



Advancing legal literacy: The effect of listenability on the comprehension of interrogation rights

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Purpose. To examine the effect of listenability features on the comprehension of interrogation rights.

Method. In Experiment 1, students ($N = 76$) underwent a mock interrogation where one of two police cautions (listenable caution vs. standard caution) was administered and students were asked to explain the caution in their own words. Experiment 2 ($N = 80$) extended Experiment 1 by identifying the individual and additive effects of the listenability features on recall of their interrogation rights.

Results. The results of Experiment 1 showed that the caution containing listenability features produced higher levels of recall than a standard caution. Results of Experiment 2 showed that repeating and organizing interrogation rights led to the greatest number of legal rights being comprehended.

Conclusions. Listenability can be used as a tool to increase legal literacy.

A wealth of research has made it abundantly clear that knowledge of interrogation rights is deficient (e.g., Cooke & Philip, 1998; Eastwood, Snook, & Chaulk, 2010; Fenner, Gudjonsson, & Clare, 2002; Grisso, 1981; Gudjonsson & Clare, 1994; Gudjonsson, Clare, & Cross, 1992). An archetypal study by Clare, Gudjonsson, and Harari (1998) provides an illustration of the ubiquitous problem of limited literacy of interrogation rights. Clare and colleagues found that, when asked to explain the meaning of a police caution delivered orally, only 7% of the general public, 8% of the student sample, and 48% of the police officers (who had, on average, 7 years of policing experience) explained the entire caution correctly. Such comprehension problems are troubling because it puts detainees at an increased risk of self-incrimination (e.g., Stuart, Quigley, & Delisle, 2013). Safeguarding interrogation rights is also important to investigators who want to avoid having evidence of probative value, acquired as a result of interviews with detainees, excluded from court proceedings.

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One leading explanation for the aforementioned comprehension problem is the high grade levels required to understand police cautions (e.g., Rock, 2007; Rogers, 2008). For instance, Greenfield, Dougherty, Jackson, Podboy, and Zimmerman (2001) analysis of the grammatical complexity of 21 versions of the *Miranda* warning (using Flesch-Kincaid readability measure) showed that the warnings tended to be written at a seventh-grade level, with some of them being written at a university level. The requisite grade levels required to understand the *Miranda* warning are problematic when one considers that the average U.S. citizen reads at a seventh-grade level (National Center for Education Statistics, 1993) and 70% of inmates in U.S. prisons are estimated to operate at or below a sixth-grade education level (Haigler, Harlow, O' Connor, & Campbell, 1992). Replications of the Greenfield *et al.* study have produced comparable results (c.f. Eastwood *et al.*, 2010; Helms, 2003, 2007; Rogers, Harrison, Shuman, Sewell, & Hazelwood, 2007; Rogers, Hazelwood, Sewell, Harrison, & Shuman, 2008).

Despite the compelling evidence that a high grade level is often required to comprehend interrogation rights, an experiment by Eastwood *et al.* (2010) showed that increasing the readability of a caution did not increase comprehension when delivered orally. Eastwood and colleagues presented 121 students with one of three legal counsel cautions that varied dramatically in reading complexity and found that comprehension levels were similar across cautions (i.e., the average comprehension score was approximately 30%). Although only a single study, their findings converge with the evidence in other domains that have shown that increasing the readability of information delivered via spoken communication does not always increase comprehension of that information (e.g., Rubin, 1987, 1993; Rubin & Rafoth, 1986). The explanation for this seemingly counterintuitive finding appears to reside within the listenability literature (Glenn, Emmert, & Emmert, 1995).

Listenability can be defined as the ease of understanding spoken communication (Rubin, 2012). Communication researchers argued that reading and listening should be viewed as two distinct modalities. In contrast to readers, listeners have to deal with additional cognitive demands such as simultaneously retaining information in working memory and interpreting a message that was received a single time (Shohamy & Inbar, 1991). According to Rubin (1987), the constraints of the listening situation can be minimized by making spoken communication more listenable and considerate. Examples of features that make text easier for listeners to understand include giving advances organizers (e.g., foreshadowing the number of points to remember), announcing important topics (e.g., telling the listener to pay attention), and being redundant (e.g., stating and then paraphrasing important points; Armbruster, 1984; Rubin, 2012). In general, listenability research suggests that adding features that make text listenable will increase comprehension levels.

Shohamy and Inbar (1991) tested the *listenable equals literacy* assumption by examining the comprehension of passages of text that were either very literate-based (i.e., news broadcast), very oral-based (i.e., consultative dialogue – a spontaneous, unrehearsed discussion between an expert and addressee involving constant interaction), or text that fell in between the oral/literate continuum (i.e., lecture). They found that participants' comprehension of the news broadcast was significantly lower than comprehension of the two more oral-based texts (i.e., lecture and consultative dialogue); comprehension levels were similar for the lecture and consultative dialogue. A study by Rubin, Hafer, and Arata (2000) also found that oral-based discourse (i.e., speech) tended to be better understood than literate-based discourse (i.e., magazine article) when delivered verbally, and

literate-based discourse tended to be better understood when delivered in written format. More recent research has shown that there are measurable benefits to increasing the listenability of information. For instance, research has shown that increasing the listenability of information can lead to improved outcomes in patient safety following surgery (Rubin, 2012).

