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A cautionary tale: A systematic review of understanding the police caution for adults in the criminal justice system, and an examination of increasing listenability of the caution.

Michael John Rendall

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1. Thesis Abstract

Rationale: Research has repeatedly demonstrated that people have difficulty understanding their interrogation rights, as presented in an orally presented police caution. There has been a limited amount of research into possible means of improving understanding, with the application of linguistic, listenability, techniques to caution wording proving most effective amongst students.

Methods: This thesis systematically reviewed research exploring verbal caution comprehension amongst adults involved in the criminal justice system, to isolate possible predictors of performance. It then assessed understanding of the Scottish police caution amongst people with an intellectual disability and if this can be improved using a modified (listenability) version.

Results: IQ and verbal comprehension appear to have a positive association with understanding. However, the reviewed literature tends to use broad inclusion criteria that may increase confounding variables and reduce opportunity to isolate further possible predictors. People with intellectual disabilities performed poorly in assessment of their understanding of the Scottish police caution, even when the modified version was used. This was despite every participant claiming they had understood.

Conclusions: The thesis questions whether the use of a verbal police caution fulfils the intention of communicating interrogation rights as required by law. It suggests more research into caution comprehension is required, with more specific inclusion criteria, to help better understand variables that predict understanding. The relationship between verbal ability and IQ suggest efforts to improve comprehension should be directed to people who have challenges in these abilities, such as people with intellectual disabilities. This should ensure any improvements can benefit a greater number of people. The thesis' empirical study suggests the method found effective amongst students does not extend to people with intellectual disabilities.

2. Thesis Lay Summary

Background: Police in many countries must let people know their rights when being interviewed. These rights can include the right that a person does not have to say anything to the police, that interviews will be recorded and that these recordings may be used as evidence. Telling people these rights is known as a police caution.

Problem: Research has shown that most people who are involved in the criminal justice system find a spoken caution difficult to fully understand. Some research used techniques to make the wording of a spoken police caution more straightforward and found this helped understanding amongst university students.

Method: This thesis first looks at past research that has studied understanding of the spoken caution in adults who are involved in the criminal justice system, particularly what things might influence how much people understand the caution. The thesis then looks at understanding of a spoken police caution in Scotland amongst people with intellectual disabilities. A person is considered to have an intellectual disability if they find it difficult to understand information or learn new things and cope without extra support. It assesses this group, as they may be vulnerable within the criminal justice system. The study compares a typical version of the caution with one that uses the techniques that had been shown, in the past, to help improve understanding. Any positive findings should benefit everyone, not just people who have an intellectual disability.

Results: People in the criminal justice system find it difficult to understand the police caution. People understand better if they have higher intelligence and good language skills. Experience in the criminal justice system, the number of years of education and age do not seem to affect how well adults understand the caution. In the thesis' study, almost everyone with intellectual disabilities said they understood both versions of the caution, but their assessed understanding was considered poor, even in the modified version.

Conclusion: The thesis suggests people have difficulty understanding the police caution. Techniques that help students understand do not seem to have the same effect for people with intellectual disabilities. More guidance and research is needed to help find ways to resolve this.

3. Systematic Review

Influences on the understanding of a verbally presented police caution amongst individuals involved in the criminal justice system: A systematic review.

This paper is written in accordance with the author guidelines for the Psychiatry, Psychology and Law journal (Appendix 1).

Abstract

This review systematically examines the literature exploring comprehension of a verbally presented police caution and the suggested factors influencing this, amongst adults within the criminal justice system. An electronic literature search returned 438 titles, with screening leaving 13 articles considered appropriate for the review question. The majority of these were USA studies, with two UK and two Canadian studies. Findings indicate a considerable proportion of this population have difficulty fully understanding the caution. Higher IQs and verbal comprehension are positively associated with performance. The studies also indicate that some factors that may appear intuitively related to comprehension, such as prior caution exposure, education, age and mental health, may not be linked to performance. The literature generally used broad inclusion criteria, which increased potential for confounders and reduced opportunity to draw out probable predictors.

Key Words: Police Caution; Miranda Rights; Miranda Warnings; Offenders; Suspects; Interrogation Rights; Comprehension.

