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MEASURING READING COMPLEXITY AND LISTENING COMPREHENSION OF CANADIAN POLICE CAUTIONS

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The reading complexity and listening comprehension of Canadian police cautions were measured. In Study 1, the complexity of 44 unique Canadian police cautions was assessed using five readability measures (Flesch-Kincaid reading level, sentence complexity, use of difficult words, use of infrequent words, and number of words). Results showed that 7 (37%) of the right-to-silence cautions ($n = 19$) and none of the right-to-legal-counsel cautions ($n = 25$) reached acceptable cutoff levels for all five measures. In Study 2, university students ($N = 121$) were presented with one of three cautions verbally and were asked to explain its meaning. Despite variations in complexity across the three cautions, participants understood approximately one third of the information contained in the cautions. The extent to which the needs of Canadian suspects and police organizations are being met and the validity of reading complexity as a predictor of listening comprehension are discussed.

Keywords: police caution; reading complexity; listening comprehension; Charter rights; *Miranda* warnings; interrogations

In Canada, the Canadian Charter of Rights and Freedoms (1982; henceforth referred to as the Charter) provides individuals facing a police interrogation with the right to silence and the right to legal counsel. Individuals are typically informed of these rights through the verbal delivery of police cautions, which are passages of text prepared by police organizations. Research from various countries has demonstrated that it is rare for people to comprehend cautions fully and, hence, understand their rights fully (e.g., Clare, Gudjonsson, & Harari, 1998; Grisso, 1981). The lack of caution comprehension could result in individuals' rights being violated and inculpatory evidence being omitted in court. One of the reasons offered to explain the lack of comprehension is the complex content and structure of cautions (e.g., Rogers, Harrison, Shuman, Sewell, & Hazelwood, 2007). We tested this explanation by measuring the reading complexity of Canadian police cautions and testing the validity of reading complexity as a predictor of listening comprehension.

A BRIEF OVERVIEW OF CAUTION COMPREHENSION STUDIES

Notwithstanding variations in legal rights and the wording of these rights both across and within countries, it appears that people have great difficulty understanding their legal

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rights. A classic set of studies by Grisso (1981) in the United States showed that both juvenile and adult offenders misunderstood their legal rights, as outlined in a *Miranda* warning (*Miranda v. Arizona*, 1966). Specifically, Grisso's results showed that only 21% of the juveniles and 42% of the adults fully understood the *Miranda* warning that was presented to them. Subsequent replications, across a range of populations (e.g., adolescents and mentally challenged individuals), have also supported the conclusion that it is rare for people to comprehend all their rights contained in a *Miranda* warning (e.g., Fulero & Everington, 1995; Viljoen, Zapf, & Roesch, 2007).

Studies conducted in the United Kingdom have also shown that comprehension of cautions is low. The percentage of students, suspects, police officers, and the general population who understood fully the standardized English and Welsh caution ranged from 0% (suspects) to 48% (police officers; Clare et al., 1998; Fenner, Gudjonsson, & Clare, 2002). A similar study in Scotland showed that only 11% of young offenders understood all of the rights contained in the Scottish caution that was delivered to them (Cooke & Philip, 1998).

Research has also shown that the comprehension of Canadian cautions (i.e., right-to-silence and right-to-legal-counsel) is relatively low. Canadian cautions are not standardized and vary across police organizations (see appendix for examples). Typically, Canadian police officers administer the right-to-silence caution first, check understanding of that caution, and then repeat this procedure for the right-to-legal-counsel caution (Snook, Eastwood, & MacDonald, in press). A study by Moore and Gagnier (2008) exploring the comprehension of a right-to-silence caution showed that 43% of a sample of university students understood the caution fully. A similar study by Eastwood and Snook (2009) examined comprehension of both a right-to-silence and right-to-legal-counsel caution using a sample of university students. For the silence caution, only 4% displayed full comprehension, and 13% understood more than half of the caution. Similarly, only 7% displayed full comprehension of the legal counsel caution, and 24% understood more than half of the information contained in the caution.

Given the inherent power differential between the police interviewer and the interviewee, legal rulings in Canada dictate that the rights contained in police cautions can be waived only if the interviewee has full knowledge of those rights and a full appreciation of the consequences of giving up those rights (*Korponay v. Attorney General of Canada*, 1982; *Clarkson v. The Queen*, 1986). Poor comprehension of cautions means that the rights and freedoms afforded to Canadians, as established in the Charter, are not being protected properly. It also means, however, that inculpatory evidence gained by police officers during an interview could potentially be ruled inadmissible. It therefore goes without saying that it is in the best interest of the administration of justice in Canada that cautions are understood fully.

Canadian case law has further dictated that to facilitate full understanding, police cautions should be as instructive and clear as possible (*R v. Bartle*, 1994). However, there is no guidance from the courts regarding what constitutes an instructive or clear caution. Nor do we know whether Canadian police cautions are as informative and lucid as they could be or whether attempts to improve clarity would result in higher levels of comprehension.

CAUTION COMPLEXITY STUDIES

As mentioned, one reason offered to explain the poor comprehension pertains to the overly complex content and structure of the cautions (see Fenner et al., 2002). It has been

argued that the readability level (one measure of complexity) of cautions often exceeds the ability of those who are asked to comprehend them (Rogers, Hazelwood, Sewell, Harrison, & Shuman, 2008). Some evidence to support this potential explanation is provided by Greenfield, Dougherty, Jackson, Podboy, and Zimmerman's (2001) analysis of the grammatical complexity of 21 versions of the *Miranda* warning being used in New Jersey. They used the Flesch-Kincaid (FK) readability measure to indicate the level of education needed to comprehend a passage of text (Flesch, 1950). Greenfield and colleagues (2001) found that the *Miranda* warnings were written, on average, at a seventh-grade level and ranged from fourth-grade all the way up to second-year college education levels. Similarly, Helms's (2003) analysis of 53 versions of *Miranda* warnings from throughout the United States found that a seventh-grade education level would be required to understand the warnings. A later study by Helms (2007) examined the individual sections of 56 adult *Miranda* warnings and found that the FK scores for the sections ranged from third-grade to ninth-grade reading levels.