A natural corollary of the aforementioned listenability research is that making police cautions more listenable should increase the comprehension of interrogation rights. Eastwood and Snook (2012) tested this assumption by adding the following three listenability features to a police caution: (1) announcing that important information that needs to be remembered is forthcoming (Instructions); (2) organizing the information into four legal rights (Listing); and (3) repeating the content of each sentence, using slightly different wording, after each sentence was delivered (Explanations). These three listenability features belong to the listenability domain of *considerateness toward listeners* (see Rubin, 2012). Participants then watched a video of an individual delivering one of the eight versions of the modified caution and were asked to explain the meaning of that caution in their own words. Eastwood and Snook found that the caution containing all three listenability modifications was able to increase comprehension from 37% to 73%. More specifically, they found the Explanations modification of repeating legal rights had a large effect on recall ($d = 0.96$), with the remaining two modifications producing small effects.

Although Eastwood and Snook's (2012) results suggest that making a police caution more listenable can increase the literacy of interrogation rights, the study was conducted under benign and artificial laboratory conditions. Specifically, the participant's single focus was on a video recording of an individual reciting the interrogation rights. There are some indications that decrements in the comprehension of interrogation rights will occur when people face more realistic situations (see Rogers, Gillard, Wooley, & Fiduccia, 2011; Scherr & Madon, 2012). Such findings suggest that the cognitive demands (e.g., split attention, multi-tasking) associated with a realistic police interrogation are likely to reduce the effects of listenability modifications observed by Eastwood and Snook.

The goal of the current research was to conduct a conceptual replication of the Eastwood and Snook (2012) study using a mock interrogation scenario. Due to the presumed increase in cognitive demands that are likely to be associated with a mock interrogation scenario, it is predicted that lower levels of comprehension will be observed than what was reported in the Eastwood and Snook study (which used a computer-based task). Nevertheless, past research using listenability as a tool to increase literacy of information that is delivered verbally leads to the prediction that a police caution containing listenable features will still result in significantly higher comprehension scores than a police caution without those features (Eastwood & Snook, 2012; Rubin, 2012; Rubin *et al.*, 2000; Shohamy & Inbar, 1991).

EXPERIMENT I

Method

Participants

Participants ($N = 76$) were undergraduate students attending Memorial University. The sample consisted of 18 men ($M_{age} = 21.94$, $SD = 2.75$) and 58 women ($M_{age} = 22.83$, $SD = 6.36$). The average year of study was 3.39 ($SD = 1.06$).

Design

A 2 (Caution Type: base vs. modified) \times 2 (Ground Truth: guilty vs. innocent) between-participants design was used. The dependent measure was the number of legal rights recalled by the participant. A nine-point coding guide was used to evaluate how well participants' comprehended the four main rights contained in the police caution. For the first right, participants received one point for stating that they had *the right to retain/hire a lawyer/legal counsel*, one point for stating they had *the right to instruct/talk to a lawyer/legal counsel*, and another point if they stated *they could perform these rights without delay*. For the second right, participants were given one point for stating they had *the right to talk to a lawyer (duty) council/get legal advice*, one point for stating that *this lawyer/legal advice is free*, and one point for stating that *this lawyer/legal advice can be received without delay*. For the third right, participants were given one point if they stated that *a phone number is provided to contact duty counsel/get legal advice*. For the fourth right, participants were given a point for stating they can *apply to get legal aid/get free lawyer to help with the case*, and one point for stating *the application was dependent on being charged with a crime*. A copy of the coding guide can be obtained from the corresponding author.

Materials and procedure

Each participant was greeted by the research assistant upon arrival for the experiment and seated at a conference table in a windowless interrogation room. Prior to their arrival, participants were assigned randomly to either a guilty or innocent condition. All participants were deceived about the true nature of the study and informed that the purpose of the experiment was to test police interviewing skills and procedures in a real-life setting via a mock interrogation.

Participants assigned to the guilty condition were instructed to commit a mock crime. Specifically, participants were told to go up one floor, enter a room, steal the purse that was located on the table in that room, and return the purse to the research assistant. Participants were then seated back in the interrogation room, and instructed to create an alibi for their whereabouts during the commission of the mock crime (approximately 20 min – the length of time it took to be briefed on the experiment and commit the mock crime), and to use that alibi to convince the interrogator of their innocence. The purpose of having the participant construct and relay the alibi was to mimic the cognitive processes of a guilty detainee during a real-world interrogation. Conversely, participants who were assigned to the innocent condition were asked to think about where they were during the previous 20 min and were not required to commit the mock crime.

Prior to the interrogator entering the room, all participants completed the pre-interrogation survey. The research assistant then left the interrogation room and, after a short delay, the interrogator entered and worked through the interrogator script. The interrogator script contained the monologue that was delivered to each participant. The monologue was based on an information gathering approach of interviewing (i.e., the PEACE model of interviewing; see NSLEC, 2004; Shepherd, 2008) and included a short (~3 min) introduction to each participant (e.g., exchange of names), interview ground rules (e.g., audio/video recording, no interruptions), and the reason for the interview. The interrogator script also contained one of the two police cautions. The first caution is referred to as the base caution (see Eastwood *et al.*, 2010), and contained one sentence for each of the four legal rights. The second caution, referred to as the modified caution, is the

base caution with three listenability features added (see Eastwood & Snook, 2012).¹ The modified caution contained the four legal rights and the three listenability modifications. The first modification involved adding instructions at the beginning of the caution that informed the interviewee to pay attention, which is akin to announcing important topics (Instructions). The second modification involved giving participants advanced organizers by announcing the number of rights they need to remember (Listing). The third modification involved adding redundancies by delivering each legal right and then paraphrasing it (Explanations). Given below are the two cautions:

(Base caution)

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

(Modified caution)

I am going to read you the police caution. The police caution describes the rights that you have when being interviewed by the police. I want you to listen carefully to the caution as I am reading it and think about the information that you hear. This is important, as I will ask you to tell me what the caution means when I finish reading it. I will start reading the caution now.

