, and previous police contact was obtained during an initial interview. To measure previous police contact with reference to interrogation, participants were asked if they had ever had to talk with a police officer about a crime in which they might have been involved. They were also asked to provide some information concerning the events that lead to that contact, and the nature of the crime that the police suspected them of having been involved. SES was coded using Blishen et al.'s (1987) Socioeconomic Index for Occupations based on participants' parents' occupations. This scale provides an occupational socioeconomic index based on 1981 Canadian census data and takes into account median income by gender, and education level for a given occupation. For participants with two working parents, each parent was assigned an SES score, and then the two scores were averaged. SES could not be coded for five participants (5%) who were not able to report sufficient information about their parents' occupation.

Intellectual Function

All participants were administered the *Wechsler Abbreviated Scale of Intelligence* (WASI, Psychological Corp., 1999) as a brief measure of intellectual function. The WASI is a screening instrument that can be administered to individuals ages six through

89 years. It consists of four subtests: Vocabulary, Block Design, Similarities, and Matrix Reasoning. The WASI yields three index or composite IQ scores, including a Full Scale intelligence quotient (FS-IQ) calculated from the four subtests, as well as measures of Verbal IQ (V-IQ) and Performance IQ (P-IQ), calculated from two subtests (Kaufman & Lichtenberger, 2002). The WASI can be administered by a person with a Bachelor's degree or appropriate graduate-level training, and requires approximately 30 minutes to complete (Psychological Corp., 1999).

The WASI evidences good internal consistency. For children ages 6-16, mean reliability coefficients were .93, .94 and .96 for V-IQ, P-IQ and FS-IQ respectively. Mean reliability coefficients for adults ages 17 to 89 were .96, .96, and .89, for V-IQ, P-IQ and FS-IQ respectively (Psychological Corp., 1999). Mean WASI reliability coefficients for children and adults on test-retest ranged from .77 to .93 (across subtests and IQs). Interscorer reliability coefficients were in the high .90s for all subtests. Construct validity for the WASI is supported by intercorrelations between the WASI subtests and IQ scales, as well as by the results of joint factor analyses between the WASI, Wechsler Intelligence Scale for Children-III (WISC-III), and the Wechsler Adult Intelligence Scale-III (WAIS, Psychological Corp., 1999). WASI correlations with WISC-III and WAIS-III V-IQ, P-IQ and FS-IQ (using 4 subtests) were also strong, ranging from .76 to .87. In the present study, only FS-IQ (hereafter referred to as IQ) scores were used, given the fact that the total IQ score tends to provide a more precise estimate of intellectual ability than the two subscale scores. Internal consistency of the WASI in the present sample was good ($\alpha = .93$) and the mean for inter-item correlations was also acceptable ($r = .15$).

The WASI was selected for use in this study because it is one of the few brief measures of intellectual function that has demonstrated sufficient reliability and validity data. However, as is the case with many short form IQ instruments, the abbreviated nature of the measure gives rise to limitations, several of which are noted in the WASI manual (Psychological Corp., 1999). Authors remind users that the WASI sacrifices some degree of clinical accuracy for the conservation of time and that the measure samples limited domains of cognitive functioning compared to a full-scale IQ instrument. There is some evidence in the literature that WASI IQ scores may not consistently provide desirably accurate estimates of IQ scores obtained on more comprehensive IQ measures in adult clinical samples (e.g., see Axelrod, 2002). However, other researchers have shown that the WASI provides satisfactory IQ estimates compared to more comprehensive measures of intellectual function. Saklofske, Caravan, and Schwartz (2000) examined correlations between IQ scores from the WASI and two Canadian measures of cognitive skills and achievement. Moderate to large correlations between the four WASI subscales and the verbal, non-verbal, language, math, and reading subscales of the Canadian Achievement Tests (2nd ed.) and the Canadian Test of Cognitive Skills (Educational Assessment Services, 1992) demonstrated strong support for the use of the WASI as a brief measure of intelligence in a sample of Canadian elementary school children. Kaufman and Kaufman (2001) recommend use of brief intellectual tests that are reliable, valid, well-normed, and easy to give and score (such as the WASI) over the use of other haphazard shortened versions of other full scale intellectual tests (such as the WAIS).

Interrogative Suggestibility

Gudjonsson's Suggestibility Scales (Gudjonsson, 1997) measure interrogative suggestibility, and tap two distinct forms of suggestibility: the extent to which people yield to misleading questions (yield), and the extent to which people shift their answers after receiving negative feedback (shift). The measure is presented to participants as a memory test, and employs a narrative paragraph describing a fictitious story that is read aloud to participants. After listening to the story, they are asked to recall as many details as they can both immediately, and again after a 50-minute delay. The second portion of the GSS asks participants 20 specific questions about the content of the story, 15 of which incorporate increasingly suggestive prompts within the question. Regardless of actual performance on these questions, participants are provided with negative feedback from the examiner who informs them that they have made a number of errors. They are then sternly asked to respond to the same set of questions again and to try to respond more accurately. Gudjonsson has developed two equivalent forms of the GSS. The parallel form (GSS 2) was employed in this study because the less British-specific names and places better reflect contemporary Canadian vocabulary. As well, the internal consistency of items on the GSS 2 is somewhat better than that of the original form (Gudjonsson, 1997). Five GSS 2 subscale scores can be calculated: short and long delay recall scores, two scores measuring the impact of suggestive questions (yield 1 and yield 2), and one score measuring the impact of interrogative pressure (shift). A total suggestibility score can also be calculated by summing the yield 1 and shift subscales.

Factor analysis of GSS 2 yield and shift items clearly showed that the two types of items load on two separate factors. The GSS 2 subscales also yield good reliability. Alpha coefficients for the yield 1, yield 2, and shift were .87, .90, and .79 respectively

(Gudjonsson, 1992). Inter-rater reliability of the memory and suggestibility scores is very high, with Intraclass correlations ranging from .951 to .969 for the memory scores and .989 to .996 for the suggestibility scores (Clare, Gudjonsson, Rutter, & Cross, 1994). Finally, while researchers have not directly investigated the predictive validity of the GSS 2, Merckelbach et al. (1998) found limited evidence for the predictive validity of the original GSS form. The correlation between the extent to which participants gave into leading questions on an unrelated task and GSS yield scores was significant ($r = 0.22$, $p < .05$). Gudjonsson and Singh (1984a) also demonstrated criterion-related validity for the GSS as evidenced by significant correlations ($r = 0.62$, $p < .001$) between teachers' ratings of suggestibility in delinquent boys and the GSS. In the present study, the yield 1 (referred to as yield from this point on), shift, and total suggestibility scores were used in analyses. Two of these indices yielded acceptable internal consistency in the present sample, with alpha coefficients of .72 for yield, and .73 for total suggestibility. Internal consistency was below desirable standards for shift, with an alpha coefficient of .57.

Researchers have also examined the extent to which the administration setting may influence GSS scores, and the appropriateness of using the scale in other cultural contexts. Gudjonsson (1995) compared the suggestibility scores of 353 offenders assessed in both prison ($N = 173$) and as outpatients in a hospital ($N = 180$) and found that setting did not influence suggestibility scores on the GSS. It has also been suggested that the GSS may not be appropriate for use outside of the cultural context within which the scales were developed. The original GSS 1 and GSS 2 norms were derived from a British sample and considerable normative data has been since collected in the U.K.. Pollard et al. (2004) reviewed the literature and found that the type of interrogative

suggestibility (higher scores on different GSS subscales) varies for different groups. In order to investigate this hypothesis, they collected normative data on the GSS 2 on a sample of 72 U.S. adults. Interestingly, they found that the U.K. sample scored significantly higher on the yield subscale and that the U.S. sample scored significantly higher on the shift subscale and that these findings remained robust across gender and socioeconomic groupings. They argued that these findings lend support to the possibility that there may be “cross-national differences in the nature of suggestibility” (p. 1101).

One possible explanation for this difference may stem from the fact that Pollard et al. (2004) did not administer the delayed free recall component of the GSS 2. They discounted the possibility that a delay in recall, and therefore differences in memory, could have caused the U.K. sample to be more responsive to the leading questions in the yield scale. It is possible that aside from increasing the difficulty of the recall task, the exercise of completing the long-delay free recall may in some way prime participants to respond in a fashion so as to yield to more questions (higher yield), but remain more firm in their original response (lower shift scores) than the U.S. sample. Polczyk (2005) also investigated cross-cultural differences in GSS 1 and GSS 2 normative data. An investigation of the psychometric properties of the Polish translations of both the GSS 1 and GSS 2 revealed no differences in suggestibility scores from those reported in the GSS manual (Gudjonsson, 1997). However, it is unclear as to whether or not they analyzed the difference scores statistically. The appropriateness of comparing GSS 2 scores from a different country or cultural group with the original U.K. norms remains unclear, however the lack of cross-cultural differences between British and Polish samples lends

some support for the administration of the instruments in a Canadian context. No published research employing the GSS in a Canadian sample was found.

