Examining the Role of Interrogative Suggestibility in Miranda Rights Comprehension in Adolescents

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Published online: 2 February 2010
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Abstract This study aimed to further clarify the association between interrogative suggestibility and Miranda rights comprehension in adolescents; in particular, we examined whether intellectual ability (IQ) serves as a mediator of this relationship. Participants completed Grisso’s Miranda Instruments, the Wechsler Abbreviated Scale of Intelligence, and the Gudjonsson Suggestibility Scale. Many youth demonstrated poor comprehension of their rights, particularly younger and less intellectually capable adolescents. Both yield and shift components of interrogative suggestibility were inversely related to rights comprehension; however, IQ fully mediated these relationships. Neither demographic variables (gender, ethnicity, socio-economic status after controlling for IQ, and English as a second language (ESL) status) nor previous police experience were significantly associated with rights comprehension in the present sample. The implications of these findings are discussed.

Keywords Miranda rights · Interrogative suggestibility

It is now firmly entrenched in many common law jurisdictions that adult and adolescent suspects in police custody have the right to avoid self-incrimination and to have legal counsel present during arrest and questioning (Grisso, 2003). In the United States, these rights were mandated in the landmark case of *Miranda v. Arizona* (1966). The *Miranda* Court required that police warn suspects prior to interrogation of several rights, including the right to remain silent, to be informed 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. These rights were soon thereafter extended to adolescents in the cases of *Kent v. United States* (1966) and *In Re Gault* (1967). Suspects who waive their rights can have any statements made entered as evidence against them at trial, provided the waiver was made “knowingly, intelligently, and voluntarily” (*Miranda v. Arizona*, 1966).

When defendants challenge the admissibility of a statement on the grounds that their waiver of rights was invalid, courts must weigh the totality of the circumstances under which the waiver was made. This typically includes consideration of both the individual capacities of the suspect (e.g., ability to understand the information included in the warnings), as well as situational factors under which the waiver was made (e.g., the manner in which police informed the suspect of his or her rights) (Grisso, 2003). Courts have additionally recognized the inherent vulnerability and immaturity of adolescent suspects, and acknowledge that because of these disadvantages, their capacities to understand their rights may be diminished (e.g., *Fare v. Michael C*, 1979; *In re Gault*, 1967). Many other common-law jurisdictions, such as Canada and the United Kingdom, provide similar protections, as outlined in both legislation and case-law decisions. For example, in Canada, the *Youth Criminal Justice Act* (2002) applies nationally to offenders aged 12–17 and requires police to provide arrest warnings to adolescent suspects in custody before they take a statement.¹

¹ Though not referred to as “Miranda rights” in jurisdictions outside the United States, we herein after use the term to refer to arrest warnings due to its familiarity in the literature.
Though the specific wording and combination of warning components varies across jurisdictions, these protections generally comprise five prongs and include the right to silence, use of any statements against the suspect, right to counsel, access to free counsel for indigent suspects, and assertion of rights at any time. Juvenile warnings often also include notification of the right for youth to consult with a parent or other appropriate adult in addition to a lawyer at any point during the legal process. There is no standard form for Miranda warnings throughout the United States or Canada, and warnings vary substantially between jurisdictions in terms of wording difficulty, readability, and linguistic complexity (Helms, 2003; Helms & Holloway, 2006; Rogers, Harrison, Shuman, Sewell, & Hazelwood, 2007). Studies have repeatedly demonstrated that adolescents are often presented with “simplified” versions of adult warnings. However, the result of efforts to “dumb down” the warning prongs often produces more complicated warnings with higher required grade reading levels and lower reading ease than those written for adult suspects (Helms, 2003; Kahn, Zapf, & Cooper, 2006).

Important shifts in juvenile justice policy over the past few decades have seen the development of models emphasizing greater accountability from young offenders and an increased availability of serious punishments (Redding, Goldstein, & Heilbrun, 2005). As adolescent suspects have come to be treated in more adult-like ways within the juvenile justice system, the importance of ensuring they are able to understand and make informed decisions about their legal rights has led to a growing body of research focusing on these issues. The finding that many adolescents do not fully understand or appreciate their rights, coupled with the fact most also waive their rights has spurred a body of literature focusing on possible risk factors associated with poor rights comprehension (e.g., Grisso, 1981; Condie, Kalbeitzer, Osman, & Geier, 2003; Viljoen & Roesch, 2005). In general, evidence strongly indicates that younger adolescents, especially those under the age of 15, show poor comprehension and appreciation of their arrest rights, whereas older adolescents demonstrate a level of understanding that is comparable to adults (e.g., Abramovitch et al., 1995; Goldstein et al., 2003; Grisso, 1981; Viljoen & Roesch, 2005). Substantial evidence has also shown positive associations between intellectual capacity and comprehension. Adolescents with lower IQs demonstrate greater impairment in understanding compared to more intellectually capable youth (e.g., Goldstein et al., 2003; Viljoen & Roesch, 2005), and some evidence indicates that comprehension is most impaired among younger adolescents with lower IQs (e.g., Grisso, 1981). Results from studies evaluating the influence of the other factors have been mixed and the extent to which these variables constitute risk markers for poor comprehension and capacity to waive rights is less clear. Interestingly, studies have shown that with increased understanding, adolescents are more likely to assert their rights in the context of a criminal investigation (e.g., Abramovitch et al., 1993; Viljoen & Roesch, 2005).