You have four rights that you need to know about: First, you have the right to hire and talk to your own lawyer right away. This means that you can hire and talk to any lawyer you want before I ask you any more questions. Second, you have the right to free legal advice from a government lawyer right away. This means that you can talk to a free lawyer and get free legal advice before I ask you any more questions. Third, if you want this free legal advice, I will give you a telephone number to call. This means that you can get a phone number from me that will let you call about the free legal advice I just mentioned. Fourth, if you are charged with a crime, you can apply for a free lawyer to help you with your case. This means that if you do end up being charged with a crime, you can apply to get a lawyer to help you for free.

The interrogator script contained a caution comprehension check by asking for an explanation of the rights (i.e., free recall) and also a follow-up prompt for the participant to report any further details that may not have been reported during the free recall (i.e., 'what else do you recall?'). The comprehension check was then followed with questions about the participant's whereabouts during the time the purse was stolen. Once the interrogator left the room, the research assistant then entered and asked participants to recall the rights again.

The same interrogator conducted all interviews. Once the interrogation ended, the research assistant returned to the interrogation room and asked participants to complete the post-interrogation survey and demographic questionnaire.² Participants were then debriefed about the experiment. The experiment took approximately 45 min to

¹ We did not test comprehension on the right to silence caution because Canadian court rulings indicate that the police 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). Although police organizations tend to deliver both cautions to suspects and accused persons (e.g., Snook, Eastwood, & MacDonald, 2010), it is typically the lawyers' responsibility to inform their clients about their right to remain silent (*R v. Hebert*, 1990).

² The pre-interrogation survey asked participants to rate their level of stress on a 7-point scale (1 = very low to 7 = very high). The post-interrogation survey asked participants three questions. The first question asked participants to rate their level of stress on a 7-point scale (1 = very low to 7 = very high). The second and third questions required participants to rate, on a 7-point scale (1 = very unfocused to 7 = very focused), how focused they were on what the interrogator was saying as he was reading the legal rights and on what the interrogator was saying when he was asking about their whereabouts, respectively. The results of the analyses pertaining to pre- and post-interrogation surveys were excluded as they were deemed tangential.

complete, and participants received a bonus mark in their psychology class for their participation. A copy of all study materials can be obtained from the corresponding author.

Reliability analysis

As a check of reliability of the coding, half of the responses were selected randomly and coded. Prior to coding the participant's responses, both coders studied the nine-point coding guide and practiced the task by coding five example responses. Cohen's Kappa (Cohen, 1960) and percentage agreement was used to measure the reliability of the coding. The Kappa (and the percentage agreement) across all components was 0.85 (92.64%) and ranged from a low of 0.63 (82.50%) for the right to talk to duty counsel to a high of 1.00 (100%) for the right to apply for legal aid.

Results

The measure of literacy was calculated by pooling the number of the nine rights recalled across the two checks of comprehension (i.e., during and after the interrogation). Results showed that the average number of rights recalled across all conditions was 4.08 ($SD = 1.84$), or 45.33%.³ A 2 (caution type: modified vs. base) \times 2 (ground truth: guilt vs. innocent) analysis of variance (ANOVA) revealed a significant main effect for caution type, $F(1, 72) = 19.69, p < .001, d = 1.04$. The average number of rights recalled by those who heard the base caution ($n = 38$) was 3.24 ($SD = 1.42$; or 36.00%, 95% $CI = 30.78\%$, 41.22%) and was 4.92 ($SD = 1.84$; or 54.67%, 95% $CI = 48.00\%$, 61.34%) for those who heard the modified caution ($n = 38$). The average number of rights recalled for those in the guilty condition ($M = 4.10, SD = 1.73$) was not significantly higher than those in the innocent condition ($M = 4.05, SD = 1.97$), $F(1, 72) < 0.001, p = .99, d = 0.03$. The interaction was not significant, $F(1, 72) = 0.46, p = .50$.

Figure 1 presents the percentage of each right that was recalled correctly as a function of caution type. As can be seen, all but two of the rights (i.e., the right to obtain free legal advice from a government lawyer before the interrogation began; the right to apply for legal aid if they were charged with a crime) were recalled by more than 50% of participants who heard the modified caution. Only one of the rights (the right to hire a lawyer) was recalled by more than 50% of participants who heard the base caution. None of the participants recalled all nine rights. As can be seen in Figure 1, while there was a difference between the modified and base caution in terms of the level of recall on each component, the trend across the nine rights was somewhat consistent for both cautions.