Dependent Variables

Rights Comprehension

Grisso's (1998) *Instruments for Assessing Understanding and Appreciation of Miranda Rights* is a screening tool developed to assist mental health professionals "examine the capacities of individual youths or adults to have waived their *Miranda* rights knowingly and intelligently at the time of their police interrogation" (Grisso, 1998, p. 1). The measures' four instruments assess an individual's understanding of a typical arrest warning, including the right to remain silent, possible use of statements provided in court, the right to counsel prior to and during interrogation, and the right to free counsel. The instruments provide a standardized method for assessing understanding and appreciation of rights warnings and provide an objective method for scoring responses. Scoring criteria for the instruments were developed by legal experts who reviewed a large number of sample responses from juveniles and arrived at a consensus regarding the logic and degree of accuracy in understanding demonstrated in juveniles' responses. It is important to remain cognizant of the fact that the measure provide an index of an individual's capacity for understanding and appreciating the rights warnings *at the time of the evaluation* and do not necessarily reflect comprehension when police questioning and rights' waiver actually occurs (Grisso, 1998).

Four instruments are included in Grisso's (1998) measure. *Comprehension of Miranda Rights* (CMR) assesses examinees' understanding of the four elements of a standard rights warning by asking them to paraphrase the meaning of each right in four

items (e.g., ‘You do not have to make a statement and have the right to remain silent.’). *Comprehension of Miranda Rights-Recognition* (CMR-R) requires little verbal skill and requires examinees to compare the four elements of a typical rights warning with a pool of statements including accurate and inaccurate rewordings of each of the sentences. This instrument comprises 12 items, with three semantic comparison items for each of the standard rights prongs. *Comprehension of Miranda Vocabulary* (CMV) requires examinees to provide definitions of six words contained in the interrogation warnings (e.g., ‘Attorney’ and ‘Interrogation’). *Function of Rights in Interrogation* (FRI) assesses the examinee’s appreciation of the importance of rights in an interrogation and legal situations generally. This instrument comprises three subsections, each assessing appreciation of the significance of the warning in different areas including: recognition of the nature of interrogation (NI), significance of the right to counsel (RC) and significance of the right to silence (RS). Examinees are presented with a series of four pictures in which youth are shown interacting with various criminal justice figures, including police officers, a lawyer, and a court scenario. They are read a short description of what is happening in a given picture, and then asked questions about the scenario (e.g., ‘What is it that the police want Joe to do’).

Three of the four instruments (CMR, CMV, and FRI) are scored from 0 to 2 based on the level of comprehension reflected in their responses. Examples of 0, 1, and 2 point answers are included in the manual for each item to improve the standardization of scoring and reliability of the instrument. CMR-R responses are scored as either correct or incorrect, and assigned a score of 0 or 1. In the context of a clinical assessment, each of the instruments is scored separately and judged relative to one another to determine the

level of understanding and appreciation of interrogation rights. A total comprehension score is not typically derived when the scale is used to inform clinical decisions. Total comprehension scores are derived by summing the four instrument scores for the purposes of drawing comparisons between overall comprehension and various predictors (GRI-TOT). CMR scores range between zero and eight, CMR-R and CMV total scores each range from zero and 12, and FRI scores range between zero and 30. Scores on each instrument can be compared to norms provided in the manual for both juveniles and adults that are provided in the manual.

Normative data for the instruments were established from a sample of 431 youths, ages 10 to 16, and 260 adults, ages 17 to 50 (Grisso, 1980). Each subscale yields adequate internal reliability, although internal consistency was not reported for the scales. Inter-item correlations for the CMR ranged from $r = .12$ to $r = .32$, and item-total correlations ranged from $r = .55$ to $r = .73$. The CMR also demonstrates high inter-rater reliability with Pearson r coefficients ranging from .80 to 1.00 for individual CMR items, and .92 to .96 for total CMR scores. Test-retest stability was established by presenting the items to a sample of youths three days after the initial administration, yielding a Pearson r coefficient of .84. For the CMV, inter-item correlations ranged from $r = .14$ to $r = .37$, item-total correlations ranged from $r = .51$ to $r = .72$. Inter-rater reliability was high, yielding Pearson r coefficients of .89 to .98 for individual vocabulary items and coefficients of .97 to .98 for total CMV scores. The standard error of measurement for the CMR was 0.76. Test-retest stability for the CMV was not examined during Grisso's (1980) original study. Tests of reliability are not required for the CMR-R because scoring is objective and requires no judgment on the part of scorers. Internal consistency and test-

retest reliability of the FRI were not examined by Grisso (1980), but the scale did yield acceptable inter-scorer reliability resulting in Pearson r coefficients ranging from .72 to 1.00 across items, .80 to .94 for the various FRI subscales and .94 to .96 for FRI total scores.

The instruments demonstrate content validity, as they reflect the language used in a typical arrest warning. Each of the four measures is significantly and positively related to age and IQ, and youths below age 15 demonstrated more impaired performance on all the measures than did older subjects. Correlations between *Miranda* comprehension measures and IQ ($r = .45$ to $.59$) were greater than correlations between individual subscales and age ($r = .19$ to $.34$). Grisso (1998) argued that these relationships are consistent with those that should be expected given the development of cognitive capacities in adolescence, demonstrating construct validity. Evidence for the concurrent validity for the instruments was drawn from moderate correlations between the individual comprehension measures (CMR, CMR-R and CMV) demonstrating more substantial associations amongst subscale pairs than between individual subscales and IQ. Not unexpectedly, the FRI does not correlate as strongly with the other three comprehension measures. Unlike the other measures, the FRI was designed to assess examinees' appreciation of the significance of the *Miranda* warnings in the context of police questioning, rather than rights understanding assessed by the other measures.

In their critique of Grisso's instruments, Rogers, Jordan, and Harrison (2004) argued that the instruments are limited in several ways. For example, the instruments do not incorporate an evaluation of an examinee's level of emotional stress at the time of administration, and cannot take into account learning effects such as increasing their

rights comprehension through interactions with counsel between the time of waiver and the time of the evaluation. In his response, Grisso (2004) argued that many of their criticisms were misplaced and that they had largely confused the instruments with a competence-to-confess measure. He strongly reminded Rogers et al. (2004) that the purpose of the instruments is not to assess whether or not an individual understood their rights, or was competent to waive those rights and make a statement at the time of interrogation, but rather an individual's present understanding of their rights. As he suggested in the instruments' manual, other factors including stress and pressure experienced at the time of the rights warning and waiver, should be evaluated during the course of an assessment as elements informing the totality of circumstances surrounding a valid rights waiver. This issue will be reviewed as a limitation of the present study in the discussion.

Rogers et al. (2004) were also critical of the lack of consideration of internal consistency presented in the instruments' manual. In his response, Grisso commented that internal consistency was indeed considered during the instruments' psychometric evaluation, and that inter-item and item-scale correlations were fairly low across the instruments. He explained that,

unlike most scales, these instruments use items (actual *Miranda* warnings) that government officials wrote without concern for interitem homogeneity. Consistent with the manual's instructions, this does not deter an examiner from using the instruments as a standardized, reliable way to assign evaluative scores for understanding of each *Miranda* warning (p. 722).

Normative data are presented in the manual for the percentages of juvenile and adults who demonstrated adequate and inadequate understanding for each item separately so that evaluators can make direct comparisons regarding an examinee's item-by-item

performance on the instruments. In the present study, internal consistency was low, yielding alpha coefficients of .46 for CMR, .62 for CMR-R, .67 for CMV, and .34 for FRI. Mean inter-item correlations ranged from .033 for FRI to .259 for CMV.

Perhaps more importantly, Grisso (2004) acknowledged concerns raised by Rogers et al. (2004) regarding the instruments' outdated norms, narrow language, and limited psychometric information from the normative sample. As described, the instruments' normative information came from a sample of juveniles in St. Louis, Missouri, in 1980. These norms may not be reflective of the level of understanding and comprehension of contemporary youths. In their recent study piloting an updated version of Grisso's instruments, Goldstein et al. (2003) found that youth continued to exhibit similar misunderstanding of their rights compared with findings from the original research. They recommend that it is appropriate to continue using the original instruments until the updated version is released.

Another important limitation of Grisso's instruments relates to the rights warnings included in the measure. The actual rights warnings and language employed in the measure reflect the warning used in St. Louis, Missouri, in 1980, and may not generalize appropriately across U.S. and Canadian jurisdictions. In the manual, Grisso (1998) suggested that evaluators' familiarize themselves with the language of rights warnings employed in their own jurisdictions and modify the language used in the instruments accordingly. While this would invalidate the application of the norms provided in the manual, Grisso argued that the information gained from a structured assessment of an examinee's rights comprehension in this fashion would still contribute to conclusions drawn during the course of an assessment.