Introduction

Many countries require police to provide a caution to suspects regarding their legal rights upon interrogation (The Law Library Congress, 2016). Although specifics can vary, certain rights remain generally consistent across jurisdictions and typically include a right to remain silent and access to legal counsel (The Law Library Congress, 2016). The consequence of choosing to waive these rights can differ, for example inferences cannot be drawn from an individual electing to remain silent in Scotland, but can in England and Wales (Carloway, 2012). Prompt delivery of the caution is usually required, typically at the time of arrest, although it is likely repeated at the police station and any subsequent interviews (The Law Library of Congress, 2016). The delivery is typically oral and/or written, more often orally if an arrest is being made within the community for example (Rogers, Harrison, Shuman, Sewell, & Hazelwood, 2007; Rogers et al., 2009).

There have been several high-profile cases where later discovery of a misunderstanding of rights, even if that person claimed understanding at the time of cautioning, has led to obtained information being dismissed in court (Kaempf & Pinals, 2008). One particularly renowned case is Miranda v. Arizona (1966), where the accused's signed confession was dismissed after it was decided his rights were not adequately explained. In that case, the US Supreme Court maintained that a suspect's waiver of rights can only be made if they are considered to have done so "voluntarily, knowingly and intelligently (p. 444)."

Ryba, Brodsky and Sholsberg (2007) suggested that individual characteristics and situational variables should be considered when determining if it would be appropriate to assess an individual's comprehension of their interrogation rights. They referenced a list of individual characteristics as described in Coyote v. United States (1967) that include "age, intelligence, education [and] experience with the criminal justice system" (p.301). It is believed these factors continue to be considered in related decision making (Rogers, Harrison, Hazelwood et al., 2007; Rogers, Rogstad et al., 2010), even though the cited characteristics were not based on empirical evidence (Ryba et al., 2007).

Assessment Methods in Assessment of Caution Comprehension

Methods have been developed to assess understanding of cautions, such as Grisso's Instruments for Assessing Understanding and Appreciation of Miranda Rights (Grisso, 1981, 1986) and the Comprehension of Caution Test (Cooke & Philip, 1998). These tools are generally consistent in applying a scoring rubric to assess reported understanding of a caution read in full and then each of its individual elements. Definitions of common legal words that may feature in a caution are then assessed. Finally, participants are asked whether a sentence means the same or something different to each element, as a means of assessment that does not require independent generation of a verbal response (Grisso, 1981, 1986; Cooke & Philip, 1998). This method is often used by forensic practitioners, for example, to aid legal competency assessments (Ryba et al., 2007) and studies have used these tools to consider understanding within various populations.

Empirical Studies looking at Caution Comprehension

The degree to which cautions are understood amongst members of public has received empirical attention within recent decades, predominately within the UK, Canada and the USA. A Scottish study by Hughes, Brain, Gilchrist and Boyle (2013), for example, considered understanding amongst a sample of the general population. Only 5% of their sample was considered to understand a verbally presented caution in full, despite 95% of participants claiming such comprehension. Similar findings have been found within other general population samples (e.g. Clare, Gudjonsson, & Harari, 1998; Fenner, Gudjonsson, & Clare, 2002; Patry, Connors, Adams-Quackenbush, & Smith, 2017), as well as amongst higher academic achievers (e.g. Eastwood & Snook, 2010; Davis, Fitzsimmons, & Moore, 2011; Snook, Luther, Eastwood, Collins, & Evans, 2016). Some specific groups have been found to struggle notably in assessment of caution comprehension, such as juveniles (e.g. Colwell et al., 2005; Frumkin, Lally, & Sexton, 2012; Zelle, Romaine, & Goldstein, 2015) and adults with an intellectual disability (e.g. Fulero & Everington, 1995; Everington & Fulero, 1999; O'Connell, Garmoe, & Goldstein, 2005).

It may be assumed that a person who has either been convicted or questioned in relation to a potential crime, and hence been cautioned, would be likely to have a

sound understanding of its meaning. However, several studies have demonstrated that, even amongst this group, there is only a limited understanding of the underlying meaning of the caution (e.g. Viljoen, Roesch, & Zapf, 2002; Rogers, Harrison, Hazelwood & Sewell, 2007; Chaulk, Eastwood, & Snook, 2014).