In deciding whether a waiver was made voluntarily, courts typically have focused on situational factors, such as the tactics employed by the police (e.g., use of coercion) while administering the warnings (Grisso, 2003). However, that is not to say that suspect characteristics are irrelevant in determining voluntariness, especially in the case of adolescents. In particular, the interaction between police tactics (e.g., pressure to waive rights) and characteristics of adolescent suspects (e.g., relative immaturity and dependency) may be especially critical in courts’ decisions about the voluntariness of waivers (Grisso, 2003). Indeed, adolescents may be at heightened risk relative to adults for poor comprehension of their rights and false confessions owing to their relative intellectual and emotional immaturity (Oberlander & Goldstein, 2001).

The construct of interrogative suggestibility is one such suspect characteristic that has received attention in research examining Miranda-related capacities. Gudjonsson and Clark (1986) define 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 relevant to police questioning. The first aspect “yield” reflects the extent to which individuals tend to give into leading questions, and the second aspect “shift” refers to individuals’ tendencies to shift or change responses under conditions of interpersonal pressure (Gudjonsson, 1984).

Research across the lifespan indicates developmental differences in both yield and shift types of interrogative
suggestibility, such that children tend to be more suggestible than younger adolescents, who are more suggestible than older adolescents (age 16 and older) and adults (Danielsdottir, Sigurgeirdottir, Einarsdottir, & Haraldsson, 1993; Warren, Hulse-Trotter, & Tubbs, 1991). This trend diverges when comparing adolescents and adults on the two suggestibility facets. Findings to date indicate that while both groups tend to yield to leading questions at similar rates, adolescents tend to be more susceptible to interrogative pressure and thus are more likely to shift their responses after receiving negative feedback in interrogation-like situations than adults (Muris, Meesters, & Merckelbach, 2004; Redlich & Goodman, 2003; Redlich, Silverman, & Steiner, 2003; Richardson, Gudjonsson, & Kelly, 1995).

In keeping with Gudjonsson and Clark’s initial formulation of interrogative suggestibility, the bulk of research supports a strong negative relationship between intelligence and suggestibility, indicating that less intellectually capable adolescents and adults tend to be more suggestible (Muris et al., 2004; Polczyk, 2005; Pollard et al., 2004; Richardson & Kelly, 1995; Richardson et al., 1995; Singh & Gudjonsson, 1992). However, this relationship appears to be influenced by range effects, where in general, significant correlations between intelligence and suggestibility are found in samples with subaverage IQ, but not in samples that include only participants with average and higher IQ (e.g., Gudjonsson, 1990).

The construct of interrogative suggestibility generally appears to be relevant in Miranda-related competencies, as indexed by clinicians’ reported use of suggestibility instruments in evaluations (e.g., Ryba, Brodsky, & Shlosberg, 2007), mentions in forensic texts (e.g., Bartol & Bartol, 2006; Fulero & Wrightman, 2008), recommendations for use by experts in clinical evaluations (e.g., Frumkin, 2000; Roesch, McLachlan, & Viljoe, 2008), and Miranda research (e.g., Fulero & Everington, 1995; Redlich et al., 2003; Rogers, Harrison, Rogstad, LaFortune, & Hazelwood, 2009). Clearly, younger and less intellectually capable youth are likely to experience more difficulty understanding their rights and appreciating the consequences of waiver compared to older, more intelligent suspects. Particularly troubling is the possibility that compared to their older counterparts, younger adolescents are also more likely to be suggestible and thus potentially more vulnerable to police tactics geared at securing a quick waiver and ultimately, a confession (Redlich et al., 2003).

To date, studies examining these interrelationships have yielded mixed findings and little can be drawn in the way of specific conclusions. In their 1999 study, Everington and Fulero investigated the relationship between Miranda comprehension and interrogative suggestibility in a sample of adult defendants with mental retardation and found expected significant negative correlations between comprehension and suggestibility measures. Alternatively, results from studies examining participants with more average intelligence have been mixed and include negative, positive, and null patterns of association. In their community sample of adolescents and young adults, Redlich et al. (2003) found that higher suggestibility in terms of yielding to misleading questions significantly predicted better rights comprehension, whereas higher suggestibility in terms of shifting answers after receiving negative feedback was associated with decreased comprehension and overall scores. Unfortunately, these findings were limited by a small sample size (n = 35). In a larger-scale study of 155 youth in custody, Goldstein, Kalbeitzer, Zelle, Romaine, and Koenigbauer (2006) similarly found that the tendency to yield to misleading questions was associated with better rights comprehension, even after controlling for age and IQ, but found no significant association between participants’ tendencies to shift their responses and rights comprehension. More recently, Harrison (2008) did not find evidence of any relationship between yield or shift subtypes of suggestibility and rights comprehension in a sample of 107 adult mentally disordered defendants. Similarly, Rogers et al. (2009) did not find significant correlations between measures of Miranda comprehension and suggestibility in a large sample of 488 adults from forensic and jail settings. One possible explanation for the differential pattern of results published to date centers around the issue of IQ. Clearly, intelligence plays an inherent underlying role in both the processes of interrogative suggestibility and Miranda comprehension and appreciation, and thus may function as a mediator of the suggestibility–rights comprehension relationship.