Discussion

The results from Experiment 1 suggest that modifying police cautions using three listenability features can lead to significant improvements in comprehension. Specifically, participants who were exposed to the modified caution showed nearly a 20% improvement compared to those who received the base caution. An assessment of the confidence intervals (CI) suggests that the plausible effect of listenability could range from

³ Eastwood (2011) found that the average number of rights recalled when participants were not read the right to legal counsel caution (i.e., base knowledge of legal rights) was 0.72 ($SD = 0.51, 95\% CI = .55$ to $.89$), or 8%.

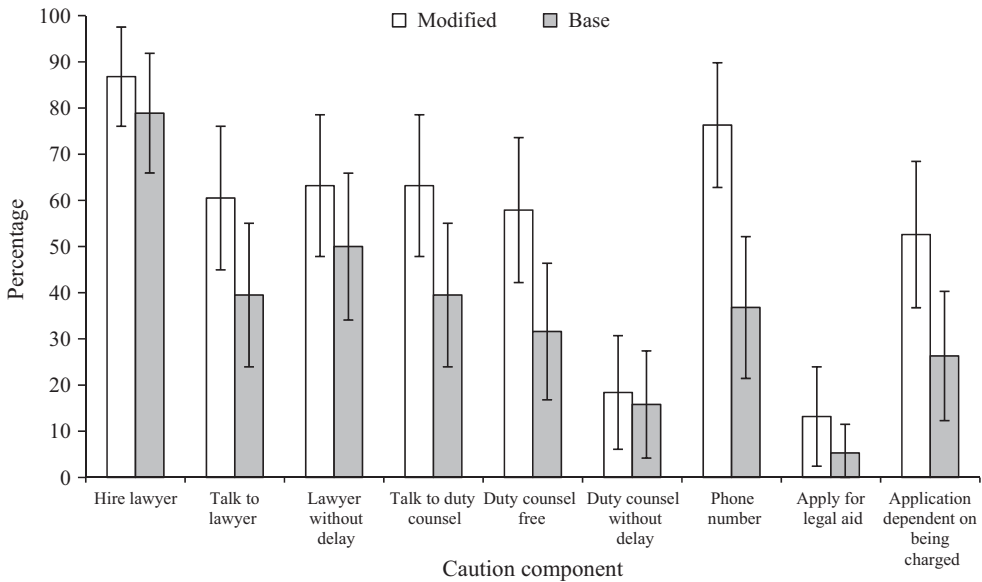


Figure 1. The percentage of participants who recalled each of the nine components contained in the police cautions.

a 7% to 30% improvement. Furthermore, the upper bound of the confidence interval suggests that it is plausible that 61% of the interrogation rights could be understood if they contained listenability features. Even when considering the glass half empty, the confidence interval suggests that nearly half of the interrogation rights could be understood from a caution that incorporated listenability features. A comparison of the two estimated mean recall levels suggest that there is a direct link between making text more considerate and releasing the demands placed on working memory when processing spoken communication. Such a finding should not be entirely surprising because of the abundance of research showing that being able to rehearse (by hearing repeated messages; e.g., Baddeley, 2001), chunk (e.g., Miller, 1956), and attend to (Cowan, 1995) information improves memory performance.

Despite the positive impact of listenability features on recall levels, the estimated levels were approximately 18% lower than the highest levels reported in the Eastwood and Snook (2012) study. Given that we did not collect any data associated with the cognitive demands of the task, the simplest explanation is that the cross-study difference is due to fluctuations that occur naturally in replications (Cumming, 2008; Lehrer, 2010). However, unlike a benign computer-based experiment, participants in this study had to engage in several cognitive tasks such as trying to convince the interviewer of their innocence, dealing with the uncertainty of the interrogation, attending to their legal rights, and ruminating about having to answer questions pertaining to their alibi/whereabouts. Thus, it might be the case that these additional tasks played a role in reducing comprehension levels. Regardless of the reason for the discrepancy, our results suggest that the listenability features have a measurable benefit on comprehension.

Although it is clear that the listenability features collectively led to significant improvements, it is not possible to determine the effect that each listenability feature had on comprehension levels. We consequently replicated Experiment 1 to identify the individual and additive effects of the listenability features on recall. Based on Eastwood

and Snook's (2012) findings, it is hypothesized that each of the three listenability modifications will increase comprehensibility independently by allowing participants to know what to listen for and better focus their attention while listening (Instructions), logically organizing the interrogation rights (Listing), and providing the opportunity for the listener to rehearse the interrogation rights (Explanations). An additive effect is also hypothesized, whereby the addition of each modification will increase comprehension. It is also predicted, based on the findings from Eastwood and Snook (2012) that the Explanations modification will result in the largest effect, followed by the Listing and Instructions modifications, respectively. As with Experiment 1, we anticipate that the mock interrogation scenario will lead to lower recall levels than those reported by Eastwood and Snook.

EXPERIMENT 2

Method

Participants

Participants ($N = 80$) were undergraduate students attending Memorial University. The sample consisted of 19 men ($M_{age} = 23.32$, $SD = 3.93$) and 61 women ($M_{age} = 21.30$, $SD = 2.76$). The average year of study was 3.30 ($SD = 1.20$).

Materials

The materials used in Experiment 1 were also used in this experiment, with the exception of the number of versions of the modified caution used and the exclusion of an innocent condition. Only a guilty condition was used because there were negligible differences in comprehension between the guilty and innocent conditions in Experiment 1. A total of eight versions of the modified caution were used to create every possible combination of the three listenability features – Instructions, Listing, and Explanations.