In the most comprehensive study of *Miranda* warnings, Rogers, Harrison, Shuman, et al.'s (2007) analysis of 560 unique *Miranda* warnings showed substantial variability in warning length and reading complexity. The length of the warnings varied from 34 to 227 words (average word length = 93), with the majority exceeding the amount of information that can be held in short-term memory (e.g., Neath, 1998). They also found that FK comprehension scores ranged from third-grade to postcollege education levels. More recently, Rogers and his colleagues (2008) analyzed an additional 385 warnings and replicated their past findings on word length and reading comprehension levels. In addition, their analysis of sentence and word complexity showed that the majority of warnings had a relatively high level of sentence complexity and often contained words that are rarely present in passages of text (low-frequency words) and words that would be understood only by those who have achieved a relatively high level of education (difficult words; see Rogers, 2008, for overview of research on *Miranda* comprehension).

The FK scores from the aforementioned studies on reading complexity suggest that Americans facing an interrogation would need approximately a seventh-grade education level to understand the content of *Miranda* warnings. In addition, the fact that the warnings contained a number of low-frequency words, difficult words, and complex sentences and often exceeded 75 words suggest that the true level of education required to understand the warnings would be higher than seventh grade. However, it has been estimated that 70% of inmates in U.S. prisons operate at or below a sixth-grade education level (Haigler, Harlow, O'Connor, & Campbell, 1992). In addition, offender populations have greater proportions of learning disabilities and mental retardation than nonoffender populations (e.g., Pallone, 1991). The fact that the majority of *Miranda* warnings exceed the comprehension level of inmates suggests that the prototypical individual facing an interrogation will be unable to understand his or her rights.

To reduce complexity of *Miranda* warnings, and thereby increase their comprehensibility, Rogers et al. (2008) recommended that the following four criteria be met: (a) FK reading level ≤ 6.0 , (b) sentence complexity ≤ 40 on Grammatik (a program found in Corel WordPerfect Version X4 [computer software]), (c) avoidance of difficult words (≥ 10 th-grade reading level), and (d) avoidance of infrequent words (< 1 occurrence per 1 million words). In addition, Rogers, Harrison, Shuman, et al. (2007) recommended that (e) warnings not exceed 75 words in length. The aforementioned cutoff levels for the five readability measures create five criteria on which to assess the complexity of police cautions.

THE CURRENT STUDY

The concerns outlined by Rogers and his colleagues regarding the lack of comprehension of *Miranda* warnings are directly relevant to Canada. To reiterate, several studies have demonstrated an apparent lack of comprehension of Canadian police cautions (Eastwood & Snook, 2009; Moore & Gagnier, 2008). Research has yet to examine the complexity of cautions currently being used in Canada. In Study 1, we measured the reading complexity of Canadian police cautions by using the five criteria recommended by Rogers, Harrison, Shuman, et al. (2007) and Rogers et al. (2008).

People facing an interrogation are required to comprehend police cautions that are delivered to them verbally. The measures used in Study 1, however, pertain primarily to reading complexity. As Rogers, Harrison, Shuman, et al. (2007) pointed out, reading comprehension appears to be related moderately to listening comprehension. For example, Rogers, Harrison, Hazelwood, and Sewell (2007) demonstrated that FK scores can help predict accurately the actual needed reading comprehension level of *Miranda* warnings. However, other studies have shown that reading complexity measures, such as FK scores, are of little value in estimating listening comprehension (e.g., Charrow & Charrow, 1979). These mixed conclusions raise the question of whether a verbally delivered caution that meets the five complexity criteria would be better understood than one that does not meet those criteria. In Study 2, the validity of reading complexity measures in predicting listening comprehension was tested.

STUDY 1

METHOD

Sample

Police caution cards, documenting right-to-silence and right-to-legal-counsel, were requested from the 86 Canadian police organizations (see www.safecanada.ca for a complete list of organizations). A total of 38 English versions of the right-to-silence caution and 38 English versions of the right-to-legal-counsel caution were obtained (response rate = 44.2% for both cautions). Each participating police organization provided a copy of both cautions. The sample consisted of 1 federal, 2 provincial, and 35 municipal or regional police organizations. A total of 12 (response rate = 50%) cautions were obtained from British Columbia, 10 (83%) from Alberta, 4 (40%) from Saskatchewan, 4 (33%) from Manitoba, 28 (33%) from Ontario, 4 (33%) from Quebec, 2 (100%) from Prince Edward Island, 2 (33%) from New Brunswick, 6 (75%) from Nova Scotia, 2 (100%) from Newfoundland and Labrador, and 2 (100%) from the federal agency. Combining the silence and legal counsel cautions resulted in a total of 76 cautions. (Examples of cautions are provided in the appendix.)

Complexity Analysis

All cautions were typed into a word processor by both the first and third authors and compared for accuracy. Any typographical discrepancies between the two entries were resolved prior to analysis. The number of syllables, words, and sentences per passage were

calculated using Readability Plus for Windows (Version 7.5; computer software). In 55 of the 76 cautions (72%), there was a blank space for a police officer to insert the type of criminal charge or reason for the detention. To ensure a conservative measure of complexity, the blank space was replaced with the one-syllable word *a*. The telephone numbers that were included in 13 of the 76 cautions (17%) were converted from figures to words. Nineteen of the 38 right-to-silence cautions (50%) were unique, and 25 of the 38 (64%) legal counsel cautions were unique. Subsequent analyses were conducted on the unique cautions. The complexity of each caution was assessed in the following ways.

1. *FK*. The FK formula estimates the grade level needed for comprehension of a passage of text (Flesch, 1950). The formula, which uses sentence length and average number of syllables per word, predicts the grade level at which individuals in that grade would understand 75% of the information in a particular passage of text (see DuBay, 2004). For example, an FK score of 6 for a passage of text indicates that individuals with a sixth-grade reading ability should be able to comprehend at least 75% of the information contained in that passage of text. This measure has been deemed a reliable measure of reading comprehension (Paasche-Orlow, Taylor, & Brancati, 2003).¹

2. *Grammatik sentence complexity*. Grammatik is a program contained in Corel WordPerfect software that provides a measure of sentence complexity. The complexity score is derived from the number of words and clauses in sentences (see Rogers et al., 2008). Score can range from 0 to 100, with increasing scores corresponding to increasing sentence complexity.