The Present Study

The present study investigated the role of interrogative suggestibility as it pertains to rights comprehension in a sample of adolescents 12–19 years of age. We included 18- and 19-year-old participants in the sample because they may be processed under adolescent legal standards in the study jurisdiction. We hypothesized that younger, less intellectually capable, or more suggestible (both yield and shift types) adolescents would demonstrate poor comprehension of their rights. We also sought to further understand the suggestibility–rights comprehension relationship. Rather than assuming a more simplistic and direct relationship between suggestibility and rights comprehension, we conducted mediation analyses to test the hypothesis that IQ serves as an explanatory variable underlying this association. Finally, because evidence in the literature remains mixed and largely stems from detained samples of adolescent offenders, we
investigated the association between several individual-level variables and rights comprehension, including previous police experience, SES, gender, ethnicity, and English as a second language (ESL) status.

**Method**

**Participants**

Participants were 94 adolescents (27 females and 67 males) ranging in age from 12 to 19 years \((M = 15.2, SD = 2.0)\) attending municipal recreation centers for youth in two Canadian medium-sized cities. Sample characteristics are presented in Table 1. Participants from the two samples differed significantly with respect to age, ethnicity (Caucasian v. other ethnicity), and ESL status (English v. other first language). From the first 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, whereas in the second 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. In spite of sample differences, these characteristics were not differentially related to Miranda comprehension allowing us to collapse the samples for further analyses (these analyses are described in the “Results” section). The two samples did not differ significantly in IQ, SES, or self-reported previous police contact.

The average IQ of participants from the combined sample was 95.2, with scores ranging from 54 to 122 \((SD = 14.5)\). The SES score of participants was calculated based on parents’ occupation using Blishen, Carroll, and Moore’s (1987) Socioeconomic Index. The average SES for the combined sample was 40.9 \((SD = 12.6)\), though SES could not be coded for 5% of participants \((n = 5)\) who were unable to report sufficient information about their parents’ occupation. Scores between 40 and 41 correspond with professions such as bookkeepers/accounting clerks (40.28) and rail vehicle operators (40.79). Nearly, a third (29.8%, \(n = 28\)) of the total sample reported at least one episode of previous police contact. Of these youth, 32.5% \((n = 9)\) recalled being advised of their rights, though only a small minority (17.8%, \(n = 5\)) were charged.

**Materials**

**Demographic variables and previous police experience.** Participant information on age, gender, ethnicity, SES, ESL 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

| Table 1 Sample characteristics |
|---|---|---|---|
| **Location** | Sample 1 \((n = 41)\) | Sample 2 \((n = 53)\) | Statistical analyses |
| **Age** | 14.44 \((SD = 2.26)\) | 15.77 \((SD = 1.58)\) | \(t = -3.371^{**}\) |
| **Gender (%)** | | | \(\chi^2 = 11.025^{**}\) |
| Male | 53.7% | 84.9% | | |
| Female | 46.3% | 15.1% | | |
| **Ethnicity (%)** | | | \(\chi^2 = 21.603^{***}\) |
| Caucasian | 85.4% | 37.7% | | |
| Hispanic | 2.4% | 1.9% | | |
| Black | – | 18.9% | | |
| Aboriginal | 2.4% | 1.9% | | |
| Asian | – | 11.3% | | |
| Other | 9.8% | 28.3% | | |
| **ESL status (%)** | | | \(\chi^2 = 21.665^{***}\) |
| English | 92.7% | 37.7% | | |
| Other | 7.3% | 62.3% | | |
| **SES** | 39.88 \((SD = 11.43)\) | 41.72 \((SD = 13.54)\) | \(t = -.679\) |
| **IQ score** | 98.29 \((SD = 13.62)\) | 92.89 \((SD = 14.82)\) | \(t = 1.816\) |
| **Previous police contact** | | | \(\chi^2 = .128\) |
| ≥1 | 31.7% | 28.3% | | |
| 0 | 68.3% | 71.7% | | |

* \(p < .05\), ** \(p < .01\), *** \(p < .001\)
information concerning the events that lead to the contact, and the nature of the crime the police suspected them of having been involved.

Wechsler Abbreviated Scale of Intelligence. The Wechsler Abbreviated Scale of Intelligence (WASI) (Psychological Corporation, 1999) is a screening instrument developed to serve as a brief and reliable measure of intelligence. The WASI can be administered to individuals age 6 through 89 years and provides measures of verbal, non-verbal, and general cognitive functioning. The WASI evidences good reliability and validity across adolescent and adult samples (Psychological Corporation, 1999). Because the Full Scale IQ provides the most precise estimate of IQ, this score was used in all analyses (herein referred to as IQ). Internal consistency in the present sample was excellent (α = .93) and the mean for inter-item correlations was acceptable (r = .15).