In the current study, rather than changing the wording of the published instruments (thereby invalidating use of the instrument's norms), two Canadian warning items were written:

You are entitled to have a lawyer and/or your parent, or an adult relative or another appropriate adult with you during questioning if you want.

If you are found guilty, you could receive an adult sentence. The most severe adult sentence is life in prison.

These warnings were developed after considering current relevant legislation, case law, and example rights warnings from both the Canadian Department of Justice and the Ontario warning form earlier described. These warnings carry a Flesch-Kincaid grade reading level of 8.6, which suggests that an individual who has completed most of the 8th grade could read and understand the content. The first warning is densely worded, and it was expected that the number of details included in the warning may be challenging for youths to grasp in a short period of time. Also, the notion that an adolescent suspect or defendant can have both a lawyer and parent or other adult present with them prior to and during interrogation is not adequately covered by the same warning pertaining to the right to an attorney in the original instruments. The *YCJA* does not require that the second warning be given prior to interrogation or arrest, even in cases where the automatic application of an adult sentence would occur in serious cases. However, youths must receive this warning prior to their first legal proceeding, and it is one of the warnings that the Canadian Department of Justice recommends be read prior to the taking of a statement from a young person. While not currently mandated by law, this warning falls within the body of common law decisions requiring police officers to provide all the information a young person would require in order to fully appreciate the consequences

of his or her rights (in this case, a significantly more severe sentence if found guilty). It was expected that these warnings would be fairly difficult for adolescents to understand. The two items were scored following the structure in Grisso's original CMR instrument, and ranged from 0 to 2 for each item. Scoring guidelines were developed by examining the legislation, case law, and scoring elements from Grisso's instruments.

Procedure

All study procedures were approved by the appropriate review boards of Simon Fraser University and were consistent with current ethical procedures. Written permission was obtained from the Mayors and/or Parks and Recreation Directors of the town of Newmarket and cities of Burnaby and Coquitlam to conduct the study at the various youth centres. Members who expressed an interest in participating were informed that the study was about young people's legal knowledge and were provided with further details regarding requirements of participation in the study. All potential participants were provided with a written study information sheet and this form was reviewed orally with participants by the examiner prior to obtaining consent. Youths aged 15 to 19 years were asked to provide informed consent by reading and signing a consent form outlining the nature of the study and associated risks. Youths aged 12 to 14 years were required to obtain written consent from their parents and well as provide written assent prior to participating in the study. Investigators clearly outlined the voluntary nature of the study and assured confidentiality except in cases of risk of harm to self or others. Participants were advised of the minimal risk nature of the study and informed that they may experience some boredom due to the length of the study and perhaps some discomfort when responding to autobiographical questions relating to previous contact with the

criminal justice system. Limits to confidentiality and potential risks were also clearly delineated on the written consent forms for participants and their parents to review.

Participants were administered a standard battery of tests during a single testing session lasting on average 1.5 hours. A standard protocol was administered to all participants in the same order. After a brief interview to collect relevant demographic data and build rapport, participants completed the WASI (Psychological Corp., 1999), which required approximately 30 minutes to administer. Next, they listened to the GSS 2 story (Gudjonsson, 1997) on an audiotape provided with the GSS manual, and then completed the short delay free recall of the GSS. During the requisite 50-minute delay, participants completed Grisso's *Miranda Scales* (1998), followed by the two Canadian rights warning items. Finally, they completed the GSS2 long-delay free recall and the two series of GSS yes/no questions. Upon completion of the study, participants were thanked and given one of three rewards as compensation for their participation, each valued at approximately seven dollars. Ontario participants were given their choice of a free pass to the skate park within the youth centre or a voucher for pizza, and B.C. participants were given a voucher for a free movie ticket. This amount was thought to be sufficient to compensate participants for their time but not enough to coerce participation.

All measures in the study protocol were administered by one of three examiners: the lead experimenter with Master's level training in psychology, and two research assistants with Bachelors' degrees in psychology. All examiners were thoroughly trained on each of the instruments. Both research assistants completed five study protocols under observation by the lead experimenter to ensure accurate administration of the materials prior to beginning independent administration. All measures were scored by the lead

experimenter and participants' performance on Grisso's *Miranda* Scales was scored independent of and blind to all other participant information. To check inter-rater reliability, the CMR, FRI and CMV subscales were re-coded by a second rater for 25 protocols. These instruments require evaluators to make judgments about the subjective quality of responses, whereas scoring for the CMR-R is based on objective criteria. Intraclass correlation coefficients calculated for single raters with a two-way random effects model (Model 2, McGraw & Wong, 1996), were found to be excellent (.92 for CMR, .95 for CMV, .98 for FRI).

Data Analysis

Significant differences between the Ontario and B.C. samples were found for a number of demographic characteristics (age, gender, ethnicity, and ESL status). A series of linear regressions was conducted to examine possible location effects on the relationship between these variables and total *Miranda* comprehension scores (GRI-TOT). For each dependent variable, the predictor and location, and then the interaction between the predictor and location were entered into a regression equation. None of the interactions between the four predictors and location were significant, therefore allowing for the examination each of the predictors in future analyses as independent from possible location effects.

A series of linear regressions was conducted to examine the relationship between performance on Grisso's *Miranda* Scales and several predictors. Given that five tests were typically conducted within a hypothesis (one for each of the four comprehension instruments and the total comprehension score), a Bonferroni correction was applied within each of the hypotheses tested. The overall *p*-value was set at .10 and the *p*-value

for each individual test was set at .02 ($\alpha = .10 / 5$). Using the Bonferroni correction with a traditional p-value equal to .05 would have been too conservative given the correlated nature of the comprehension scales (ranging from $r = .55, p < .01$, to $r = .85, p < .01$) (Sankoh, Huque, & Dubey, 1997). Effect sizes (f^2) for multiple regressions are reported in tables 3, 4, 7, and 9. An effect size is a measure of the size of a statistically significant difference. By convention, f^2 effect sizes of 0.02, 0.15, and 0.35 are considered small, medium, and large, respectively (Cohen, 1988).

Mediator and moderator hypotheses were tested using regression analyses. To test moderation hypotheses, the predictor, the moderator variable, and then the interaction of the predictor and the moderator were entered into a series of regressions equations. Mediator analyses were conducted using regression analysis in the four step procedure outlined by Baron, Kenny, and Judd (Baron & Kenny, 1986). Using this procedure, the associations between the predictor and outcome (Step 1), predictor and mediator (Step 2), and mediator and outcome (Step 3) must be examined for significance. If these associations are significant, then the association between the predictor and outcome is examined after the mediator is added to the model (Step 4) (see Baron & Kenny, 1986, for a full description of these procedures).

Results

Performance on Grisso's *Miranda* Scales

Performance on Grisso's *Miranda* Instruments is outlined in Table 2.

Comprehension was defined as impaired when participants obtain a score of zero on a given item. Participants' average score on CMR was 6.0 ($SD = 1.81$) out of 8.0.

Participants demonstrated poorest comprehension of the third warning (consult with an attorney before and during interrogation), with 26.6% ($n = 25$) of the sample obtaining a score of zero on the item. The fourth warning (right to free counsel) was best understood by participants, with only 4.3% ($n = 4$) of the sample obtaining a score of zero. For the first warning (right to silence), 16% ($n = 15$) of participants from the present sample earned scores of zero, and for the 2nd warning (use of information in court) 21.3% ($n = 20$) earned a score of zero.

For CMR-R, scores on each of the three comparison items for the four warnings were summed to gauge understanding for each right. For the first warning, 4.3% ($n = 4$) obtained a score of zero on all three of the semantic comparison items. For the second warning, none of the participants earned zeroes on all of the three items. For the third warning, 3.2% ($n = 3$) received zeros on all three items, and on the fourth warning, 2.1% ($n = 2$) received zeroes on all three items.

On the CMV scale, participants demonstrated the least understanding of the word "interrogation," with 24.5% ($n = 23$) obtaining scores of zero on this item. Participants had the least difficulty defining the word "consult" with only 6.4% ($n = 6$) obtaining scores of zero. For the remaining four items, 9.6% ($n = 9$) obtained scores of zero on the

word “attorney,” 11.7% ($n = 11$) earned scores of zero on the word “appoint,” 10.6% ($n = 10$) earned scores of zero on the word “entitled,” and 19.1% ($n = 18$) obtained scores of zero on the word “right.”