Language Comprehension

To understand information presented verbally, the listener must hold the information being communicated in mind, something that may be achieved via rehearsal within the phonological loop of verbal working memory (Baddeley & Hitch, 1974). The central executive is then theorised to direct attention to the salient information and access verbal knowledge, as stored in long term memory, to make sense as relevant (Baddeley, 2012). However, the amount and pace of information being communicated may vary and the listener may not have control or be able to predict this. Therefore, to determine the meaning of the caution, a complex, bi-directional and active process is required to modify the essence of the communication as information increases (Ferreira & Patson, 2007; Baddeley, 2012). It is suggested that if the information being communicated contains complex language or is large in quantity, this can lead to cognitive overload and therefore misinterpretation or misunderstanding (Baddeley, 1994; Marton, Schwartz, Farkas, & Katsnelson, 2006).

Comprehension of a Verbal Caution

Several factors may increase the complexity of cautions and therefore the cognitive skill required to achieve adequate understanding. This includes the complexity of vocabulary, which can include words that usually require a higher level of education to understand (Rogers, Harrison, Shuman et al., 2007; Rogers et al., 2008) and are not often heard outside legal contexts (Cooke & Philip, 1998; Rogers, Harrison, Shuman et al., 2007; Rogers, Hazelwood, Sewell, & Blackwood, 2008; Hughes et al., 2013). The length of cautions can vary significantly and often exceed suggested listening capacity limits (Rogers, Harrison, Shuman et al., 2007; Rogers et al., 2008). The element of being able to choose whether to waive interrogation right(s) is often stated at the beginning of a caution and therefore requires one to retain that option whilst making sense of the subsequent complex information being communicated (Hughes et al., 2013).

These factors may explain why the findings of studies that consider cognitive ability in caution comprehension have repeatedly pointed to a relationship in caution comprehension with intelligence and verbal abilities (e.g. Cooke & Philip, 1998; Rogers et al., 2008; Hughes et al., 2013), with recent evidence of an association with working memory (Chaulk et al., 2014). There has also been some mixed evidence that mental illness can impair performance in assessment of caution comprehension (e.g. Viljoen et al., 2002; Rogers, Harrison, Hazelwood & Sewell, 2007; Cooper & Zapf, 2008).

Relevant Offender Characteristics

It is arguable that certain characteristics commonly found amongst offenders indicate impairment in the suggested capacities required to understand a verbal caution. A UK review suggested around 50-70% of offenders had no qualifications and literacy skills within the lowest range of a national standardised framework (Clark & Dugdale, 2008). It is also estimated that the prevalence of people with intellectual disabilities may be disproportionately higher than in the general population, up to 9.6% (Murphy, Gardner, & Freeman, 2015). Mental illness is a significant problem amongst prisoners, with psychosis and major depression being particularly prevalent when compared to the general population figures (Fazel & Danesh, 2002).

Rationale

It is well-established that adults with intellectual disabilities are significantly impaired when it comes to understanding the caution. However, it is helpful to empirically consider other variables that may influence comprehension and are important to be aware of. Therefore, the review excludes people with intellectual disabilities to ensure significant impairment of IQ does not overwhelm other characteristics that might be of relevance. The review considers the literature assessing this within a single population, adults within the criminal justice system (i.e. suspects and offenders). This population was selected given the practical relevance of examining the group for whom the caution is intended. It is also a group within which various characteristics exist that are possibly contributing to performance in assessment of caution comprehension.

Aims

The aim of this systematic review is to assess the evidence base on factors that impact comprehension of a police caution amongst adults within the criminal justice system, such as demographic characteristics and cognitive and/or psychiatric variables.

Method

Eligibility Criteria

Studies that assessed caution understanding amongst suspects and offenders were considered for inclusion. The following eligibility criteria were applied to article selection:

Inclusion Criteria

- Participants within the Criminal Justice System at the time of assessment
- English language publication
- Peer reviewed published articles
- Participants with minimum age of 16 years
- Study includes assessment of verbal presentation of caution.

Exclusion Criteria

- Participants with a formally diagnosed intellectual disability, where results from this group cannot be differentiated from other groups in the study.

Search Strategy

Relevant articles were found using the following search terms: (police caution* OR Miranda warning* OR Miranda right*) AND (comprehen* OR understand*). A MeSH term search (US National Library of Medicine, 2017) did not return other suitable synonyms.

Psychological and legal databases were selected as they were considered reflective of the systematic review focus. The databases included in the search were EMBASE, Medline, Medline daily, Medline ePub ahead of print, in-process & other non-indexed citations, PsychInfo, Criminal Justice Database, Applied Social Sciences Index and Abstracts, Sociological Abstracts, Social Science Database and Westlaw. All searches were carried out on 1st November 2017.