Gudjonsson Suggestibility Scale. The Gudjonsson Suggestibility Scale (GSS) (Gudjonsson, 1997) is a measure of interrogative suggestibility tapping two distinct forms of suggestibility theoretically relevant in interrogation-like contexts: 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 employs a narrative paragraph describing a fictitious story and is presented as a memory test with short- and long-delay recall intervals. The second portion of the GSS asks participants 20 specific questions about the content of the story, 15 of which incorporate increasingly suggestive prompts. Regardless of actual performance on these questions, participants are provided with negative feedback and are sternly asked to respond more accurately to the same set of questions. Gudjonsson has developed two equivalent forms of the GSS. The parallel form (GSS2) was selected for use because the items provided a better fit for the study jurisdiction (in terms of contemporary vocabulary and names), and demonstrates improved internal consistency over the original form (Gudjonsson, 1997). Five GSS2 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. Many studies have demonstrated adequate reliability and validity for the GSS2 subscales (Clare, Gudjonsson, Rutter, & Cross, 1994; Gudjonsson, 1992; Gudjonsson & Singh, 1984; Merckelbach, Muris, Wessel, & van Koppen, 1998).

In the present study, the yield 1 (referred to as yield from this point on) and shift scores were used in analyses, given their theoretical distinctions and differential patterns of association with key variables across the literature. In the present sample, the yield subscale had acceptable internal consistency (α = .72), but was below desirable for the original shift subscale (α = .57). We used a modified shift subscale in subsequent analyses by deleting eight items found to yield item-total correlations lower than .20. Deleted items (2, 4, 11, 12, 15, 17, 19, and 10) included both leading and leading/false alternative question types, leaving a balance of both question types. The modified 12-item scale yielded improved internal consistency (α = .68).

Grisso’s Instruments for Assessing Understanding and Appreciation of Miranda Rights. Grisso’s Miranda Instruments (Grisso, 1998) assess an examinee’s understanding and appreciation 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. Three instruments assess understanding of interrogation warnings. Comprehension of Miranda Rights (CMR) measures examinees’ ability to paraphrase the elements of the interrogation warnings. Comprehension of Miranda Rights—Recognition (CMR-R) requires examinees to recognize sentences that have the same meaning as a statement from the interrogation warnings, and Comprehension of Miranda Vocabulary (CMV) requires examinees to define words contained in the interrogation warnings. The final instrument, Function of Rights in Interrogation (FRI), assesses the appreciation of interrogation rights. It consists of three separate subscales, including Nature of Interrogation (NI), right to counsel (RC), and right to silence (RS). On the FRI measure, examinees are shown drawings and read short vignettes about various legal scenarios.

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. For the purposes of this study, three index scores were derived: a total understanding score was derived by summing the instruments targeting examinees’ factual understanding of the warnings and vocabulary (CMR, CMR-R, and CMV); the FRI subscale scores NI, RC, and RS were summed to create a total appreciation score; and an overall comprehension score (GRI-TOT) was derived by summing the understanding and appreciation indices. The instruments demonstrate adequate validity and high inter-rater reliability (Grisso, 1998). In the present study, a second trained research assistant rescored 25 written protocols blind to other study variables in order to calculate interrater reliability. 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).

**Procedure**

Members of the research team approached youth attending drop-in recreation centers and invited them to participate in the study. Flyers were also posted in the facilities. Youth 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. Once informed consent was obtained from youth and their parents, study participants were administered the interview and test battery in a quiet area. Participants completed a standard battery of tests in the same order during a single session lasting on average 1.5 hours. Following a brief interview to collect relevant demographic data and build rapport, participants completed the WASI followed by the first recall portion of the GSS2. During the requisite 50-min delay, participants completed Grisso’s Instruments and then the remaining GSS2 items. Upon completion of the study, participants were thanked and given a $5–10 gift certificate redeemable at various locations as compensation for their participation. All study procedures were approved by the University Research Ethics Review Board and were consistent with governing ethical guidelines (American Psychological Association, 2002; Canadian Psychological Association, 2000).

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 Bachelor’s degrees in psychology. The lead experimenter received training and supervision on the instruments from the second author, and the research assistants were trained by the lead experimenter. Each 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 Instruments was scored independent of and blind to all other participant information.

**Results**

**Data Analysis**

As reported in the “Method” section, significant differences between the two samples were found for a number of demographic characteristics (age, gender, ethnicity, and ESL status; see Table 1). A series of linear regressions was conducted to examine possible sample effects on the relationship between these variables and total Miranda comprehension scores. For each dependent variable, the predictor and sample, and then the interaction between the predictor and sample, were entered into a regression equation. None of the interactions between the four predictors and sample were significant, indicating that the predictors were not related to Miranda comprehension scores differentially across samples. Therefore, we collapsed across samples in all analyses.

**Miranda Rights Comprehension**

Overall, participants’ performance on Grisso’s Instruments was comparable to the performance of juveniles described in Grisso’s original normative sample (see Table 2). Many adolescents experienced difficulty understanding the warnings. On examining youth’s performance across the individual instruments, we found that impaired comprehension scores were earned by 42.5% \((n = 40)\) of participants on the CMR instrument (defined as earning a ‘zero’ on one or more of the four warnings); 41.5% \((n = 39)\) on the CMR-R instrument (two out of three items incorrect for a given warning); and 44.7% \((n = 42)\) on the CMV instrument (score of zero on one or more vocabulary...
Youth also demonstrated deficits in appreciation for the meaning of the warnings. They experienced the most difficulty on the RS scale earning an average score of 5 out of 10 ($SD = 2.3$), and showed better appreciation on the adversarial NI and RC scales, with average total scores of 9 out of 10 ($SD = 1.4$) and 8.4 out of 10 ($SD = 1.7$), respectively.