On the FRI instrument, total scores for each of the three subscales were calculated. Participants demonstrated the least understanding of items related to the right to silence as an entitlement that should not and cannot legally be violated or revoked by authority (RS), earning an average score of 5 out of 10 ($SD = 2.32$). Items pertaining to the adversarial nature of the relation of police officers to suspects (NI), were most easily understood by participants, with an average total score of 9 out of 10 ($SD = 1.35$). For items concerning the advocacy nature of attorney-client relationships (RC), the average total score was 8.4 out of 10 ($SD = 1.70$).

Age and Intellectual Ability

A series of multiple regressions was conducted to determine the accuracy of age (entered as a continuous variable) and IQ¹ in predicting comprehension scores on the four subscales (CMR, CMR-R, CMV, FRI) and total score (GRI TOT) from Grisso’s *Miranda* Instruments. Age and IQ were entered as independent variables into regression equations. Regression results indicate that the overall model significantly predicted comprehension on the four subscales and total score from Grisso’s *Miranda* Scales (Table 3). Both Age and IQ predicted higher comprehension across all four subscales and the total scale score, CMR, $R^2_{adj} = .356$, $F(2, 91) = 26.702$, $p < .001$, CMR-R, $R^2_{adj} = .244$, $F(2, 91) = 15.992$,

¹ One participant obtained an IQ score of 54 on the WASI (within 3 *SD* from the mean). This case was viewed as a valid low score. The main analyses including IQ were run both with and without the case. The findings remained unchanged and therefore the case was included in the analyses reported here.

$p < .001$, CMV, $R^2_{adj} = .539$, $F(2, 91) = 55.261$, $p < .001$, FRI, $R^2_{adj} = .462$,
 $F(2, 91) = 40.921$, $p < .001$, and GRI-TOT, $R^2_{adj} = .629$, $F(2, 91) = 79.963$, $p < .001$.

In order to investigate whether intellectual ability explains or mediates the relationship between age and *Miranda* rights comprehension, additional regression analyses were conducted. There were significant associations between age and the four *Miranda* subscale scores and total score as well as between IQ and the comprehension scales. However, the absence of a significant association between age and IQ indicated that intellectual ability did not mediate the relationship between age and *Miranda* rights comprehension, meaning that both age and IQ serve as independent predictors of rights comprehension.

In order to investigate the hypothesis that age may be a particularly strong predictor of rights comprehension in younger adolescents, an additional series of regression analyses were conducted². Age, IQ, and then the interaction between age and IQ were entered into regression equations to test the influence of age as a moderator between IQ and comprehension. The interaction was not significant for any of the four instruments or total score, CMR, $\beta = -1.816$, $t(87) = -1.776$, $p = .079$, CMR-R, $\beta = -2.303$, $t(87) = -2.151$, $p = .034$, CMV, $\beta = -1.068$, $t(87) = -1.168$, $p = .246$, FRI, $\beta = 1.561$, $t(87) = 1.713$, $p = .090$, and GRI-TOT, $\beta = -.686$, $t(87) = -.867$, $p = .388$. While this might indicate that age does not moderate the relationship between IQ and rights comprehension, these findings may be limited due to insufficient power of the analyses given the relatively small sample size (Aguinis, 2004).

² Three cases were identified as multivariate outliers and eliminated from the analysis (Mahalanobis Distance Values $> (\chi^2)$ critical value at $p < .001$, $\chi^2_{crit} = 16.266$, $df = 2$)

Suggestibility

An initial examination of Pearson correlations between age and both sub-types of suggestibility revealed significant associations. Age was significantly associated with shift scores ($r = -.27, p = .009$), but not with yield scores ($r = -.11, p = .31$). A series of t -tests revealed no gender differences in yield or shift suggestibility scores.

To examine the relationship between suggestibility and rights comprehension, the two subscales of Gudjonsson's Suggestibility Scales, yield³ and shift were entered as independent variables in the same regression analyses to test their independent effects. The overall model was significant for all comprehension scales, CMR, $R^2_{adj} = .191$, $F(2, 91) = 11.961, p < .001$, CMR-R, $R^2_{adj} = .197, F(2, 91) = 12.405, p < .001$, CMV, $R^2_{adj} = .144, F(2, 91) = 8.802, p < .001$, FRI, $R^2_{adj} = .112, F(2, 91) = 6.857, p = .002$, and GRI-TOT, $R^2_{adj} = .230, F(2, 91) = 14.869, p < .001$. Regression results indicated that the yield scale inversely predicted comprehension on the three of the four subscales and the total score from Grisso's *Miranda* Scales, and that shift inversely predicted comprehension on three indices (Table 4). Yield scores inversely predicted scores on CMR-R, $\beta = -.293, t(91) = -2.926, p = .004$, CMV, $\beta = -.295, t(91) = -2.849, p = .005$, FRI, $\beta = -.300, t(91) = -2.849, p = .005$, and GRI-TOT, $\beta = -.332, t(91) = -3.384, p = .001$. Shift scores inversely predicted scores on CMR, $\beta = -.379, t(91) = -3.767, p < .001$, CMR-R, $\beta = -.265, t(91) = -2.648, p = .010$, and GRI-TOT, $\beta = -.265, t(91) = -2.705, p = .008$.

³ Evaluation of normality revealed moderate positive skew. A square root transformation was applied as recommended by Mertler and Vannatta (2005). The transformed variable better approximated conditions of normality.

Previous research with adults has demonstrated a strong negative association between suggestibility and intellectual ability. This relationship appears to operate differently at different IQ ranges, where the negative association is significant for low IQ individuals, but does not remain significant for individuals with average and higher levels of intellectual ability. Similar differences in suggestibility based on IQ were evident in the present sample. Recognizing the limits of this approach, IQ was artificially dichotomized at the standardized mean of 100 from the WASI. Low ($IQ \leq 99.9$) and high ($IQ \geq 100$) IQ groups were created, and Pearson correlations between yield, shift, and total suggestibility scores were examined. A significant negative association between IQ and yield suggestibility, $r = -.309, p = .023$, was found for the low IQ group, but not for the above average IQ group, $r = -.219, p = .17$. Interestingly, a significant negative correlation between total suggestibility and IQ, $r = -.318, p = .04$, was found for the above average IQ group, but not in the low IQ group, $r = -.203, p = .14$.

Correlations between yield, shift, IQ, and the five comprehension indices are presented in Table 5. In order to investigate whether IQ mediates the relationship between the suggestibility and rights comprehension, two regression analyses were conducted. Associations between both yield and IQ, yield and the five comprehension indices, and IQ and the five comprehension indices were all significant. The association between yield and comprehension on CMR, CMV, FRI, and GRI-TOT was no longer significant once, in addition to yield, IQ was entered into the regression equations (see Table 6). Associations between shift and IQ, shift and four of the five comprehension indices (not FRI), and IQ and the five comprehension indices were all significant. The association between shift and CMR, $\beta = -.293, t(92) = -3.352, p = .001, CMR-R,$

$\beta = -.257, t(92) = -2.721, p = .008$, and GRI-TOT, $\beta = -.174, t(92) = -2.427, p = .017$, remained significant after, in addition to shift, IQ was entered into the regression equations. Shift no longer significantly predicted performance on CMV after adding IQ to the regression equation. These results indicate that IQ partially explains or mediates the negative relationship between both yield, and shift (to a lesser extent), and rights comprehension.

Finally, the hypothesis that age moderates the relationship between suggestibility and rights comprehension was investigated by conducted an additional two series of regression analyses. In the first series, yield scores, age, and then the interaction between yield scores and age were entered in regression equations. In the second series, shift scores, age, and then the interaction between shift scores and age were entered in regression equations. The interactions between age and yield scores, and age and shift scores were not significant for the five comprehension indices. Results indicate that yield and shift suggestibility did not differently predict rights comprehension for younger versus older adolescents.

Combined Model

A series of hierarchical regression analyses was conducted to determine whether the yield and shift subtypes of suggestibility contributed to the prediction of rights comprehension above and beyond the factors of age and IQ. Age, IQ, yield and shift suggestibility subtypes were entered as independent variables into a regression equation, with age and IQ entered together in the first block, followed by yield and shift together in a second block. Overall regression equations for the first model (age and IQ as predictors) and combined model significantly predicted understanding across the five

rights comprehension indices (Table 7). The combined model did not produce significant R^2 Change values for any of the five comprehension indices. In the combined model, age remained a significant predictor for CMR, $\beta = .207$, $t(92) = 2.429$, $p = .017$, CMV, $\beta = .220$, $t(92) = 2.952$, $p = .004$, FRI, $\beta = .254$, $t(92) = 3.174$, $p = .002$, and GRI-TOT, $\beta = .268$, $t(92) = 4.076$, $p < .001$, but no longer significantly predicted performance on CMR-R, $\beta = .163$, $t(92) = 1.779$, $p = .079$. IQ remained a significant predictor for the five comprehension indices (Table 7). Yield failed to significantly predict understanding on any of the five indices. Shift suggestibility inversely predicted performance on CMR, $\beta = -.234$, $t(92) = -2.534$, $p = .013$. Results indicate that age and IQ remain significant predictors after yield and shift are entered into the model. However, only shift suggestibility (not yield) serves as a significant predictor of comprehension above and beyond the variance explained by age and IQ, and this result was only significant for the CMR instrument.