3. *Word analysis*. The word analysis consisted of analyzing the (a) frequency level of each unique word contained in the cautions, (b) difficulty level of each unique word contained in the cautions, and (c) number of words in each caution. Each word from each silence and legal counsel caution was entered into a cell in a Microsoft Excel spreadsheet. The list of words was sorted alphabetically, and all redundant words were removed. This process produced 187 unique words. The frequency level of each word was determined by using two word frequency guides, one from the United States (Zeno, Ivens, Millard, & Duvvuri, 1995) and one from Britain (Leech, Rayson, & Wilson, 2001). A word was classified as infrequent if at least one of the two guides indicated that the word occurred less than once in every million words. The difficulty level was determined by calculating the approximate grade level needed to understand each unique word (see Dale & O'Rourke, 1981, for details on estimating word difficulty). For words with more than one definition, the grade level that corresponded to the definition of the word contained in the caution was used. For example, for the word *right*, the definition pertaining to legal guarantees was used as opposed to other definitions referring to directionality, being correct, and so on.

RESULTS

Right to Silence

Table 1 contains the results for each unique right-to-silence caution for each of the readability measures. As can be seen, 79% ($n = 15$) of the cautions reached an acceptable FK score (i.e., ≤ 6.0). The average FK score for the right-to-silence cautions was 5.39 ($SD = 1.10$).

TABLE 1: Complexity Measures for Right-to-Silence Cautions

Police Organization	Complexity Measure					Number of Criteria Met
	Flesch-Kincaid Reading Level ≤ 6.0	Sentence Complexity ≤ 40	Avoids Difficult Words (≥ 10 th-Grade Reading Level)	Avoids Infrequent Words (< 1 /million)	Number of Words < 75	
Halifax Regional Police	Y (5.2)	Y (17)	Y	Y	Y (31)	5
Royal Newfoundland Constabulary	Y (5.8)	Y (20)	Y	Y	Y (36)	5
Amherst Police Department	Y (5.8)	Y (20)	Y	Y	Y (37)	5
Saint John Police Force	Y (5.5)	Y (20)	Y	Y	Y (39)	5
Charlottetown Police Department	Y (5.1)	Y (20)	Y	Y	Y (40)	5
Prince Albert Police Service et al. ^a	Y (5.1)	Y (20)	Y	Y	Y (40)	5
Royal Canadian Mounted Police	Y (5.3)	Y (23)	Y	Y	Y (47)	5
The Blood Tribe Police Service	Y (4.0)	Y (14)	N (1)	Y	Y (35)	4
Bridgewater Police Service et al. ^b	Y (4.2)	Y (14)	N (1)	Y	Y (41)	4
Medicine Hat Police Service	Y (5.2)	Y (17)	N (1)	Y	Y (31)	4
Halton Regional Police Service	Y (4.8)	Y (18)	N (1)	Y	Y (32)	4
Calgary Police Service	Y (4.4)	Y (18)	N (1)	Y	Y (33)	4
Lethbridge Regional Police Service	Y (4.0)	Y (18)	N (1)	Y	Y (36)	4
Hamilton Police Service et al. ^c	Y (4.9)	Y (20)	N (1)	Y	Y (38)	4
Edmonton Police Service	N (6.3)	Y (25)	N (1)	Y	Y (28)	3
British Columbia ^d	N (8.4)	Y (28)	N (1)	Y	Y (17)	3
Montreal Police Service	Y (5.0)	Y (34)	N (1)	N (1)	Y (55)	3
Winnipeg Police Service	N (7.3)	Y (20)	N (2)	Y	Y (39)	3
Gatineau Police Service	N (6.1)	Y (36)	N (1)	Y	N (76)	2

Note. Y = yes; N = no. Values in parentheses represent raw scores for that measure of reading complexity.

a. Prince Albert Police Service, Brockville Police Service, Cornwall Community Police Service, Greater Sudbury Police Service, London Police Service, North Bay Police Service, Orangeville Police Service, Ottawa Police Service, Thunder Bay Police Service, and York Regional Police.

b. Bridgewater Police Service, Saskatoon Police Service, and Winkler Police Service.

c. Hamilton Police Service, Niagara Regional Police Service, Ontario Provincial Police, and Peel Regional Police.

d. All cautions collected from police forces in the province of British Columbia ($n = 6$). Because all cautions from British Columbia were identical, they are collectively represented under the title "British Columbia."

The FK scores ranged from 4.00 for the Lethbridge Regional Police Service and Blood Tribe Police Service cautions to 8.40 for the British Columbia caution.

All cautions met the acceptable cutoff for sentence complexity (i.e., ≤ 40). The average Grammatik score was 21.16 ($SD = 5.90$), with scores ranging from 14 (Bridgewater Police Service et al. grouping and the Blood Tribe Police Service) to 36 (Gatineau Police Service).

Thirty-seven percent ($n = 7$) of the cautions did not contain any difficult words (i.e., ≥ 10 th grade).² The average number of difficult words per caution was 0.68 ($SD = 0.58$; range = 0 to 2). The caution with the most difficult words was from the Winnipeg Police Service. Only the caution from the Montreal Police Service contained a low-frequency

word (i.e., occurring less than once per million words). The average number of low-frequency words per caution was 0.05 ($SD = 0.23$; range = 0 to 1). All but one caution met the acceptable cutoff for word length (i.e., <75 words). The average word length was 38.47 ($SD = 11.89$) and ranged from 17 words for the British Columbia caution to 76 words for the Gatineau Police Service caution.

A total of 7 (37%) of the 19 cautions met all five of the criteria, 7 (37%) met four of the five criteria, 4 (21%) met three of the criteria, and 1 (5%) met two of the criteria.