As shown in Table 3, results from a series of multiple regressions revealed that age (entered as a continuous variable) and IQ both independently predicted Miranda understanding, $F(2, 91) = 56.46, p < .001$, appreciation, $F(2, 91) = 40.92, p < .001$, and overall comprehension scores, $F(2, 91) = 79.96, p < .001$. Older and more intellectually capable adolescents demonstrated better comprehension across the three indices. Effect sizes ($f^2$) for these analyses are also reported in Table 3 and range from medium to large.  

**Table 3** Regression equations predicting Miranda Comprehension

<table>
<thead>
<tr>
<th></th>
<th>Age (B)</th>
<th>SE (B)</th>
<th>$\beta$</th>
<th>IQ (B)</th>
<th>SE (B)</th>
<th>$\beta$</th>
<th>Model statistics</th>
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<tr>
<td><strong>Grisso’s Instruments</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand</td>
<td>.77</td>
<td>.19</td>
<td>.28***</td>
<td>.26</td>
<td>.03</td>
<td>.70***</td>
<td>.54*** 1.24</td>
</tr>
<tr>
<td>Appreciate</td>
<td>.46***</td>
<td></td>
<td></td>
<td>.25**</td>
<td>.02</td>
<td>.65***</td>
<td>.90</td>
</tr>
<tr>
<td>GRI-TOT</td>
<td>.64***</td>
<td></td>
<td></td>
<td>.30***</td>
<td>.03</td>
<td>.75***</td>
<td>1.75</td>
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<table>
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<tr>
<th></th>
<th>Yield (B)</th>
<th>SE (B)</th>
<th>$\beta$</th>
<th>Shift (B)</th>
<th>SE (B)</th>
<th>$\beta$</th>
<th>Model statistics</th>
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<tbody>
<tr>
<td><strong>Grisso’s Instruments</strong></td>
<td></td>
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</tr>
<tr>
<td>Understand</td>
<td>-.207</td>
<td>.81</td>
<td>-.26*</td>
<td>-.79</td>
<td>.23</td>
<td>-.35**</td>
<td>.27*** .37</td>
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<tr>
<td>Appreciate</td>
<td>-.161</td>
<td>.55</td>
<td>-.32**</td>
<td>-.07</td>
<td>.16</td>
<td>-.05</td>
<td>.10** .11</td>
</tr>
<tr>
<td>GRI-TOT</td>
<td>-.368</td>
<td>1.21</td>
<td>-.31**</td>
<td>-.87</td>
<td>.34</td>
<td>-.26*</td>
<td>.22*** .28</td>
</tr>
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*p < .05, ** p < .01, *** p < .001

**Table 4** Performance on GSS

<table>
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<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Yield 1</td>
<td>5.4</td>
<td>3.0</td>
<td>5.5</td>
<td>3.1</td>
</tr>
<tr>
<td>Shift</td>
<td>7.2</td>
<td>3.5</td>
<td>5.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>10.8</td>
<td>4.9</td>
<td>10.5</td>
<td>5.1</td>
</tr>
<tr>
<td>New shift</td>
<td>3.1</td>
<td>2.4</td>
<td>–</td>
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</tr>
</tbody>
</table>

As shown in Table 3, results from a series of multiple regressions revealed that age (entered as a continuous variable) and IQ both independently predicted Miranda understanding, $F(2, 91) = 56.46, p < .001$, appreciation, $F(2, 91) = 40.92, p < .001$, and overall comprehension scores, $F(2, 91) = 79.96, p < .001$. Older and more intellectually capable adolescents demonstrated better comprehension across the three indices. Effect sizes ($f^2$) for these analyses are also reported in Table 3 and range from medium to large.  

Interrogative Suggestibility

Compared to the norms for adolescents presented in the GSS manual (Gudjonsen, 1997), participants from this sample obtained similar scores on the yield, original shift, and total suggestibility scales (see Table 4). Our findings with respect to age patterns in both the shift and yield subtypes of suggestibility were in keeping with previous studies (e.g., Richardson et al., 1995), with significant negative correlations between age and shift ($r = -.22, p = .036$), but not between age and yield scores ($r = -.11, p = .31$). While younger adolescents were more likely to change their answers in response to negative feedback and pressure than their older counterparts, age differences with respect to the tendency to give into misleading questions were not evident. Significant negative associations between IQ and both yield ($r = -.42, p < .001$), and shift scores ($r = -.39, p < .001$), were found, indicating that less intellectually capable youth were on the whole more suggestible than youth with higher IQs.