Design

A 2 (Instructions: yes vs. no) \times 2 (Listing: yes vs. no) \times 2 (Explanations: yes vs. no) between-participants design was used. The dependent measure was the number of legal rights recalled by the participant; the same 9-point coding guide used in Experiment 1 was used to evaluate how well participants' recalled their legal rights.

Procedure

The procedure for Experiment 1 was followed in this experiment with the exception of one minor difference – the research assistant followed the script for the guilty condition for all participants.

Reliability analysis

As a check of reliability of the coding, all of the responses were coded by the second author. Prior to coding the participant's responses, both coders studied the nine-point coding guide and practiced the task by coding five example responses. Cohen's Kappa (Cohen, 1960) and percentage agreement was used to measure the reliability of the

coding. The Kappa (and percentage agreement) across all components was .81 (90.56%) and ranged from a low of .31 (95.00%) for the right to apply for legal aid to a high of .95 (97.5%) for the application being dependent on being charged with a crime.

Results

The measure of legal literacy was calculated by pooling the number of the nine rights recalled across the two checks of comprehension (i.e., during and after the interrogation). Results showed that the average number of rights recalled was 5.00 ($SD = 1.85$), or 55.56%. A 2 (instructions: yes vs. no) \times 2 (listing: yes vs. no) \times 2 (explanations: yes vs. no) ANOVA revealed a significant main effect of Explanations, $F(1, 72) = 6.82, p = .011, d = 0.59$. Participants who heard the cautions that contained the Explanations modification recalled more information ($M = 5.53, SD = 1.81$) than those who heard cautions without that modification ($M = 4.48, SD = 1.75$; see Figure 2). There was no statistically significant difference between those who were presented with the Instructions modification ($M = 4.93, SD = 1.72$) and those who were not presented with that modification ($M = 5.08, SD = 1.99$), $F(1, 72) = 0.139, p = .710, d = 0.08$. Although there was a medium effect, there was no statistically significant difference between those who were presented with the Listing modification ($M = 5.38, SD = 1.66$) and those who were not presented with this modification ($M = 4.63, SD = 1.97$), $F(1, 72) = 3.48, p = .066, d = 0.41$. None of the interactions were significant (all F values < 1).

The average comprehension score (out of 9) and associated 95% CI , for each of the eight cautions is shown in Figure 3. As can be seen, the lowest level of recall was achieved for the base caution ($M = 3.80, SD = 1.69$; or 42.22%, 95% $CI = 28.78\%, 55.67\%$) and the highest level of recall was achieved for a caution that contained both Listing and Explanation ($M = 6.00, SD = 1.56$; or 66.67%, 95% $CI = 54.22\%, 79.11\%$) modifications. The caution that contained all three modifications had a mean recall level of 5.70 ($SD = 1.49$; or 63.33%, 95% $CI = 51.44\%, 75.22\%$). In terms of amount of information recalled correctly, the top three cautions contained the Explanations modification while three of the top four contained the Listing modification.

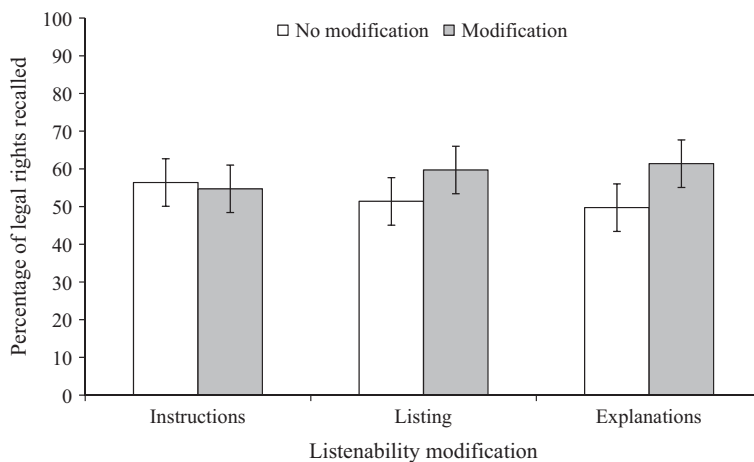


Figure 2. The percentage of legal rights recalled, and associated 95% confidence intervals, for each of the three modifications.

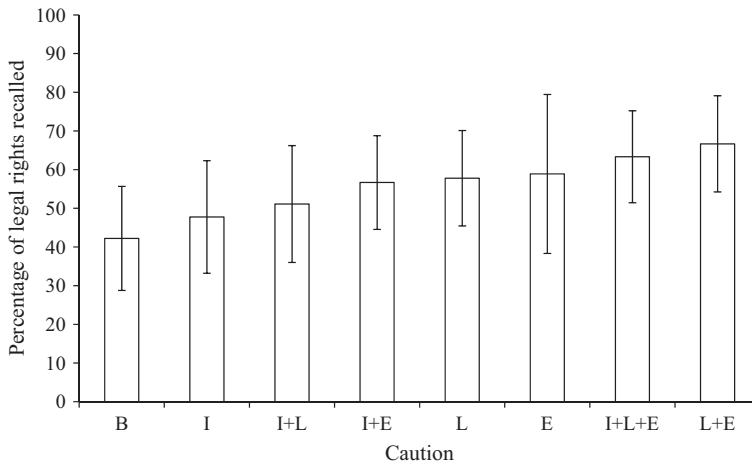


Figure 3. The percentage of legal rights recalled, and associated 95% confidence intervals, for each of the cautions. Note that B = base caution; I = instruction modification; L = listing modification; E = explanation modification.