Right to Legal Counsel

Table 2 contains the scores for each unique right-to-legal-counsel caution for each readability measure. Thirty-six percent ($n = 9$) of the cautions met the acceptable FK score (≤ 6.0). The average FK score was 6.45 ($SD = 1.32$), with scores ranging from 4.30 for the Bridgewater Police Service and York Regional Police cautions to 8.50 for the cautions used by the Calgary Police Service and the Royal Newfoundland Constabulary (RNC).

Sixty percent ($n = 15$) of the cautions did not exceed the acceptable level of sentence complexity (≤ 40). The average Grammatik score was 38.76 ($SD = 8.51$), with scores ranging from 25 for the Brockville Police Service and North Bay Police Service to 59 for the Gatineau Police Service.

All of the cautions contained difficult words (≥ 10 th grade; see Note 2). The average number of difficult words per caution was 2.68 ($SD = 0.85$; range = 2 to 6). The RNC caution contained the greatest number of difficult words, and 11 cautions tied for the least amount of difficult words. Eighty-four percent of the cautions contained low-frequency words (<1/million). The average number of low-frequency words per caution was 1.04 ($SD = 0.61$; range = 0 to 2). Five cautions tied for the greatest number of low-frequency words, and four cautions tied for the least number of low-frequency words. Twenty percent ($n = 5$) of the cautions contained less than 75 words. The average word length of the right-to-legal-counsel cautions was 100.52 ($SD = 27.18$) and ranged from 28 words for the Hamilton Police Service to 133 words for the Saint John Police Force.

Approximately 32% ($n = 8$) of the 25 cautions did not meet any of the criteria recommended by Rogers, Harrison, Shuman, et al. (2007) and Rogers et al. (2008). Only 3 (12%) cautions met three of the five criteria, 10 (40%) met two, and 4 (16%) met one of the criteria.

DISCUSSION

The purpose of this study was to measure the reading complexity of Canadian police cautions. In line with Rogers, Harrison, Shuman, et al.'s (2007) and Rogers et al.'s (2008) findings with *Miranda* warnings, we found substantial variation in the measures of reading complexity. Using the cutoff criteria advocated by Rogers and his colleagues for each of the five readability measures, we found that the majority of silence cautions were not overly complex, but the opposite was true for the legal counsel cautions. These findings suggest that Canadians should be able to understand their right to silence but unable to understand their right to legal counsel.

The large differences in reading complexity of both types of cautions across police organizations are not overly surprising, because policing in Canada is primarily a provincial responsibility. That is, many organizations would have developed their cautions independently of

TABLE 2: Complexity Measures for Right-to-Legal-Counsel Cautions

<i>Police Organization</i>	<i>Complexity Measure</i>					
	<i>Flesch-Kincaid Reading Level ≤ 6.0</i>	<i>Sentence Complexity ≤ 40</i>	<i>Avoids Difficult Words (≥10th-Grade Reading Level)</i>	<i>Avoids Infrequent Words (<1/million)</i>	<i>Number of Words < 75</i>	<i>Number of Criteria Met</i>
Charlottetown Police Department	Y (4.8)	Y (26)	N (2)	N (1)	Y (52)	3
Prince Albert Police Service/Saskatoon Police Service	Y (4.8)	Y (31)	N (2)	N (1)	Y (73)	3
Hamilton Police Service	Y (4.5)	Y (36)	N (2)	N (1)	Y (28)	3
Brockville Police Service/ North Bay Police Service	Y (4.6)	Y (25)	N (3)	N (1)	N (97)	2
Montreal Police Service	N (7.2)	Y (27)	N (3)	N (1)	Y (65)	2
Bridgewater Police Service/ York Regional Police	Y (4.3)	Y (27)	N (3)	N (1)	N (76)	2
Saint John Police Force	Y (5.0)	Y (31)	N (3)	N (2)	N (133)	2
Cornwall Community Police Service	Y (5.2)	Y (39)	N (3)	N (1)	N (119)	2
Peel Regional Police	Y (5.9)	Y (40)	N (3)	N (1)	N (113)	2
Winkler Police Service	N (7.1)	Y (33)	N (3)	Y	N (111)	2
Winnipeg Police Service	N (8.0)	Y (39)	N (3)	Y	N (101)	2
Gatineau Police Service	N (7.7)	N (59)	N (2)	Y	Y (68)	2
Royal Newfoundland Constabulary	N (8.5)	Y (34)	N (6)	Y	N (77)	2
British Columbia ^a	N (6.2)	Y (36)	N (2)	N (1)	N (103)	1
Amherst Police Department	N (7.7)	Y (38)	N (2)	N (2)	N (119)	1
London Police Service/Ontario Provincial Police	Y (5.8)	N (42)	N (3)	N (1)	N (112)	1
Halifax Regional Police	N (7.3)	Y (38)	N (2)	N (2)	N (119)	1
Greater Sudbury Police Service	N (6.2)	N (41)	N (3)	N (1)	N (124)	0
Royal Canadian Mounted Police	N (7.5)	N (43)	N (2)	N (1)	N (92)	0
Ottawa Police Service	N (6.1)	N (45)	N (3)	N (1)	N (122)	0
The Blood Tribe Police Service	N (7.5)	N (46)	N (2)	N (1)	N (122)	0
Thunder Bay Police Service/Niagara Regional Police Service/ Orangeville Police Service	N (6.1)	N (46)	N (3)	N (1)	N (123)	0
Edmonton Police Service/Lethbridge Regional Police Service/Medicine Hat Police Service	N (7.7)	N (47)	N (2)	N (2)	N (124)	0
Halton Regional Police	N (7.0)	N (48)	N (3)	N (1)	N (116)	0
Calgary Police Service	N (8.5)	N (52)	N (2)	N (2)	N (124)	0

Note. Y = yes; N = no. Values in parentheses represent raw scores for that measure of reading complexity.

a. All cautions collected from police forces in the province of British Columbia ($n = 6$). Because all cautions were identical, they are collectively represented under the title "British Columbia" in the table.

other organizations. Furthermore, the task of developing the police cautions is typically the responsibility of each organization's legal department, whereby a lawyer would interpret the Charter and relevant case law to decide on the wording of the cautions. Such a practice raises questions about procedural fairness regarding the administration of rights in the Canadian justice system, because suspects in some regions of the country may be afforded better protection of their rights than suspects in other regions. Although we recognize that the adoption of national standards is not a straightforward process, we advocate the development of a standardized police caution.