We examined the relationship between suggestibility and the three rights comprehension indices by testing for
the independent effects of yield and shift in a series of regressions. The overall model was significant for all comprehension indices (see Table 3). Regression results indicated that yield scores inversely predicted comprehension on the three indices (understanding, $\beta = -0.24$, $p = 0.021$, appreciation, $\beta = -0.30$, $p = 0.008$, and total comprehension, $\beta = -0.29$, $p = 0.006$), whereas shift scores inversely predicted scores on the understanding ($\beta = -0.37$, $p = 0.001$) and total comprehension indices ($\beta = -0.28$, $p = 0.008$), but not the appreciation index ($\beta = -0.07$, $p = 0.532$). Overall, participants who were more likely to yield to misleading questions demonstrated more impaired understanding and appreciation of their rights. Similarly, youth who demonstrated a greater tendency to shift their responses after receiving negative feedback were less likely to understand their rights, but were not less likely to appreciate the nature of those rights compared to those who did not demonstrate this style of responding. These findings diverge from those previously reported by Redlich et al. (2003), Goldstein et al. (2006), and Harrison (2008) who did not demonstrate this style of responding.

These findings appreciate the nature of those rights compared to those who likely to understand their rights, but were not less likely to responses after receiving negative feedback were less likely to shift their preferences to misleading questions demonstrated more impaired suggestibility on rights comprehension (using total scores to analyses to examine whether IQ functions as a mediator of the variation in total comprehension scores, respectively. Including IQ, the models substantially increased the variability accounted for to 57%, for yield scores ($R = 0.75$) $F(2, 91) = 59.65$, $p < 0.001$ as well as 57% for shift scores ($R = 0.75$) $F(2, 91) = 59.18$, $p < 0.001$. Controlling for IQ, neither yield (from $\beta = -0.43$ $SE = 0.11$ to $\beta = -0.15$ $SE = 0.04$) $z = 4.05$, $p < 0.001$ (Sobel, 1982) nor shift scores (from $\beta = -0.40$ $SE = 0.32$ to $\beta = -0.14$ $SE = 0.25$) $z = 3.74$, $p < 0.001$ (Sobel, 1982) contributed significantly to the prediction of total rights comprehension. Results using a Bootstrapping estimation technique less sensitive to sample size than the Sobel test yielded similar results for both yield and shift indices (Preacher & Hayes, 2004). These findings indicate that IQ scores fully mediated or accounted for the relationship between both yield and shift types of suggestibility and rights comprehension (see Fig. 1).

### Demographic Variables and Previous Police Experience

No significant correlations were found between rights comprehension indices and gender, ethnicity, and ESL. SES was positively correlated with CMR, $r = 0.25$, $p = 0.019$, CMV, $r = 0.30$, $p = 0.004$, FRI, $r = 0.27$, $p < 0.001$, significantly predicted IQ. The third criterion requires establishing a relationship between the proposed mediator and outcome. There was a significant correlation between IQ and total comprehension scores (see Table 5) and a regression demonstrated that IQ accounted for 55% of the variation in total comprehension scores, $F(1, 92) = 112.02, p < 0.001$.

Two pairs of regressions analyses were conducted in the final step. The first tested the direct effects of both yield and shift scores on total comprehension, and the second included IQ in each model to control for its effects. The direct effects of yield and shift scores were moderate, accounting for 17%, $F(2, 91) = 20.98, p < 0.001$, and 16%, $F(2, 91) = 17.81, p < 0.001$, of the variability in total rights comprehension scores, respectively. Including IQ, the models substantially increased the variability accounted for to 57%, for yield scores ($R = 0.75$) $F(2, 91) = 59.65$, $p < 0.001$ as well as 57% for shift scores ($R = 0.75$) $F(2, 91) = 59.18$, $p < 0.001$. Controlling for IQ, neither yield (from $\beta = -0.43$ $SE = 0.11$ to $\beta = -0.15$ $SE = 0.04$) $z = 4.05$, $p < 0.001$ (Sobel, 1982) nor shift scores (from $\beta = -0.40$ $SE = 0.32$ to $\beta = -0.14$ $SE = 0.25$) $z = 3.74$, $p < 0.001$ (Sobel, 1982) contributed significantly to the prediction of total rights comprehension. Results using a Bootstrapping estimation technique less sensitive to sample size than the Sobel test yielded similar results for both yield and shift indices (Preacher & Hayes, 2004). These findings indicate that IQ scores fully mediated or accounted for the relationship between both yield and shift types of suggestibility and rights comprehension (see Fig. 1).

#### Mediation analyses

We conducted a parallel series of analyses of to examine whether IQ functions as a mediator for the observed effects of yield, and shift subtypes of suggestibility on rights comprehension (using total scores to minimize the number of analyses) following the 4-step procedure initially outlined by Baron and Kenny (1986) and Judd and Kenny (1981) and recently modified by Preacher and Hayes (2004). First, we found significant associations among yield, shift, IQ, and total comprehension scores (see Table 5). The second criterion requires establishing an association between the predictors and the mediator. In addition to correlations between yield and IQ, and shift and IQ, regressions demonstrated that both yield, $F(2, 91) = 19.24, p < .001$, and shift scores, $F(2, 91) = 15.98$, $p < .001$, significantly predicted IQ. The third criterion requires establishing a relationship between the proposed mediator and outcome. There was a significant correlation between IQ and total comprehension scores (see Table 5) and a regression demonstrated that IQ accounted for 55% of the variation in total comprehension scores, $F(1, 92) = 112.02, p < .001$.