Table 1 contains the percentage of participants who recalled each of the nine components contained in the police caution. Overall, across all conditions, it was found that participants struggled (i.e., <25% of people recalled correctly) the most with their right pertaining to free legal advice *without delay*, their right to *apply* for legal aid to help with their case, and that the only way they can apply is if they are *charged* with an offence. Four of the rights were recalled by half to three quarters of the participants. These rights included the right to *talk to their own lawyer*, to talk to that lawyer *without delay*, that a *phone number will be provided* to talk to a free government lawyer, and that duty counsel is *free*. The majority (i.e., >80%) of participants recalled the right to *talk* to a free lawyer and the right to *hire* their own lawyer. As can be seen in Table 1, modifying the legal counsel warning (by adding an explanation and a listing feature) resulted in an increase in comprehension (when compared against an unmodified warning) with respect to the ability to hire and talk to their own lawyer without delay, to be given a phone number to contact a free government lawyer (i.e., duty counsel), and the ability to apply for legal assistance through the court process if they are charged with a crime.

Discussion

Similar to Experiment 1, we found that modifying a police caution to make it more listenable led to an increase in recall during a mock interrogation scenario. More specifically, and partially in line with our hypothesis, it was found that the Explanations and Listing modifications produced medium effects, while the Instructions modification produced a small effect. The results also supported our prediction that the Explanations modification would have the largest impact on recall levels, followed by the Listings and Instructions modification, respectively. Moreover, we found partial support for the prediction that adding listenability features would lead to incremental increases in comprehension. We found that adding the Explanations and Listing modifications to a caution led to the greatest comprehension levels. As evidenced by the observed increase in comprehension, it appears that giving suspects and accused persons multiple attempts

Table 1. The percentage of participants who recalled each of the nine components contained in the police cautions as a function of caution type

Condition	Caution component								
	Hire lawyer (%)	Talk to lawyer (%)	Lawyer without delay (%)	Talk to duty counsel (%)	Duty counsel free (%)	Duty counsel without delay (%)	Phone number (%)	Apply for legal aid (%)	Application dependent on being charged (%)
Base	70	40	40	80	50	40	50	0	10
Instructions	90	40	50	80	80	10	50	0	30
Instructions + Listing	80	60	70	70	70	20	60	0	30
Instructions + Explanations	90	60	70	70	70	20	70	10	50
Listing	100	30	80	80	60	20	80	0	70
Explanations	90	50	60	90	90	40	50	10	50
Instructions + Explanations + Listing	100	60	60	100	100	20	80	0	50
Explanations + Listing	100	80	80	90	70	30	90	10	50

to process legal rights and simplifying those rights by chunking them into pieces eases the cognitive burdens that are present in listening situations.

In practical terms, participants who were exposed to a police caution that repeated and chunked interrogation rights showed nearly a 25% improvement in recall compared to those who received the base caution. An assessment of the CI for the modified (Explanations + Listing) and base cautions suggests that plausible estimates of percentage improvements in recall are somewhat imprecise, as they range from being potentially negligible to being as high as 50%. Furthermore, the upper bound of the confidence interval suggests that it is plausible that 79% of the interrogation rights could be understood if they contained Explanations and Listing features. Even when considering the lower bound of the confidence interval, the results suggest that just over half of the interrogation rights could be understood from a caution that incorporated Explanations and Listing features.

GENERAL DISCUSSION

The goal of this research was to test the effect of three listenability features (i.e., Instructions, Listing, and Explanations) on the comprehension of interrogation rights during a mock interrogation. Across the two experiments, we found that modifying police cautions according to these listenability features resulted in increased comprehension. We also found that the improvements were due primarily to the Explanations modifications, and to a lesser extent the Listing modification. That is, repeating each legal right immediately after it was delivered and explicitly organizing the caution into the four constituent legal rights resulted in a marked increase in comprehension.

Overall, the results suggest that it is possible to use listenability modifications as a tool to minimize the cognitive constraints that are present in listening situations (Rubin, 1993; Rubin & Rafoth, 1986). The Explanations modification, for instance, allows listeners to hear information a second time; this prevents information from being missed in the initial delivery, and also acts as built-in rehearsal mechanism which may allow people to hold the information in their working memory long enough to decode and store it in their long term memory (Baddeley, 2001). Although a smaller effect, the Listing modification appears to prevent working memory from being overloaded by providing listeners with a method to organize information into manageable chunks (see Bower, Clark, Lesgold, & Winzenz, 1969; Miller, 1956).

The comprehension levels reported in our two experiments are lower than the levels reported in Eastwood and Snook (2012). As mentioned above, this difference in comprehension is likely due to chance. However, given the variation in the procedure between the computer-based experiment and the mock crime scenario, it is worthwhile to explore the effect that these variations have on comprehension. If it were found that our mock crime scenario is more similar to a real-world interrogation than a computer-based experiment, our findings raise interesting possibilities about the ability to use listenability as a tool for improving comprehension of interrogation rights in real-life settings; and the need for additional research on lessening the impact of the interrogation situation on comprehension levels. We are encouraged by the fact that listenability may be the way forward in solving with the widely documented problem surrounding the comprehension of interrogation rights.