Our reading complexity analysis suggests that Canadian police organizations ought to revise their legal counsel cautions significantly and, to a lesser extent, their silence cautions. Every attempt should be made to reduce words that are difficult to understand (e.g., *retain*) and are not used often in everyday communications (e.g., *detained*). The majority of cautions should be shortened to match what we know about the capacity of short-term memory (e.g., Neath, 1998). We also recommend that the sentences in the cautions be shortened and multiple-syllable words be avoided. It is expected that such revisions would allow Canadian offenders, who typically have a low literacy level and high frequency of learning disabilities (Bell, Conrad, & Suppa, 1984; Muirhead & Rhodes, 1998), to better understand the rights contained in these cautions. These revisions would also likely help implement the recommendation made in *R v. Bartle* (1994) that police cautions be as clear as possible. Overall, we echo Rogers et al.'s (2008) conclusions that more emphasis needs to be placed on designing cautions that use simple declarative statements and avoid legalistic phrases.

Indications from the reading complexity analysis about whether people should be able to understand their rights are mixed. On one hand, the low level of reading complexity for the right-to-silence caution does not correspond to research showing that people do not understand that caution fully (Eastwood & Snook, 2009; Moore & Gagnier, 2008). On the other hand, the fact that none of the right-to-legal-counsel cautions met all five readability criteria corresponds to Eastwood and Snook's (in press) findings that it is rare for people to understand the rights contained in a right-to-legal-counsel caution. These mixed findings beg the question of whether reading complexity is a valid predictor of listening comprehension. The purpose of Study 2 was to test the validity of the criteria used for measuring complexity in Study 1 as measures of listening comprehension.

STUDY 2

METHOD

Participants

Participants ($N = 121$) were undergraduate students from Memorial University. The sample consisted of 42 men (mean age = 20.50, $SD = 3.08$) and 79 women (mean age = 20.35, $SD = 2.71$). The average year of study for participants was 2.16 ($SD = 1.37$).

Materials

The right to silence was derived from Section 7 of the Charter, which states, "Everyone has the right to life, liberty and security of the person and the right not to be deprived thereof

except in accordance with the principles of fundamental justice.” In Canadian case law, the right to silence means that suspects and accused persons must be given a free choice about whether to speak to the police (see *R v. Hebert*, 1990). Although Canadian court rulings indicate that the police cannot interfere with this right (e.g., offer promises or threats), they are not obligated to inform suspects and accused persons of their right to silence prior to questioning (see *R v. Papadopoulos*, 2006; *R v. Smith*, 1996).

The right to legal counsel is contained in Section 10(b) of the Charter and states, “Everyone has the right on arrest or detention to retain and instruct counsel without delay and to be informed of that right.” As clarified in subsequent cases *R v. Bartle* (1994) and *R v. Brydges* (1990), a legal counsel caution must include the following four requirements: Notify suspects and accused persons of (a) their right to retain and instruct counsel without delay; (b) information about access to counsel free of charge where an accused meets prescribed financial criteria set up by provincial Legal Aid plans; (c) information about access to immediate, although temporary, legal advice irrespective of financial status (“duty counsel”); and (d) basic information about how to access available services which provide free, preliminary legal advice.

Although police organizations tend to deliver both cautions to suspects and accused persons (e.g., Snook et al., in press), case law states that they are obligated to inform them only of their Section 10(b) rights (see *R v. Papadopoulos*, 2006). As discussed in *R v. Hebert* (1990), one of the primary purposes of informing individuals of their right to legal counsel is to provide them with the ability to get legal advice regarding their rights, with the most important of these rights being the right to silence. Given that police are not obligated to deliver right-to-silence cautions to suspects and accused persons, and given the lack of guidance regarding the content of these cautions, tests of listening comprehension in the current study focused on right-to-legal-counsel cautions.

Each of the 25 unique legal counsel cautions from Study 1 was assessed to determine whether it contained the four legal requirements outlined previously. A total of 17 (68%) met all of the criteria.³ To test the validity of Rogers, Harrison, Shuman, et al.'s (2007) and Rogers et al.'s (2008) cutoff criteria in predicting listening comprehension, the 17 cautions were first organized according to how many of the five criteria were met. The cautions meeting the most and least amount of criteria were then selected. As there was a seven-way tie in cautions meeting the most criteria (i.e., 2) and a seven-way tie in cautions meeting the least number of criteria (i.e., 0), the cautions that tied were rank-ordered using their raw scores on the readability measures (see Table 2). The two cautions that ranked, on average, as highest and lowest were from the Brockville Police Service and North Bay Police Service (highest score, or simplest caution) and the Calgary Police Service (lowest score, or most complex caution).

Although the Brockville Police Service and North Bay Police Service caution was the simplest of the cautions, it still only met two of the criteria. To perform a more thorough test of the criteria, a third caution that met all four legal requirements and all five of the criteria was created. The created caution (Created) had an FK score of 4.0, a Grammatik score of 25, no low-frequency words, no difficult words, and a total of 57 words. By including a third caution, the stimuli consisted of a caution that met none of the criteria (Calgary), a caution that met approximately half of the criteria (Brockville and North Bay), and a caution that met all of the criteria (Created), as determined by the second author through the use of relevant case law and consultation with legal professionals. The three cautions are listed as follows in order of complexity. The first sentence in the first two cautions is

incomplete because we did not want to increase the complexity of the cautions by inserting the name of an arbitrary criminal charge.