Table 5 Correlations between predictors and comprehension

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Suggestibility</th>
<th>Yield</th>
<th>Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grisso’s Instruments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMR</td>
<td>.25**</td>
<td>.55**</td>
<td>.10</td>
</tr>
<tr>
<td>CMR-R</td>
<td>.22*</td>
<td>.46**</td>
<td>.15</td>
</tr>
<tr>
<td>CMV</td>
<td>.21*</td>
<td>.71**</td>
<td>.07</td>
</tr>
<tr>
<td>FRI</td>
<td>.23*</td>
<td>.64**</td>
<td>.12</td>
</tr>
<tr>
<td>GRI-TOT</td>
<td>.28*</td>
<td>.74**</td>
<td>.13</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IQ</td>
<td></td>
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</tbody>
</table>

Correlations for gender, ethnicity, and ESL are Point BiSerial

$^* p < .05$, $^{**} p < .01$
Models of Direct Effects: Suggestibility and Rights Comprehension

![Diagram](image)

Models Including IQ

![Diagram](image)

Fig. 1 Model of IQ mediating the effects of suggestibility on total Miranda comprehension scores. Notes. Values are standardized regression coefficients. Dashed line indicates full mediation. ** p < .01; *** p < .001

$p = .011$, and GRI-TOT, $r = .30$, $p = .004$. 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. 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 youth who had some versus no previous police contact.

**Discussion**

Results from this study provide further support to the finding that many adolescents do not fully understand their arrest rights. Performance on Grisso’s Miranda Instruments (1998) was similar to the norms presented in the instruments’ manual, and this is in keeping with recent research using the measure with adolescents (e.g., Viljoen & Rosch, 2005). Consistent with our hypotheses, age and IQ emerged as robust predictors of comprehension on Grisso’s Instruments. Younger adolescents and adolescents with lower IQ showed greater levels of comprehension impairment, both in terms of their understanding, and appreciation of Miranda warnings. These results are similar to those described by Goldstein et al. (2003, 2006), who also used the WASI to measure IQ. However, our findings are notable given the substantial variability accounted for by age and IQ (64%) in predicting overall comprehension scores on Grisso’s Instruments. Alternatively, we did not find support for the relationship between other demographic variables from the literature, including gender, ethnicity, first-language status, or SES (after controlling for IQ) and rights comprehension. These results strongly suggest that age and IQ remain the strongest predictors of rights comprehension in youth, and provide further support for the continued consideration of these suspect characteristics by courts and clinicians engaged in evaluations and decisions concerning the validity of rights waiver. We did not find that youth with previous police experience demonstrated better comprehension of their rights, a further caution to evaluators and courts who may see youth with criminal justice system experience as more knowledgeable about their rights, or likely to appreciate their significance.

Consistent with the body of research, we found that 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. However, our results diverge somewhat from the literature with respect to the suggestibility–rights comprehension relationship. Our findings showed that more highly suggestible youth (both yield and shift tendencies) were less likely to understand or appreciate their rights. Alternatively, in studies of participants without mental retardation (though lower average IQ than the present sample) both Goldstein et al. (2006) and Redlich et al. (2003) found a positive association between the tendency to yield to leading questions and comprehension. Similar to our results, Redlich et al. demonstrated a negative relationship between the tendency to shift responses and comprehension, but Goldstein et al. did not find an association between the two. In an unpublished doctoral dissertation, Harrison (2008) found no significant associations between suggestibility and rights comprehension in an adult sample of mentally disordered defendants, whereas Rogers et al. (2009) found a similar lack of association in a large sample of adult offenders.

Our results more closely match the findings published by Everington and Fulero (1999), as they also found a negative relationship between yield suggestibility and comprehension, but still no association between shift and comprehension in a sample of mentally retarded adults (though their use of a simplified form of the GSS renders the results less easily comparable). One possible explanation for
the divergence in findings relate to the characteristics of our sample. In particular, this community sample of adolescents demonstrated much higher average IQ scores compared to many published studies, and did not suffer limitations associated with a truncated range, with both the lower and the higher ends of the IQ continuum represented. However, the exact reason for negative correlation between the shift subtypes of suggestibility (which has not been found in published average-IQ samples) remains somewhat unclear. Our findings with respect to the mediational function of IQ may help to place these findings into context.

To our knowledge, this study was the first to explicitly test models of indirect effects in the rights comprehension literature. Importantly, results from mediation analyses indicated that IQ fully explained the relationship between both yield and shift subtypes of suggestibility and rights comprehension. These findings make sense in light of the implicit underlying role that IQ plays in the processes of suggestibility and rights comprehension. For example, Gudjonsson and Clark (1986) initially hypothesized that suggestibility is influenced by an individual’s ability to cope with the demands of interrogation (e.g., uncertainty, expectation, pressure), and that these coping skills are lacking in individuals with limited intellectual resources. In terms of Miranda capacities, a suspect’s ability to understand and reason about his or her rights demands sufficient cognitive ability with respect to verbal comprehension, knowledge of vocabulary, and a basic capacity to think rationally, among many additional specific cognitive functions. It seems reasonable to conclude, that it is not an individual’s interpersonal tendencies to give into leading questions, or bend under pressure, that result in poor understanding and appreciation of rights per say, but rather that both processes tax suspects’ cognitive capacities in individuals with limited intellectual function.