Data Extraction

Demographic data, including age, gender, recruitment population, number of prior arrests and years of education were extracted if provided within the article. Any measures of cognitive ability, such as IQ and its indices, were extracted as well as any further psychological measures assessing cognitive functioning or mood/mental illness.

Quality Assessment of Studies

The lead investigator developed an assessment to critically appraise study quality (Appendix 2). This was informed by previously published quality checklists, the Critical Appraisal Skills Programme (CASP; Critical Appraisal Skills Programme, 2018) and Scottish Intercollegiate Guidelines Network (SIGN) methodology checklists (SIGN, 2012), with questions tailored or added to best consider the review question.

The criteria focussed on rationale, sample characteristics, assessment measures, analysis of results, and acceptability of conclusions drawn. These were assessed over 14 quality criteria, which could be scored as 2 (well covered), 1 (adequately addressed) or 0 (poorly addressed).

As a check of reliability, an independent reviewer, third-year Trainee Clinical Psychologist, applied the quality assessment to six randomly selected papers to reduce risk of bias (Haahr, 1998). Cohen's κ suggested moderate agreement in ratings, $\kappa=.78$, $p<.001$ (McHugh, 2012). All initial disagreements were discussed and resolved collaboratively. There were no noticeable areas of disagreement across criteria that were considered more prevalent.

Results

The electronic literature search retrieved 438 papers, with 285 remaining after the removal of duplicates. A screening of article titles left 76 papers as potentially relevant to the review question. A review of these abstracts left 46 papers. For those abstracts considered unclear, the full-text was reviewed against the inclusion/exclusion criteria. This left the remaining 12 for inclusion (see Appendix 3 for exclusion reasons). A review of the reference lists of included papers returned one more paper (Rogers, Robinson, & Henry 2017). A flow chart of this process is provided in Figure 1. Generally, the papers included did not solely assess caution comprehension amongst adults within the criminal justice system or solely verbal caution presentation. Therefore, only the relevant data and related analyses were considered. Table 1 contains a brief overview of the tools used to assess caution comprehension. The conclusions within Table 2 are only those relevant to the current review question.

Table 1. Tests of Caution Comprehension

Test Name	Brief Detail of Assessment	Author(s) & Country of Origin
Comprehension of Miranda Rights (CMR)	- Define each element of the Miranda statement in own words. - Decide if a statement means the same or something different to each element. - Define six words that may be challenging (e.g. consult, attorney).	Grisso (1981, 1986) USA
Test of Caution Comprehension (ToCC)	- Define each element of the caution in own words. - Decide if a statement means the same or something different to each element. - Define six words that may be challenging.	Olley, Ogloff, & Jager (1993) Canada
Comprehension of Caution Test (CoCT)	- Define whole caution. - Decide if a statement means the same or something different to each element. - Define 20 ‘legal’ words. - Decide if a statement means the same or something different to each element.	Cooke & Philip (1998) Scotland

Miranda Statements Scale (MSS)	- Uses Miranda warnings at various (reading) levels of difficulty. - Define each element of the caution in own words.	Rogers (2005) USA
Miranda Vocabulary Scale (MVS)	- Define 36 'Miranda-relevant' words.	Rogers et al. (2009) USA
Below are assessments that do not assess understanding of the wording of a caution.		
Miranda Rights Scale (MRS)	- Provide reasons for waiving rights in own case. - Questions about advantages and disadvantages of Miranda-related decisions.	Rogers (2006) USA
Miranda Quiz (MQ)	- 15 true-false questions regarding Miranda-decisions and consequences.	Rogers et al. (2010) USA
Function of Rights in Interrogation (FRI)	- Vignettes with an accompanying 15 questions related to appreciation of Miranda rights.	Grisso (1998) USA