I am arresting you. You have the right to retain and instruct a lawyer without delay. This means that before we proceed with our investigation you may call any lawyer you wish or a lawyer from a free legal advice service immediately. If you want to call a lawyer from a free legal advice service, we will provide you with a telephone and you can call a toll-free number for immediate legal advice. If you wish to contact any other lawyer, a telephone and telephone books will be provided to you. If you are charged with an offence, you may apply to Legal Aid for assistance. Do you understand: Do you want to call a free lawyer or any other lawyer? (most complex; Calgary)

I am arresting you. It is my duty to inform you that you have the right to retain and instruct counsel without delay. You have the right to telephone any lawyer you wish. You also have the right to free advice from a legal aid lawyer. If you are charged with an offence, you may apply to the Legal Aid Plan for assistance. Telephone number 1-800-265-0451 will put you in contact with a Legal Aid Duty Counsel Lawyer for free legal advice right now. Do you understand? Do you wish to call a lawyer now? (least complex; Brockville and North Bay)

You can hire and talk to your own lawyer right now. You can also get free legal advice from a government lawyer right now. If you want this free advice I will give you the number to call. If you are charged with a crime you can apply for a free lawyer to help with your case.

A Visual Basic program was designed using Visual Basic 5 (computer software). This program consisted of three different forms, each of which was displayed on a computer monitor in sequence. The first form consisted of instructions regarding how to complete the experiment. The second form consisted of a video of the second author reading one of the three legal counsel cautions (i.e., Calgary, Brockville and North Bay, or Created) in its entirety. The speed of delivery for the three cautions was 2.7 words per second for Calgary, 3.0 words per second for Brockville and North Bay, and 3.4 words per second for Created, which should be conducive to verbal comprehension (see Carver 1982; Jester & Travers 1966). The third form instructed participants to describe, in as much detail as possible, their understanding of the caution they heard. Located below the instructions was a text box for participants to type their answers. All answers that were typed into the text boxes were saved automatically in a Microsoft Word document.

Procedure

The study was conducted in the Bounded Rationality and Law Lab at Memorial University. Each participant was greeted at the entrance to the lab and was directed to one of four computer testing stations. Participants were then asked to read and sign an informed consent form as well as complete a short demographic questionnaire. Next, the experimental instructions were outlined, and it was verified that the participant understood how to complete the study. Participants were then provided with a pair of headphones to listen to the videos, were assigned randomly to one of the three caution conditions, and were instructed to begin the experiment. There was no difference in participants' age, gender, or year of study across the Calgary ($n = 38$), Brockville and North Bay ($n = 44$), and Created ($n = 39$) conditions. After completion of the experiment, each

participant received a debriefing form that outlined the purpose of the study. The study took approximately 5 min to complete, and participants' names were entered into a drawing for a \$100 prize.

Coding participant answers. Participants' answers were coded by the first author using a coding guide constructed to measure participants' comprehension of the four legal requirements. For the first requirement, participants received 1 point if they stated they could retain or hire a lawyer or counsel (1a), 1 point if they stated they could talk to or instruct a lawyer or counsel (1b), and 1 point if they stated that these (i.e., 1a and 1b) could be done without delay or immediately (1c). For the second requirement, 1 point was given if participants stated they could talk to a government lawyer or get legal advice (duty counsel, 2a), 1 point if they mentioned that this legal service was free (2b), and 1 point if they mentioned they could obtain this free legal service without delay or immediately (2c). For the third requirement, 1 point was given if participants stated there was a number they could call to talk to this free lawyer or to get legal advice (3). For the fourth requirement, 1 point was given if participants mentioned they could apply for legal aid (4a), and 1 point was given if they mentioned that the application to legal aid was dependent on their being charged with a crime (4b). Scores for comprehension of the cautions could range from 0 to 9, reflecting each of the nine components that underlie the four requirements. Any extra information contained in the cautions (e.g., that a telephone book would be provided) was not coded.

Interrater reliability. Agreement of the coding was assessed by having the second author code all of the answers independently. The second author was provided with a 1-hr training session that covered the practical aspects of coding the answers and the content of the 9-point coding guide. In addition, practice was gained by coding five booklets from an earlier study of caution comprehension before the actual coding was conducted. Any confusions pertaining to the task were resolved before the interrater reliability commenced. The reliability of coding was measured using Cohen's Kappa (Cohen, 1960) and percentage agreement. The Kappa and percentage agreement (in parentheses) for Component 1a was .85 (93%), for Component 1b was .81 (91%), for Component 1c was .88 (95%), for Component 2a was .54 (77%), for Component 2b was .71 (86%), for Component 2c was .71 (93%), for Component 3 was .93 (97%), for Component 4a was .67 (90%), and for Component 4b was .68 (91%). The average Kappa across all answers was .79 (90%), thus suggesting excellent agreement between the coders (Fleiss, 1981; Landis & Koch, 1977).

Confidence intervals and effect size calculations. As the current research was concerned primarily with practical rather than statistical significance (Kirk, 1996), the use of effect sizes and 95% confidence intervals (CIs) was emphasized. CIs give a range within which the true population parameter is likely to lie (Kirk, 1996). For the purpose of this analysis, CIs with a width greater than 20% were defined as imprecise. For between-participant comparisons, CIs that do not overlap or barely touch can be interpreted as $p < .01$. Conversely, $p > .05$ when the overlap is about half the average margin of error (Cumming & Finch, 2005). Cohen's d was used where appropriate to assess the magnitude of the effects. According to Cohen (1988), $d = .2$ is a small effect, $d = .5$ is a medium effect, and $d = .8$ is a large effect.

RESULTS

The mean comprehension level, of a maximum of 9 points, for the Calgary caution was 3.53 ($SD = 1.81$; 95% CI = 2.93 to 4.12), and the mean comprehension for the Brockville and North Bay and Created cautions was 3.11 ($SD = 1.45$; 95% CI = 2.67 to 3.55) and 3.36 ($SD = 1.87$; 95% CI = 2.75 to 3.97), respectively. There was substantial overlap between the CIs across the three conditions. The largest difference in level of comprehension was between the Calgary and Brockville and North Bay cautions, although the effect size was small, $d = .26$. The effect size for the difference in comprehension level between Calgary and Created was $d = .09$, and the effect size for the difference in comprehension level between Created and Brockville and North Bay was $d = .15$.