Future research should involve an examination of the effects that other listenability modifications may have on recall. For instance, Rubin (2012) published a listenability

style-guide that contained four broad listenability domains. In this research, we focused purely on the *considerateness toward listeners* domain. Greater gains may be possible if other listenability domains are considered, such as using *oral-based sentence structure*, *oral-based vocabulary*, and *features of face-to-face conversation*. Although we have improved recall by making modifications to the message (i.e., the content of the caution), a comprehensive theory that explains the low levels of comprehension is still required. Such a theory should be able to account for all of the factors that have been shown to pertain to this problem. Ultimately, this theory will aid in the development of practices that maximize the literacy around this aspect of legal knowledge.

There are at least four aspects of this study that require some consideration. First, the fact that participants did not report certain aspects of each caution does not mean that they did not understand them. Likewise, just because participants were able to repeat back components of the cautions does not mean that they completely understood them. Free recall is, however, the most widely accepted way of measuring comprehension (Gudjonsson & Clare, 1994). A second potential limitation was the exclusive use of university students who are likely to differ from the typical offender in terms of cognitive functioning, thus representing an upper-bound study (Bergeron & Valliant, 2001; Rogers *et al.*, 2011). We encourage others to replicate these experiments using community and offender samples. The third issue is that some level of scepticism may be required about the factor that is contributing to the power of the Explanations modification. Since the Explanations modification involved adding text, there is a small possibility that the increased message length is the factor leading to the increased comprehension. Although future research is required to disentangle message length from the Explanations modification, the practical significance associated with the Explanations modification should not go unnoticed. The fourth issue pertains to the lack of power in Experiment 2. Although there were no significant interactions, it may be the case that this finding would be reversed if a larger sample was employed.

In general, advancing legal literacy is paramount in pursuits to improve the administration of justice. Top among this pursuit is ensuring that individuals facing an interrogation are able to make the correct decision about whether or not they should invoke their legal rights. The ability to make an informed decision about their interrogation rights rests heavily on whether they understand those rights fully. Although a consideration of many other factors will be necessary to account for the legal literacy problem, our results suggest that it may be possible to advance knowledge of interrogation rights by making a police caution more listenable. The next step is to test the bounds of the effects of listenability on the comprehension of interrogation rights.

References

- Armbruster, B. (1984). The problem of 'inconsiderate text'. In G. G. Duffy, L. R. Roehler, & J. Mason (Eds.), *Comprehension instructions* (pp. 202–217). New York, NY: Longman.
- Baddeley, A. D. (2001). Is working memory still working? *American Psychologist*, *56*, 849–864. doi:10.1037/0003-066X.56.11.851
- Bergeron, T. K., & Valliant, P. M. (2001). Executive function and personality in adolescent and adult offenders vs. non-offenders. *Journal of Offender Rehabilitation*, *33*, 27–45. doi:10.1300/J076v33n03_02
- Bower, G. H., Clark, M. C., Lesgold, A. M., & Winzenz, D. (1969). Hierarchical retrieval schemes in recall of categorized world lists. *Journal of Verbal Learning and Verbal Behavior*, *8*, 232–343. doi:10.1016/S0022-5371(69)80124-6

- Clare, I. C. H., Gudjonsson, G. H., & Harari, P. M. (1998). Understanding of the current police caution (England and Wales). *Journal of Community and Applied Social Psychology*, *8*, 323–329. doi:10.1002/casp.658
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Experiment*, *20*, 37–46. doi:10.1177/001316446002000104
- Cooke, D. J., & Philip, L. (1998). Comprehending the Scottish caution: Do offenders understand their right to remain silent? *Legal and Criminological Psychology*, *3*, 13–27. doi:10.1111/j.2044-8333.1998.tb00349.x
- Cowan, N. (1995). *Attention and memory: An integrated framework*. New York, NY: Oxford University Press.
- Cumming, G. (2008). Replication and p intervals: P values predict the future only vaguely, but confidence intervals do much better. *Perspectives on Psychological Science*, *3*, 286–300. doi:10.1111/j.1745-6924.2008.00079.x
- Eastwood, J. (2011). *Improving the comprehension of Canadian police cautions*. Unpublished doctoral dissertation. Memorial University, St. John's, NL, Canada.
- Eastwood, J., & Snook, B. (2012). The effect of listenability factors on the comprehension of police cautions. *Law and Human Behavior*, *36*, 177–183. doi:10.1037/h0093955
- Eastwood, J., Snook, B., & Chaulk, S. (2010). Measuring reading complexity and listening comprehension of Canadian police cautions. *Criminal Justice and Behavior*, *37*, 453–471. doi:10.1177/0093854810362053
- Fenner, S., Gudjonsson, G. H., & Clare, I. C. H. (2002). Understanding of the current police caution (England and Wales) among suspects in police detention. *Journal of Community & Applied Social Psychology*, *12*, 83–93. doi:10.1002/casp.658
- Glenn, E. C., Emmert, P., & Emmert, V. (1995). A scale for measuring listenability: The factors that determine listening ease and difficulty. *International Journal of Listening*, *9*, 44–61. doi:10.1080/10904018.1995.10499141
- Greenfield, D. P., Dougherty, E. J., Jackson, R. M., Podboy, J. W., & Zimmerman, M. L. (2001). Retrospective evaluation of *Miranda* reading levels and waiver competency. *American Journal of Forensic Psychology*, *19*, 75–86.
- Grisso, T. (1981). *Juveniles' waiver of rights: Legal and psychological competence*. New York, NY: Plenum Press.
- Gudjonsson, G. H., & Clare, I. C. H. (1994). The proposed new police caution (England & Wales): How easy is it to understand? *Expert Evidence*, *3*, 109–112.
- Gudjonsson, G. H., Clare, I. C. H., & Cross, P. (1992). The revised PACE 'Notice to Detained Persons': How easy is it to understand? *Journal of the Forensic Science Society*, *32*, 289–299. doi:10.1016/S0015-7368(92)73086-2
- Haigler, K. O., Harlow, C., O' Connor, P., & Campbell, A. (1992). *Executive summary of literacy behind prison walls: Profiles of the prison population from the National Adult Literacy Survey*. Washington, DC: U.S. Department of Education.
- Helms, J. L. (2003). Analysis of *Miranda* reading levels across jurisdictions: Implications for evaluating waiver competency. *Journal of Forensic Psychology Practice*, *3*, 25–37. doi:10.1300/J158v03n01_03
- Helms, J. L. (2007). Analysis of the components of the *Miranda* warnings. *Journal of Forensic Psychology Practice*, *7*, 59–76. doi:10.1300/J158v07n03_03
- Lehrer, J. (2010). The truth wears off: is there something wrong with the scientific method? Retrieved from: http://www.newyorker.com/reporting/2010/12/13/101213fa_fact_lehrer
- Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, *63*, 81–97. doi:10.1037/h0043158
- National Center for Education Statistics. (1993). *Adult literacy in America*. Washington, DC: U.S. Department of Education. <http://www.nald.ca/fulltext/Report2/rep15-01.htm>
- NSLEC (2004). *Practical guide to investigative interviewing*. Wyboston, UK: National Centre for Policing Excellence.
- R v. Hebert. (1990). 2 S.C.R. 151.