Previous Police Contact

In order to investigate the relationship between previous police contact (entered as a dichotomous variable, one or more previous contact(s) or no previous contact) and rights comprehension, a one-way ANOVA was conducted. There were no significant differences in mean rights comprehension across any of the five indices for youths who had had some versus no previous police contact.

Demographic Variables

Although not the primary focus of the current study, the relationship between gender (male v. female), ethnicity (Caucasian v. other groups), ESL (English as first language v. other first languages) and SES (continuous scores), and *Miranda* rights

comprehension was assessed. In order to conserve power, Pearson correlations were first examined between each of the demographic variables and the five indices of rights comprehension rather than conducting a series of regression analyses with multiple variables (see Table 8). No significant correlations were found between rights comprehension indices and gender, ethnicity, and ESL. SES was positively correlated with CMR, $r = .25, p < .02$, CMV, $r = .30, p < .01$, FRI, $r = .27, p < .02$, and GRI-TOT, $r = .30, p < .01$. In order to determine whether SES remained a significant predictor of rights comprehension after controlling for IQ, IQ, and then SES were entered into a series of regression analyses. Controlling for IQ, SES was not significantly associated with comprehension on any of the five indices.

Canadian Rights Comprehension

Some participants demonstrated difficulty paraphrasing the two Canadian rights warnings. On the first warning (right to lawyer and adult during questioning), 12.8% ($n = 12$) of participants obtained scores of zero. On the second warning (possibility of adult sentence), 38.3% ($n = 36$) of participants obtained scores of zero. Scores from the two items were combined to obtain a total Canadian comprehension score (CND-TOT). In order to examine the extent to which the predictors age, IQ, yield, and shift suggestibility were associated with understanding of these Canadian warnings, the four predictors were simultaneously entered as independent variables in a regression analysis (Table 9). The overall model significantly predicted comprehension for the Canadian warnings, $R^2_{adj} = .261, F(4, 89) = 9.216, p < .001$. Of the four independent variables, only IQ significantly predicted comprehension, $\beta = .548, t(89) = 5.445, p < .001$.

Ancillary Analyses

Given the associations between age, IQ, and suggestibility found by researchers thus far, it is possible that a model incorporating various higher-order interactions between these variables might better predict rights comprehension than the main effects and simple moderation models that have been tested thus far. However, further analyses were limited due to sample size and insufficient power. Recognizing the limits of this approach, efforts were made to examine these additional associations descriptively by creating high and low groups for age, IQ, and total suggestibility.⁴ Eight groups were created by combining low and high values of each of the three groups, and the groups were ordered from low to high performance on GRI TOT scores from Grisso's *Miranda* Instruments. Based on the previous pattern of results and relationships amongst the predictors as well as findings from the literature, it was expected that the older, high IQ participants who were low in suggestibility would perform best on GRI TOT, while the worst performance would be found for younger, low IQ participants who were highly suggestible. Figure 1 orders performance on GRI TOT for the eight groups. As hypothesized, younger participants with lower IQ who were higher in suggestibility obtained the lowest total comprehension scores on Grisso's *Miranda* Instruments, and the highest scores were obtained by older adolescents with higher IQ and lower suggestibility. Also, it can be observed that the four groups who performed most poorly on GRI TOT were all in the low IQ category, while the four who performed the highest were all in the high IQ category. No apparent pattern emerged for high and low age and suggestibility groups.

Discussion

Primary Findings

Juvenile justice systems in both Canada and the U.S. are increasingly becoming more punitive in their approach with young offenders, and generally operate under the expectation that youth can be treated similarly to adults. Canadian courts appear to recognize some of the unique developmentally-driven challenges faced by adolescents in today's criminal justice system. However, the extent to which this recognition is informed by research, or respected in practice, remains unclear. The present study examined adolescents' comprehension of their legal arrest rights in a Canadian context. Many potential predictors of rights understanding were examined in an effort to identify those factors which are most strongly associated with impaired comprehension. A community sample of Canadian adolescents was chosen for this study in order to more broadly examine the influence of variables hypothesized as key to rights comprehension, including IQ. For example, the IQ of participants from this sample was considerably higher than in previous samples studied (approximately one standard deviation on average). Additionally, the youth from this sample represented a group of adolescents who may or may not have come into contact with the criminal justice system in the past, allowing for the investigation of possible differences in rights comprehension between these two groups. The fact that this sample was drawn from two Canadian provinces allows for the generalization of these findings to a variety of Canadian adolescents.

⁴ Yield and shift subscales were not examined due to an insufficient number of cases per group created. Groups were formed by taking the median split for each variable.

Previous research conducted in the U.S. has overwhelmingly demonstrated that age and IQ are strongly predictive of rights comprehension in adolescent samples. However, findings from the literature have been less clear with regards to other predictors, and little research has been published examining the association between rights comprehension and suggestibility. It was hypothesized that younger adolescents would generally show greater impairment in understanding than older adolescents. It was also expected that youths with more limited intellectual capacity would have greater difficulty understanding their legal arrest rights than those with better intellectual ability levels. More highly suggestible youths were expected to demonstrate poorer overall comprehension than their less suggestible counterparts. Finally, it was hypothesized that the youngest adolescents, least intellectually capable and most suggestible would show the greatest level of impairment in rights comprehension.

Results from this study indicate that many contemporary Canadian adolescents do not fully understand their arrest rights. Performance on Grisso's *Miranda* Instruments was similar to the norms presented in the instruments' manual (1998) (Table 2). Nearly half the participants (43.6%, $n = 41$) demonstrated impaired comprehension (score of zero) on at least one of the four rights warnings included in Grisso's CMR instrument. The third warning (right to counsel) was least understood by participants, with more than one-quarter (26.6%, $n = 25$) showing comprehension deficits (score of zero). This is particularly concerning given the fact that the right to counsel arguably represents the most important procedural safeguard for vulnerable adolescents. Results from the piloted Canadian warnings were also troubling, with 12.8% ($n = 12$) of participants showing impaired comprehension of the right to counsel and/or adult representation, and 38.3%

($n = 36$) failing to comprehend the significance of receiving an adult penalty upon conviction.

Consistent with predictions, age and IQ emerged as robust predictors of comprehension on Grisso's *Miranda* Instruments. Younger adolescents and adolescents with lower intellectual ability levels showed greater levels of impairment in comprehension across the four instruments. However, the results of more specific mediation and moderation hypotheses for age, IQ and rights comprehension diverged from findings recently reported by Viljoen and Roesch (2005). IQ did not mediate, or explain the relationship between age and rights comprehension. In their study, Viljoen and Roesch found evidence for a partial mediation model, where general cognitive capacity partially explained the age-based differences in rights comprehension. They also found that cognitive development was a particularly strong predictor of rights comprehension among younger adolescents, however age did not emerge as a significant moderator of IQ and rights comprehension in the present study. Age and IQ both independently predicted performance on the rights comprehension instruments. These results are similar to those described by Goldstein et al. (2003, 2006), who also used the WASI to measure intellectual ability. One possible explanation for these differences may be the result of having used very different indicators of cognitive capacity. Viljoen and Roesch employed the Woodcock-Johnson III Cognitive Assessment Battery (WJ III; McGrew, & Woodcock, 2001) which provides a measure of general intelligence, broad cognitive clusters, and narrow abilities. The measure taps constructs that the WASI may not directly measure, such as attention, and executive function. Additionally, the mean IQ in this normative sample was substantially higher than the average IQ (82.57) reported by

Viljoen and Roesch from their detention sample. It is possible that the relationship between intellectual ability and comprehension operates differently at lower levels than higher IQ levels.

The relationship between several demographic and individual difference variables from the literature and rights comprehension was also investigated. As in previous studies, no significant differences in comprehension were found between male and female adolescents. Similarly, there were no significant differences in rights understanding based on ethnicity, first-language status, or socioeconomic status (after controlling for IQ). These results strongly suggest that intellectual ability remains the strongest predictor of rights comprehension compared to many other individual difference variables. However, these variables and other external factors (e.g., stress) may still figure importantly in the reasoning and decision-making process concerning rights waiver. This will be further discussed as a limitation of the present study.