Figure 1 displays the percentage of participants, and the associated 95% CIs, who comprehended each of the nine components as a function of caution heard. The fact that width of the CIs for each of the components is wider than what we deemed acceptable (i.e., 20%) suggests that our estimates of the comprehension levels are somewhat imprecise. Bearing this in mind, an examination of each component can still provide some indication of where specific difficulties in comprehension exist. The percentage of participants who indicated correctly that they could hire or retain a lawyer ranged from 43% for the Brockville and North Bay caution to 74% for the Created caution. The percentage of participants indicating that they could instruct or talk to a lawyer varied greatly as well, ranging from 44% for the Created caution to 84% for the Calgary caution. Relatively few participants indicated that they could exercise these rights right away (<39% for all cautions). The percentage of participants who indicated correctly that they could get legal advice or call a government lawyer (i.e., duty counsel) ranged from 26% for the Created caution to 61% for the Calgary caution. Fifty-five percent of participants who viewed the Calgary caution indicated that this legal service was free, compared to 34% for the Brockville and North Bay caution and 31% for the Created caution. Relatively few participants indicated that this legal service could be accessed immediately (<16% for all cautions). Approximately 40% of participants indicated correctly that there was a toll-free number that could be used to access legal advice or a lawyer for both the Calgary and Created cautions. However, the fact that a toll-free number was available was reported by 66% of the participants in the Brockville and North Bay group. The two components dealing with legal aid (i.e., one can apply for legal aid or a lawyer, application dependent on being charged with a crime) were comprehended most frequently by participants in the Created group (33% and 36%, respectively). However, less than 16% of the participants in the Calgary and Brockville and North Bay caution conditions comprehended the legal aid components.

DISCUSSION

The purpose of this study was to test the validity of the criteria used for measuring the complexity of police cautions, as outlined in Rogers, Harrison, Shuman, et al. (2007) and Rogers et al. (2008), for predicting listening comprehension. Our results showed that the level of listening comprehension was similar for three cautions that varied greatly in reading complexity. Irrespective of the caution heard, participants demonstrated knowledge of only one third of the information contained in the caution presented verbally to them. These findings suggest that the reading complexity measures examined here may not be useful

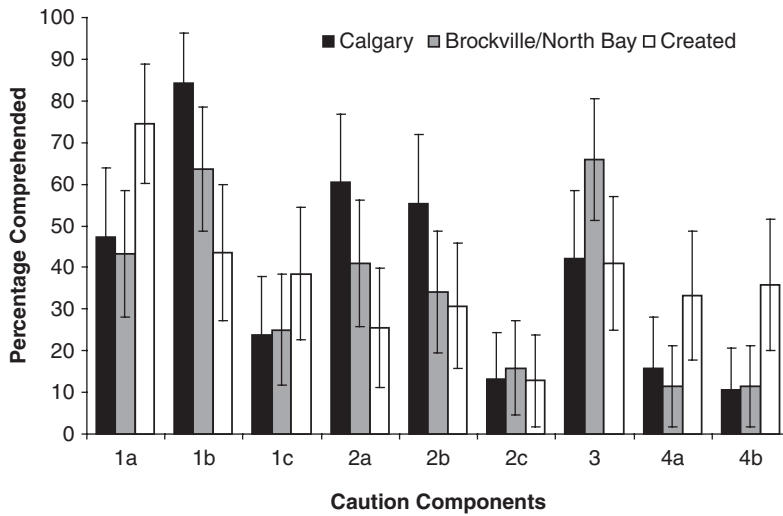


Figure 1: Percentage of Participants, and Associated 95% Confidence Intervals, Who Understood Each of the Nine Components of the Right-to-Legal-Counsel Cautions in Three Distinct Cautions

Note. Component 1a refers to the right to hire a lawyer; 1b refers to the right to speak to a lawyer; 1c refers to the right to have these rights without delay; 2a refers to the right to legal advice or to call a lawyer; 2b refers to the fact that this service (i.e., legal advice or calling a lawyer) is free; 2c refers to the fact that access to this service (i.e., legal advice or calling a lawyer) can be obtained immediately; 3 refers to the provision of a toll-free number to access free legal advice; 4a refers to the right to apply to legal aid for legal help; 4b refers to the fact that the right to apply to legal aid for help is contingent on the individual's being charged with a crime.

predictors of listening comprehension of police cautions and that people are not fully aware of the information needed to deal with the intricacies of a police interrogation. We also found variation in levels of comprehension across cautions with regard to specific rights contained in the cautions. These findings have implications for the protection of legal rights and statement admissibility.

One would expect that passages of text that are relatively short, require low levels of reading ability, have simplistic sentences, and do not contain difficult words or infrequently used words would be easier to comprehend verbally than would those that do not meet those criteria. The fact that this is not the case for legal counsel cautions highlights the need to consider whether the acts of reading and listening are synonymous processes (see Rubin, 1987). Some have argued that these are two distinct modalities and that the way to improve listening comprehension is to alter a passage of text so that it better matches the way people perceive auditory information (Rubin, 1993; Rubin & Rafoth, 1986). For example, researchers have argued that providing listening instructions prior to delivering the information (Vandergrift, 1999), adding redundancies to the message (Meyer & McConkie, 1973), and organizing the information in a logical fashion (Shohamy & Inbar, 1991) can help improve the level of listening comprehension. Our ongoing research involves an exploration of the possibility that these factors will have a positive impact on comprehension of Canadian police cautions.

The finding that university-level individuals understood only one third of the information contained in a police caution suggests that suspects and accused persons would also struggle to comprehend fully the information contained in police cautions. We acknowledge that a limitation of our study is its lack of ecological validity, because caution comprehension

was tested under unrealistic and optimal conditions (e.g., high-functioning students, low-stress laboratory setting, and acceptable speed of delivery). However, these results provide a relatively precise estimate of the maximum level of comprehension possible. We predict that tests of comprehension under more realistic conditions (e.g., low-functioning individual, high-stress situation, quick delivery of caution) would result in a decrease in performance. We are highly skeptical that suspects facing an actual police interrogation would be able to understand even one third of the information contained in these cautions.

An examination of the nine components that are contained in each of the three cautions reveals variations in comprehension. The within-component analysis revealed that confidence intervals between the three cautions overlapped (see Cumming & Finch, 2005). That is, after we corrected for nine comparisons, no caution was better understood than the other two cautions on any single component. One may still be tempted to simply take the component that scored the highest from each caution and combine them to construct a highly comprehensible caution. It must be pointed out that this is not easily accomplished, because multiple components are embedded in a single sentence and, for the most part, are not discrete statements. Future research should separate out the nine components into discrete sentences and test whether certain components are more difficult to comprehend than others.