- R v. Papadopoulos. (2006). O. J. No. 5407 (QL).
- R v. Smith. (1996). 151 N.S.R. (2d) 76.
- Rock, D. F. (2007). *Communicating rights: The language of arrest and detention*. New York, NY: Palgrave Macmillan.
- Rogers, R. (2008). A little knowledge is a dangerous thing: Emerging *Miranda* research and professional roles for psychologists. *American Psychologist*, *63*, 776–787. doi:10.1037/0003-066X.63.8.776
- Rogers, R., Gillard, N. D., Wooley, C. N., & Fiduccia, C. E. (2011). Decrements in *Miranda* abilities: An investigation of situational effects via a mock-crime paradigm. *Law and Human Behavior*, *35*, 392–401. doi:10.1007/s10979-010-9248-y
- Rogers, R., Harrison, K. S., Shuman, D. W., Sewell, K. W., & Hazelwood, L. L. (2007). An analysis of *Miranda* warnings and waivers: Comprehension and coverage. *Law and Human Behavior*, *31*, 177–192. doi:10.1007/s10979-006-9054-8
- Rogers, R., Hazelwood, L. L., Sewell, K. W., Harrison, K. S., & Shuman, D. W. (2008). The language of *Miranda* warnings in American jurisdictions: A replication and vocabulary analysis. *Law and Human Behavior*, *32*, 124–136. doi:10.1007/s10979-007-9091-y
- Rubin, D. L. (1987). Divergence and convergence between oral and written communication. *Topics in Language Disorders*, *7*, 1–18. doi:10.1097/00011363-198709000-00003
- Rubin, D. L. (1993). Listenability = oral-based disclosure + considerate-ness. In A. D. Wolvin, & C. G. Coakley (Eds.), *Perspectives on listening* (pp. 261–281). Norwood, NJ: Ablex Publishing.
- Rubin, D. L. (2012). Listenability as a tool for advancing health literacy. *Journal of Health Communication: International Perspectives*, *17*, 176–190. doi:10.1080/10810730.2012.712622
- Rubin, D. L., Hafer, T., & Arata, K. (2000). Reading and listening to oral-based versus literate-based discourse. *Communication Education*, *49*, 121–133. doi:10.1080/03634520009379200
- Rubin, D. L., & Rafoth, B. A. (1986). Oral language criteria for selecting listenable materials: An update for reading teachers and specialists. *Reading Psychology: An International Quarterly*, *7*, 137–151. doi:10.1080/0270271860070302
- Scherr, K. C., & Madon, S. (2012). You have the right to understand: The deleterious effect of stress on suspects' ability to comprehend *Miranda*. *Law and Human Behavior*, *36*, 275–282. doi:10.1037/h0093972
- Shepherd, E. (2008). *Investigative interviewing: A conversation management approach*. Oxford, UK: Oxford University Press.
- Shohamy, E., & Inbar, O. (1991). Validation of listening comprehension tests: The effect of text and question type. *Language Testing*, *8*, 23–40. doi:10.1177/026553229100800103
- Snook, B., Eastwood, J., & MacDonald, S. (2010). A descriptive analysis of how Canadian police officers administer the right-to-silence and right-to-legal counsel cautions. *Canadian Journal of Criminology and Criminal Justice*, *52*, 545–560.
- Stuart, D., Quigley, T., & Delisle, R. J. (2013). *Learning Canadian criminal procedure*. Toronto, ON: Carswell.

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