As in previous studies examining the influence of an arrest history or criminal justice system experience, youths who reported having had previous police contact in relation to a crime they were suspected of having committed did not perform better on the rights comprehension indices than their inexperienced counterparts. While it makes logical sense that adolescents who have had previous exposure to an arrest rights warning procedure and police interrogation may be more familiar with those rights, this by no means guarantees improved understanding. In their study, Viljoen and Roesch (2005) found that youths who reported having had increased contact with lawyers demonstrated considerably better understanding of their interrogation rights than those who had spent less time with lawyers. These results suggest that time spent in an adversarial

interrogation situation with police officers is less likely to provide a situation conducive to learning than time spent with a supportive legal expert.

This study was the first to examine interrogative suggestibility in a sample of Canadian adolescents. Compared to the norms for normal adolescents presented in the Gudjonsson Suggestibility Scales manual (1997) participants from this sample obtained similar scores on the yield, shift, and total suggestibility scales. Consistent with the body of research, younger adolescents were more likely to shift their responses in the face of negative feedback and pressure (shift), but were no more likely to incorporate misleading feedback (yield) than older adolescents. Males and females did not differ significantly in yield, shift or total suggestibility.

Observed differences in the IQ-suggestibility relationship at different IQ ranges were similar to those reported by Gudjonsson (1990), and Richardson and Kelly (1995). For adolescents in the low IQ group, IQ inversely predicted the likelihood of yielding to suggestive prompts, but IQ was unrelated to yield scores in the average and above average IQ group. Similarly, no relationship between IQ and the tendency to change responses after negative feedback and pressure was observed in either of the IQ groups. Youths with average and above average IQ were more likely to receive lower total suggestibility scores, but there was no evidence of this relationship for adolescents in the low IQ group. These results may serve to warn that less intelligent adolescents may be particularly likely to incorporate leading information provided in an adversarial interrogation situation, but that suggestibility is likely to be less of a problem for brighter adolescents. However, further research and analysis of these differences is required.

The results for suggestibility also diverged from previous findings described by Goldstein et al. (2006) and Redlich et al. (2003). These findings indicate that both yield and shift suggestibility subtypes inversely predicted rights comprehension. Everington and Fulero (1999) also found a negative relationship between yield suggestibility and comprehension, but no association between shift and comprehension in a sample of mentally retarded adults. However, they used a significantly modified (simplified) version of the GSS, and therefore the results may not be easily compared.

Interestingly, IQ significantly mediated the relationship between yield suggestibility and rights comprehension across most of Grisso's indices. Once entered into the regression models, intellectual ability accounted for the association between yield and comprehension on all but the CMR-R instrument. This may be due, in part to the fact that the CMR-R is a less cognitively challenging recognition-based task, and does not require that participants synthesize, explain or paraphrase material in their responses. IQ also partially explained the relationship between shift suggestibility and comprehension, but did not fully account for differences in understanding on the CMR, CMR-R, and GRI-TOT indices. These results suggest that young people's tendency to shift their responses after receiving negative feedback may operate more independently of intellectual ability from the tendency to yield, or incorporate misleading information into responses.

One possible explanation for the differential impact of IQ as a mediator in these relationships may lie in the definition of each construct. A relationship has been demonstrated between acquiescence (more like yield suggestibility) and intellectual ability in the personality literature (Gudjonsson, 1990). For example, suggestibility

research conducted in samples of mentally retarded adults has consistently demonstrated strong acquiescent tendencies in this population (Gudjonsson & Henry, 2003, Gudjonsson, 1990). It was initially expected that shift, or the tendency to change responses in the face of negative feedback and pressure represented an even less intellectually sophisticated response than the tendency to yield. However, it seems likely that other aspects of the interrogation-like situation may figure more importantly here than intellectual ability. Shift scores are obtained by having the interviewer (a person in a position of authority) tell examinees that their answers are incorrect, and that they must try harder to answer the questions correctly. It is possible that this decision may actually be less cognitively taxing (than yield) for certain adolescents if they choose not to reason or consider their responses, but rather accept that the adult with the answers is correct. Perhaps other variables related to psycho-social maturity and interpersonal relations may better account for the relationship between shift suggestibility and overall comprehension.

In the combined regression equations, once age and IQ had been entered into the model, yield did not remain a significant predictor of rights comprehension, and shift only remained a significant predictor of the CMR instrument. These results differ from those found in a community sample of adults and adolescents by Redlich et al. (2003), where yield and shift both significantly predicted performance on several of Grisso's *Miranda* Instruments when included in a larger prediction model including other demographic variables. This discrepancy may be a result of Redlich et al. having used participant average grades as a substitute for intellectual ability, rather than directly measuring the construct.

Due to power limitations, it was not possible to directly assess the final hypothesis through inferential methods, given the very large sample size required to test prediction models with three-way interactions. Recognizing the limits of this approach, comparisons were drawn between artificial groups created based on high and low age, IQ, and suggestibility scores. Consistent with predictions, younger, less intellectually capable and more highly suggestible adolescents demonstrated the most impairment in overall rights comprehension, while older youth, more intelligent and less suggestible youths showed the best level of understanding. The degree to which suggestibility contributed significantly to a prediction model after taking into consideration age and IQ is unclear at this point. However, these results are particularly concerning, given the hypothesized relationship between these three variables and interrogative suggestibility in the false confession literature.

Limitations and Future Research

This study examined the association between several individual variables and adolescent rights comprehension. However, youths' understanding and appreciation of their legal rights represents only one possible dimension contributing to their decision to either waive or exercise their legal rights. Previous research has demonstrated that young people's declarative knowledge of their rights does not necessarily translate to making informed or knowing waiver decisions (Peterson-Badali et al., 1999). Situational variables such as the coerciveness of interactions with police officers, stress, fatigue, and one's true innocence or guilt are examples of the factors that may come into play when making these important decisions. Even if a young person demonstrates adequate knowledge of his or her rights, combinations of these external factors may interfere with

the ability to access or knowingly apply this understanding. Future research examining the influence of these factors on understanding and waiver decisions is required.

A related limitation pertains to the comprehension measure employed. While the use of Grisso's *Miranda* Instruments is supported by empirical research, they are limited in their ability to gauge understanding at an earlier point in time, or capture the true stressful nature of a real-life interrogation. Under less optimal conditions, it is likely that adolescents' understanding of their arrest rights would be more limited. This possibility is particularly concerning given that the youths demonstrated poor average rights comprehension levels under favourable testing conditions.

As previously discussed, the specific wording employed in Grisso's *Miranda* Instruments was based on rights warnings used in a single U.S. jurisdiction. Performance on the comprehension instruments therefore may not generalize to other jurisdictions where wording of rights warnings differs significantly. In the instruments' manual, Grisso (1998) recommends that clinicians alter the wording to reflect the warnings in use in a given jurisdiction, but notes that significant changes may invalidate use of the norms provided. The wording employed in sample Canadian warnings did not differ dramatically from the wording employed in the original instruments. Perhaps more importantly, the two substantively different warnings used in some Canadian jurisdictions were not sufficiently addressed by the measure. By including Canadian rights warning items in the present study, this important limitation was partially overcome, and this resulted in an improved ability to generalize results to other Canadian jurisdictions.

Another issue related to ecological validity focuses on the question of whether or not to read participants their rights prior to administering the rights comprehension

instruments. In this study, participants were not read a rights warning immediately before assessing comprehension because this may have unduly biased the results. Theoretically, having opted to do so for this community sample might have more closely approximated conditions experienced by the group of young defendants to whom these results would be generalized. However, this would have only been an approximation of the experience of young defendants. For example, defendants have likely only briefly heard their rights during stressful conditions and the extent to which they have actually heard and processed the warnings is questionable. More importantly, most adolescents are never read their rights because police are not obligated to do so unless they plan to interrogate him or her and use the confession as evidence.

A second set of limitations relates to the sample. The participation rate was somewhat low with only approximately 33% of adolescents approached agreeing to participate in the study. While this raises concerns about possible selection biases, this was most likely the result of the lengthy protocol length. Adolescents largely found the prospect of spending 90 minutes to complete the study quite daunting, and often reported that they did not have the time to participate. It is likely that the nature of the settings where youths were approached was responsible for the low participation numbers. Young people engaged in free-time recreational activities may be understandably less eager to participate in this type of research compared with adolescents from schools and detention centres with few other enjoyable ways to spend their time. The sample also yielded several anticipated strengths, including variability in intellectual ability, gender, and previous police experience allowing for the investigation of their association with rights comprehension.

Use of the WASI was an appropriate choice in this study given its abbreviated nature, shortened administration time and established reliability and validity. However, it is difficult to ascertain the extent to which its abbreviated breadth of inquiry places limitations on the interpretation of these findings. While the WASI has been shown to be a reasonable approximation of the full scale IQ scores obtained by more comprehensive measures, the ability to analyze the contribution of different aspects of cognitive functioning not assessed by the WASI is limited (e.g., attention and concentration, executive function). For example, in their study, Viljoen and Roesch (2005) found that verbal and attentional abilities were strongly related to rights comprehension, while other aspects of cognitive capacity such as retrieval, fluid reasoning, and executive function did not significantly predict understanding. For this reason, future research examining the influence of intellectual and cognitive abilities on rights comprehension should employ full scale IQ measures where possible.