Notwithstanding the relative imprecision of our estimates, the between-component analysis showed that the majority of participants (regardless of the caution heard) appeared to understand that they could either retain or talk to a lawyer (their own lawyer or duty counsel), and nearly half mentioned that there was a phone number available that would put them in touch with free legal advice. By contrast, most participants did not seem to understand that they could access legal help immediately (their own lawyer or government lawyer-duty counsel) and did not appear to understand that their rights concerning legal aid was contingent on their being charged with a crime. Although improving the comprehension of all components is needed, particular attention should be paid to ensuring that people know they can access legal help immediately and the options available to them if they are charged with a crime (i.e., legal aid).

One methodological issue that deserves specific mention is the use of a free recall procedure to measure comprehension. The fact that participants did not report certain aspects of the caution does not guarantee that they did not comprehend them. For example, participants may know they can contact a lawyer "right away" but believed that this right is implied in their statement that they have a right to get a lawyer. Potentially more valid measures of comprehension include the use of role-playing exercises (e.g., getting participants to take the role of a lawyer providing legal advice to a client), action-based scenarios (e.g., asking participants whether certain courses of action by a suspect are legally possible), and multiple choice tests (e.g., asking participants to choose a legally acceptable course of action from a list of options). Although free recall is used commonly to measure comprehension in a range of domains, such as law and medicine (e.g., Charrow & Charrow, 1979; Crane, 1996; Gudjonsson & Clare, 1994), we advocate the development and testing of additional ways of assessing comprehension that can supplement this procedure.

CONCLUSIONS

The primary goal of the current research was to improve comprehension of Canadian police cautions. In particular, we were interested in whether caution complexity might be

able to explain the existing low levels of caution comprehension. Despite the somewhat intuitive notion that cautions with relatively higher levels of reading complexity should be more difficult to comprehend when presented verbally than those with lower levels of reading complexity, we found that modifying cautions so that they meet acceptable readability levels did not improve listening comprehension. In fact, university-level students under ideal conditions understood only one third of the information contained in a very simple caution. Given the dual importance of protecting people's rights and ensuring that inculpatory evidence is admitted in court, the current state of affairs remains problematic. Nevertheless, we remain optimistic that pursuit of alternative ways of increasing comprehension (e.g., improving listenability) will help resolve this important issue.

NOTES

1. We also assessed reading complexity using the Flesch Reading Ease (FRE; Flesch, 1948) and Simple Measure of Gobbledygook (SMOG; McLaughlin, 1969). The scores for FRE and SMOG are not provided because they correlated highly with the Flesch-Kincaid (FK; Flesch, 1950) measure for both the right to silence ($r = .94$ and $r = .82$, respectively) and right to legal counsel ($r = .89$ and $r = .89$, respectively). The FK was chosen to remain consistent with previous caution complexity research, as it is used more commonly than FRE or SMOG. Also, the FK is a more reliable measure when dealing with smaller passages of text.

2. Following is the list of difficult words that appeared in the cautions (percentage of 44 unique cautions containing that word is in parentheses): *retain* (57%), *counsel* (50%), *offence* (34%), *obliged* (23%), *bound* (5%), *commission* (2%), *criteria* (2%), *subsequently* (2%), *access* (2%), *eligible* (2%), and *video* (2%). The following is the list of low-frequency words that appeared in the cautions (percentage of 44 unique cautions containing that word is in parentheses): *arresting* (43%), *toll-free* (9%), *detained* (5%), and *non-business* (5%).

3. The cautions from the following police organizations did not meet all four of the legal requirements (the requirements not met by each caution is in parentheses): Bridgewater Police Service and York Regional Police (accessing free legal advice), Gatineau Police Service (legal aid); Montreal Police Service (accessing free legal advice); Saint John Police Force (accessing free legal advice); Prince Albert Police Service and Saskatoon Police Service (legal aid); Royal Canadian Mounted Police (legal aid); Charlottetown Police Department (accessing free legal advice, duty counsel); Hamilton Police Service (accessing free legal advice, duty counsel, legal aid).

Appendix Example Cautions

RIGHT TO SILENCE

You do not have to say anything unless you wish to do so. You have nothing to hope from any promise of favour and nothing to fear from any threat whether or not you say anything. Anything you say may be used as evidence. Do you understand? (Royal Canadian Mounted Police)

You are not obliged to say anything, but anything you do say may be given in evidence. (British Columbia)

You are under arrest for ——. We must inform you that we are police officers. You are not obliged to say anything. You have nothing to hope from any promise or favour and nothing to fear from any threat whether or not you say anything. But you must understand clearly that if you wish to say something, whatever you do say will be taken down in writing and may be given in evidence. Do you understand? (Gatineau Police Service)

(continued)

Appendix (continued)

RIGHT TO LEGAL COUNSEL

I am arresting you for _____. It is my duty to inform you that you have the right to retain and instruct counsel of your choice in private and without delay. Before you decide to answer any question concerning this investigation you may call a lawyer of your choice or get free advice from Duty Counsel. If you wish to contact Legal Aid duty counsel I can provide you with a telephone number and a telephone will be made available to you. Do you understand? Do you want to call a lawyer? (Royal Canadian Mounted Police)

I am arresting you for _____. It is my duty to inform you that you have the right to retain and instruct counsel in private, without delay. You may call any lawyer you want. There is a twenty four hour telephone service available which provides a legal aid duty lawyer who can give you legal advice in private. This advice is given without charge and the lawyer can explain the legal aid plan to you. If you wish to contact a legal aid duty lawyer, I can provide you with a telephone number. Do you understand? Do you want to call a lawyer? (British Columbia)

You have the right to retain and instruct counsel of your choice without delay. You may also without delay, call free of charge, a legal aid counsel who is available at all time by calling 1-800-842-2213, or a duty counsel, and obtain legal advice, regardless of your financial resources. Do you understand? Do you wish to do so? (Gatineau Police Service)

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