Although it will be important to replicate these results in additional samples before firm conclusions can be drawn, these findings may hold important implications for this line of research. Importantly, mixed findings in this new area of research may be due, in part, to a lack of specificity on the part of investigators who have set out to test the suggestibility–rights comprehension relationship in the past. Previous rationales for examining the suggestibility–rights comprehension relationship have focused on the heightened potential for adverse outcomes (e.g., risk for false confessions). However, rather than testing this additive model (in which poor comprehension and suggestibility would be treated as risk indicators associated with an increased likelihood of invalid rights waivers or the possibility of making a false statement to police), these studies have primarily tested the direct association between suggestibility and rights comprehension. Understandably, research of this nature is very difficult to conduct given ethical concerns surrounding the induction of interrogation-like situations and the difficulties involved with conducting in vivo research with police. However, while these distinctions may seem somewhat artificial in the real world, it is important to articulate the theoretical foundation for inferential analyses conducted in research, as illustrated by the present findings.

We agree that work seeking to identify clusters of characteristics of vulnerable youth who may be particularly likely to provide police with invalid waivers and potentially offer false statements in interrogation is important. Indeed, findings from the present study support previous work demonstrating that younger, less intellectually capable youth are both less likely to understand their rights and are more likely to be suggestible, and thus susceptible to police interrogation tactics that involve pressure or coercion. However, these results also suggest that it may be helpful, in conducting future work focusing on Miranda comprehension and other aspects of police interrogation, to outline a more explicit conceptual framework for analyses.

One possible framework for the context of Miranda and suggestibility situates understanding and appreciation of rights as aspects more relevant in the knowing and intelligent components of a valid waiver, whereas interrogative suggestibility fits more directly in the voluntariness aspect of valid waiver (Grisso, 2003; Rogers et al., 2009). Consider, for example, a young person who has the capacity to understand his or her rights as well as appreciate the functional significance of a waiver (knowing and intelligent), but who may still provide an involuntary waiver if he or she is particularly suggestible and likely to acquiesce under police pressure to make a statement without counsel (voluntariness).

Limitations

This study was not without its limitations. Our sample consisted of a group of community youth with some previous police experience. Given that police can interrogate any young person if he or she is suspected to have committed an offense, one may argue that this more “average” sample provides an optimal group of adolescents in which to examine rights comprehension. The full range of IQ in this sample further allowed us to examine predictors of rights comprehension in a more normative group of youth, relative to previous work conducted on detained samples (e.g., Bove, Golstein, Appleton, & Thomson, 2003; Viljoen & Roesch, 2005). However, the extent to which these findings generalize to juvenile justice populations cannot be determined without further replication.

The generalizability of our findings may also be somewhat limited by the comprehension measure we employed. While the use of Grisso’s Instruments is supported by
Commentators have expressed concerns about the fact that the wording included in the measure may not accurately capture contemporary warnings that vary in difficulty and content between jurisdictions (e.g., Rogers, Jordan, & Harrison, 2004). We acknowledge that this time, particularly given the widespread use of the GSS2 in research and clinical practice. Finally, while our findings did not support the shift subscale can be generalized to other studies using the GSS2. We also recommend that further psychometric investigation of the instrument is warranted at this time, particularly given the widespread use of the GSS2 in research and clinical practice. Finally, while our results provided support for the role of IQ as a mediator in the suggestibility–comprehension relationship, these findings do not definitely establish that this is the only possible explanatory model, and other variables could be examined in future process analyses.

Future Directions

Overall, these results complement a growing body of literature suggesting that younger, less intellectually capable adolescents represent a highly vulnerable group of suspects who may be at increased risk of making poor decisions in the interrogation context. While our findings did not support suggestibility as a factor directly related to rights comprehension and appreciation, interrogative suggestibility remains a potentially important suspect characteristic relevant to the interpersonal transaction with police during waiver administration procedures. Courts, police, and clinicians who evaluate the validity of Miranda waivers should carefully consider an adolescent’s age and IQ in discriminating likely comprehension and appreciation of rights, and suggestibility as a suspect characteristic relevant to inquiries of the overall validity of waivers. Looking to the future, it is important that investigators continue to provide an empirical foundation for risk indicators strongly tied with the potential for miscarriages of justice in Miranda waiver contexts. However, the practical difficulties of research conducted with actual suspects in interrogation contexts continue to limit our ability to draw connections between risk indicators, contextual factors of actual interrogations tactics, and adverse outcomes. We recommend that investigators continue efforts to foster collaborative relations with police forces by encouraging them to understand the ways in which empirical research can support best practices in line with policy and legislative requirements. Similarly, it will be important for the field to engage in efforts to translate the knowledge ascertained from an accumulating body of research in this area to policy and lawmakers, criminal justice professionals, and mental health clinicians in order to better inform practice and reduce possible miscarriages in justice for vulnerable populations.

Acknowledgments

This study was supported by grants from the Social Sciences and Humanities Research Council of Canada and the American Psychology-Law Society. The authors thank Jodi L. Vljoen and Sarah Desmarais, who provided helpful feedback during preparation of this manuscript. Also, we offer our sincere appreciation to the youth who participated in this study, and the youth center staff who facilitated recruitment for this project.

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Evaluating competencies: Forensic assessments

Instruments for assessing understanding and suggestibility


Juvenile’s waiver of rights: Legal and psychological implications


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