A further limitation of this study may relate to the manner in which the GSS taps into the construct of interrogative suggestibility. Willner and White (2005) highlighted the fact that the GSS assesses suggestibility by presenting information with no personal significance to respondents, unlike real-life situations. They proposed that people will be less suggestible when being asked to yield or shift their responses regarding events or memories that are personal to their experience, and will feel less invested in impersonal stories such as those presented in the GSS. Results from their recent study evaluating suggestibility in a sample of intellectually disabled adults supported this hypothesis. It is possible, then, that the GSS overestimates individuals' suggestibility levels, when compared to their suggestibility in relation to a personally experienced or witnessed event

such as a crime. Given that an interrogation and rights waiver situation would generally involve questioning pertaining to the latter type of event, this represents an important area in which to conduct further research before conclusions regarding interrogative suggestibility can be made with confidence.

With the exception of a few studies, researchers have focused on narrow aspects of adolescents' experience of police interrogation, such as rights comprehension, waiver decision making, or false confessions. Future programs of research must work to better understand important connections between these important factors. Unfortunately, this suggestion may not be easily carried out in the real world given the practical difficulties inherent in doing research with real suspects and police forces. As Grisso (2003) has repeatedly cautioned, the assessment of rights comprehension is almost always carried out long after an adolescent is actually administered the *Miranda* warning and therefore comprehension is highly confounded with a variety of possible intervening factors (e.g., time spent with a lawyer, learning from other adolescents in detention, etc.). Future research must also aim to assess comprehension at a time much closer to the actual time of warning and waiver in order to best understand the factors relating to rights comprehension and waiver decisions. Importantly, the practical outcomes of waiver decisions should be investigated by examining how court decisions and dispositions relate to rights comprehension, waiver decisions, and the statements and/or confessions provided by young suspects.

Implications

Canadian courts appear to recognize the unique developmentally-based challenges faced by adolescents in today's criminal justice system. The extent to which youth court

judges' decisions regarding waiver validity are informed by research remains unknown, and it seems even less likely that daily police interactions with adolescents are guided by this body of research. These results suggest that courts and clinicians who evaluate young defendants' arrest rights comprehension should carefully consider the adolescent's age, intellectual ability, and overall suggestibility levels.

The information included in arrest rights warnings are recognized as fundamentally guaranteed protections that are required to ensure procedural justice for adolescents and adults alike (*Charter, YCJA*). In this study, those adolescents whose rights comprehension levels were most severely compromised were arguably the individuals for whom these procedural safeguards are most critical. These results complement a growing body of literature suggesting that younger, less intellectually capable and more highly suggestible adolescents are the youth who are most vulnerable and at risk of making poor decisions in an interrogation situation. The consequences of poor comprehension and waiver, in combination with a highly suggestible young person and coercive interrogation conditions may be far ranging, and logically include a greatly increased likelihood of offering a false confession. Indeed, these characteristics have been identified through research as being prototypical of those individuals who give false confessions and who are wrongfully convicted. It is also important to recognize the fact that a young person may choose to waive their arrest rights with a full understanding and appreciation of the consequences of doing so, and still proceed to make false statements or false confessions.

For an adolescent, criminal conviction can have devastating consequences including severe adult sentences ranging up to 25 years in prison under Canadian law.

Previous findings strongly suggest that youths involved in police questioning and interrogation waive these rights in the majority of cases (Grisso, 2003). Results from this study and previous research underscore a strong need for the provision of more appropriate assistance in rights communication and the waiver processes for vulnerable adolescents. Some U.S. researchers and courts have suggested barring youths' from the decision to waive these rights altogether without the presence of a lawyer or interested adult (Feld, 2000). However, this unilateral solution ignores the level of individual variability in understanding found across different groups of young people. Studies evaluating the helpfulness of having a parent present during waiver and questioning have shown that parents often do not help their children understand their rights, and often pressure them into cooperating with investigators (Grisso, 1981). Viljoen and Roesch (2005) found 89% of youth indicated their parents wanted them to confess or tell the truth, 11% indicated that their parents wanted them to deny the offense, and none reported that their parents advised them to remain silent.

An overall goal of this study was to identify factors related to rights comprehension deficits in Canadian adolescents. This research, along with previous findings enable us to identify groups of young people who are particularly 'at-risk' of misunderstanding their legal arrest rights and of making poor, uninformed decisions regarding the waiver of their rights. These are the young people with whom police should exercise special caution when administering rights warnings and the waiver procedure. Findings from a recent U.S. study suggest that law enforcement officials may not be as resistant to further training regarding this issue as one might expect. Meyer, Reppucci, and Owen (2006) administered surveys to 1828 police officers and detectives working in 10 police agencies

across the U.S. regarding their practices in interrogating youth suspects. Respondents agreed that children and adolescents are inherently suggestible both within and outside the interrogation setting and disagreed that adolescents do not understand their *Miranda* rights. Nearly two-thirds (61%) agreed that there is a need for more standardized methods to use in interrogating adolescents, and most (79%) indicated that they would be interested in receiving more training about interrogating adolescents. Future research on the impact in practice of better educating law enforcement officers may be warranted. It seems likely that a further step would be required to help police officers practically apply the results of this study, and previous research in practice. One possibility may involve developing and testing a valid and efficient screening procedure that would allow police to identify those adolescents who are most in need of more in-depth explanation or third-party assistance.

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APPENDIX: TABLES AND FIGURES

Table 1: Sample Characteristics

	Location		Significant Differences
	Ontario (<i>n</i> = 41)	British Columbia (<i>n</i> = 53)	
Age	14.44 (<i>SD</i> = 2.26)	15.77 (<i>SD</i> = 1.58)	$t = -3.371^{**}$
Gender (%)			
Male	53.7%	84.9%	$\chi^2 = 11.025^{**}$
Female	46.3%	15.1%	
Ethnicity (%)			
Caucasian	85.4%	37.7%	$\chi^2 = 21.603^{***}$
Hispanic	2.4%	1.9%	
Black	-	18.9%	
Aboriginal	2.4%	1.9%	
Asian	-	11.3%	
Other	9.8%	28.3%	
ESL Status (%)			
English	92.7%	37.7%	$\chi^2 = 21.665^{***}$
Other	7.3%	62.3%	
SES	39.88 (<i>SD</i> = 11.43)	41.72 (<i>SD</i> = 13.54)	$t = -.679$
IQ Score	98.29 (<i>SD</i> = 13.62)	92.89 (<i>SD</i> = 14.82)	$t = 1.816$
Previous Police Contact (%)			
≥ 1	31.7%	28.3%	$\chi^2 = 0.128$
0	68.3%	71.7%	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2: Performance on Grisso's *Miranda* Instruments and Canadian Items

Standardized Coefficients for Predictors									
<i>Grisso's Miranda Scales</i>	Present Study			Grisso's Juveniles			Grisso's Adults		
	<i>M</i>	<i>SD</i>	% Fail	<i>M</i>	<i>SD</i>	% Fail	<i>M</i>	<i>SD</i>	% Fail
CMR	1.8								
Warning 1			16.0%			8.8%			5.0%
Warning 2			21.3%			23.9%			8.5%
Warning 3			26.6%			44.8%			14.6%
Warning 4			4.3%			4.9%			3.1%
CMR-R	9.2	2.1							
Items 1-3			4.3%						
Items 4-6			0.0%						
Items 7-9			3.2%						
Items 10-12			2.1%						
CMV	8.8	2.5							
Item 1			6.4%			28.3%			6.9%
Item 2			9.6%			6.7%			1.5%
Item 3			24.5%			59.9%			22.3%
Item 4			11.7%			8.4%			8.1%
Item 5			10.6%			9.3%			5.7%
Item 6			19.1%			9.9%			16.5%
FRI	22.3	2.1		23.3	3.8		25.9	3.3	
NI	9.0	1.3		9.1	1.2		9.6	0.9	
RC	8.4	1.7		8.5	1.7		9.2	1.4	
RS	5.0	2.3		5.5	2.5		7.2	2.2	
<i>Canadian Items</i>									
Warning 1			12.8%						
Warning 2			38.3%						

Table 3: Regression Equations for Age and IQ

	Standardized Coefficients for Predictors			
	Adjusted R^2	β_{Age}	β_{IQ}	f^2
<i>Grisso's Miranda Scales</i>				
CMR	.356***	.270**	.553***	.587
CMR-R	.244***	.228*	.463***	.352
CMV	.548***	.226**	.712***	1.212
FRI	.462***	.245**	.650***	.901
GRI TOT	.637***	.297***	.750***	1.755

Note: * $p < .02$, ** $p < .01$, *** $p < .001$

Table 4: Regression Equations for Yield and Shift

	Standardized Coefficients for Predictors			
	Adjusted R^2	β_{yield}	β_{shift}	f^2
<i>Grisso's Miranda Scales</i>				
CMR	.191***	-.150	-.379***	.263
CMR-R	.197***	-.293**	-.265**	.272
CMV	.144***	-.295**	-.186	.193
FRI	.112**	-.300**	-.119	.151
GRI TOT	.230***	-.332**	-.265**	.326

Note: * $p < .02$, ** $p < .01$, *** $p < .001$

Table 5: Correlations between Predictors and Comprehension

	Suggestibility and IQ		
	Yield	Shift	IQ
<i>Grisso's Miranda Scales</i>			
CMR	-.291**	-.435**	.545**
CMR-R	-.392**	-.375**	.456**
CMV	-.364**	-.296**	.705**
FRI	-.345**	-.231**	.643**
GRI-TOT	-.431**	-.389**	.741**
IQ	-.416**	-.313**	

Note: * $p < .02$, ** $p < .01$

Table 6: Mediation influence of IQ on the Association Between Suggestibility and Comprehension

	Standardized Coefficients for Predictors			
	Equation 1: Relationship between yield and rights comprehension		Equation 2: Relationship between yield and rights comprehension once IQ is added	
	Beta	<i>t</i> -test	Beta	<i>t</i> -test
<i>Grisso's Miranda Scales</i>				
CMR	-.291	-2.917**	-.078	-0.806
CMR-R	-.392	-4.087***	-.245	-2.463*
CMV	-.364	-3.747***	-.085	-1.051
FRI	-.345	-3.521**	-.093	-1.063
GRI-TOT	-.431	-4.580***	-.148	-1.957
	Equation 1: Relationship between shift and rights comprehension		Equation 2: Relationship between shift and rights comprehension once IQ is added	
	Beta	<i>t</i> -test	Beta	<i>t</i> -test
<i>Grisso's Miranda Scales</i>				
CMR	-.435	-4.628***	-.293	-3.352**
CMR-R	-.375	-3.875***	-.257	-2.721**
CMV	-.296	-2.968**	-.083	-1.068
FRI	-.231	-2.279	-.033	-0.393
GRI-TOT	-.389	-4.052***	-.174	-2.427*

Note: * $p < .02$, ** $p < .01$, *** $p < .001$

Table 7: Hierarchical Regression Equations for Age, IQ, Yield and Shift

		Standardized Coefficients for Predictors						
		Adjusted R^2	β_{age}	β_{IQ}	β_{yield}	β_{shift}	R^2 Change	f^2
<i>Grisso's Miranda Scales</i>		Model 1: Age, IQ						
CMR		.356***	.270**	.553***				.587
CMR-R		.244***	.228*	.463***				.352
CMV		.539***	.226**	.712***				1.212
FRI		.462***	.245**	.650***				.901
GRI-TOT		.629***	.297***	.750***				1.755
<i>Grisso's Miranda Scales</i>		Model 2: Combined Model						
CMR		.387	.207*	.487***	.021	-.234*	.044	.704
CMR-R		.287	.163	.338**	-.174	-.160	.057	.464
CMV		.531	.220**	.689***	-.054	-.001	.002	1.227
FRI		.456	.254**	.640***	-.076	-.066	.006	.923
GRI-TOT		.635	.268***	.690***	-.090	-.067	.013	1.857

Note: * $p < .02$, ** $p < .01$, *** $p < .001$

Table 8: Correlations between Demographic Variables and Comprehension

Grisso's <i>Miranda</i> Scales	Demographic Variables			
	Gender	Ethnicity	ESL	SES
CMR	.097	.014	.192	.248*
CMR-R	.154	-.082	-.003	.135
CMV	.066	-.088	.116	.292**
FRI	.116	-.180	-.004	.268
GRI-TOT	.133	-.123	.078	.304*

(Correlations for Gender, Ethnicity, and ESL are Point BiSerial)

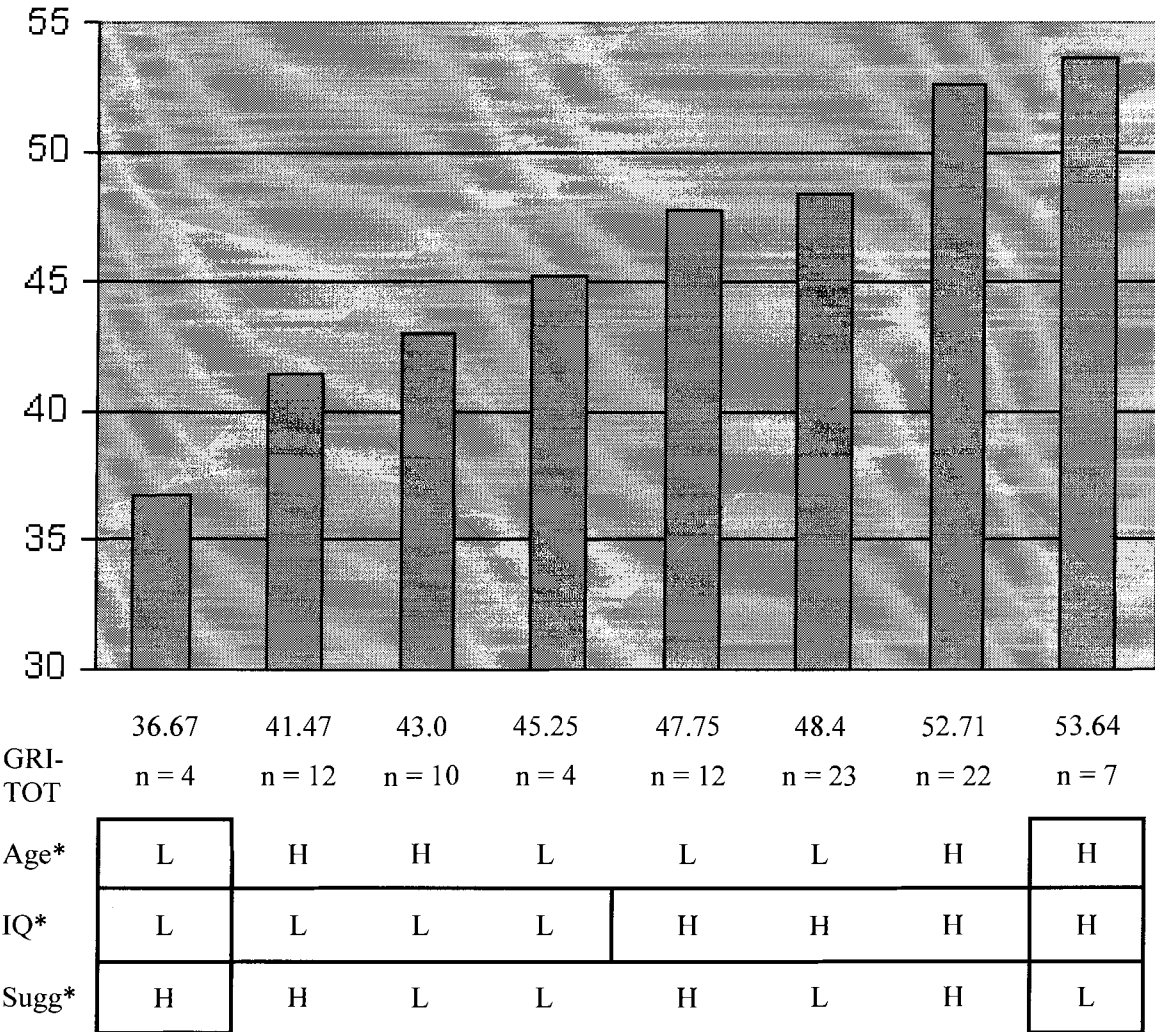
Note: * $p < .02$, ** $p < .01$

Table 9: Regression Equations for Canadian Warning Items

	Standardized Coefficients for Predictors					
	Adjusted R^2	β_{age}	β_{IQ}	β_{yield}	β_{shift}	f^2
Canadian Warning Total Score	.261***	.147	.548***	-.014	.092	.414

Note: *** $p < .001$

Figure 1: Comprehension by High/Low Age, IQ, and Suggestibility



Note: Median Age = 15, low Age = 12-14, high age = 15-19
 Median IQ = 98, low IQ = 54.0-97.9, high IQ = 98.0-122.0
 Median Total Suggestibility = 10, low sugg. = 1.0-9.9, high sugg. = 10.0-23.0