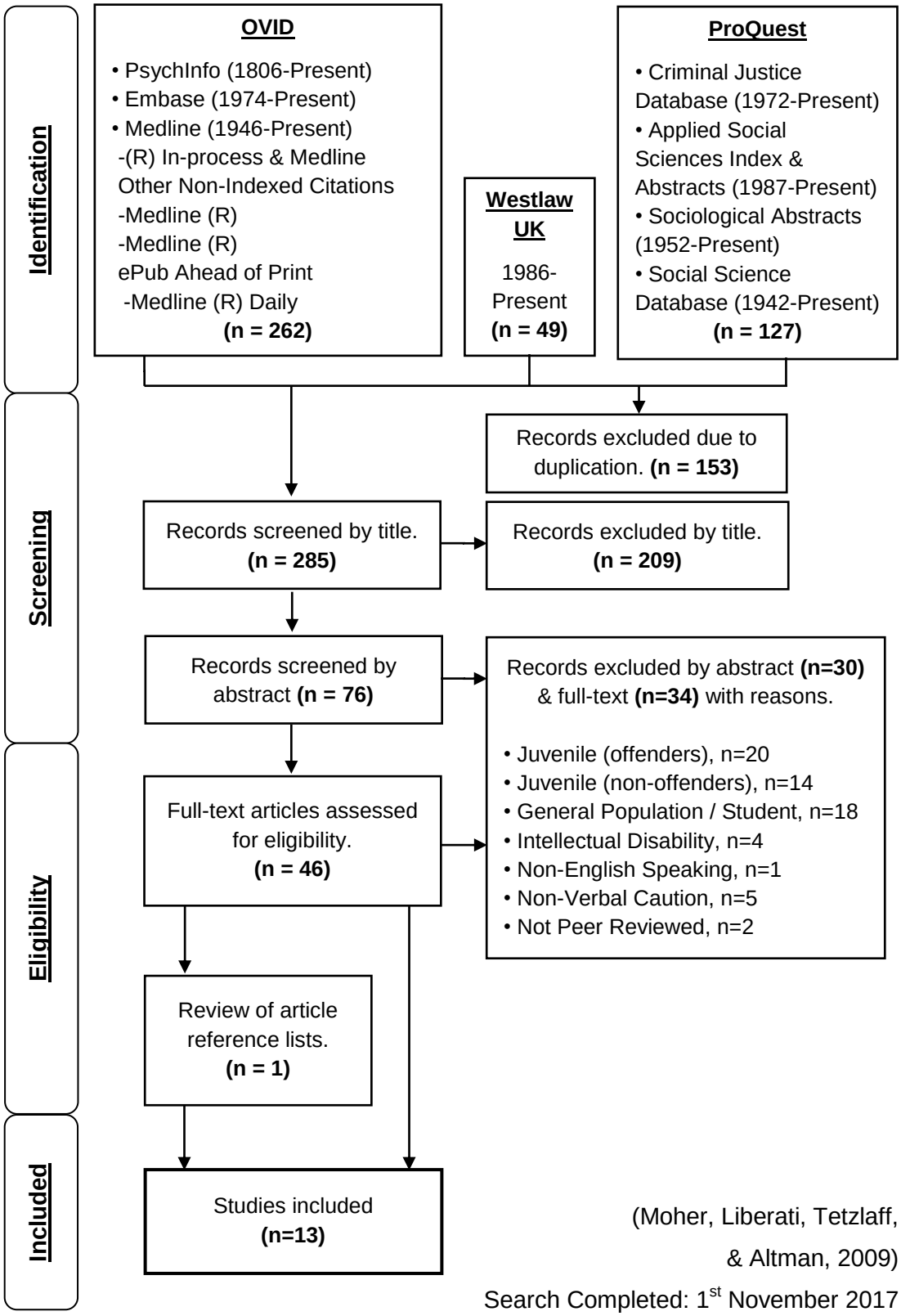

Figure 1. PRISMA Flowchart: Study identification and inclusion

Table 2. Overview of Included Studies

Authors (Year of Publication) Country	**Sample Relevant to Research Question**	**Cognitive Measure(s)**	**Other Psychological / Psychiatric Measure(s)**	**Assessment(s) of Caution Knowledge**	**Key Relevant Conclusions**
1. Cooke & Philip (1998). Scotland.	Young Offenders. • N: 100 (All male). • Age: M = 18 (4.8; 16-21*). • No. Offences: M=20.8 (52.7; 1-450). • Education: 47% had no educational qualifications.	Silverstein 4 subtest of WAIS – Revised (Silverstein, 1982). FSIQ: M = 87.46 (11.76; 64-123).	Not Assessed.	CoCT	• Comprehension of the full caution was low amongst participants. • Discrepancy between reported understanding and comprehension scores. • Comprehension was associated with IQ, particularly Verbal IQ. • No suggested relationship between experience with the criminal justice system and comprehension. • No analysis considering educational levels of participants.

Authors (Year of Publication) Country	**Sample Relevant to Research Question**	**Cognitive Measure(s)**	**Other Psychological / Psychiatric Measure(s)**	**Assessment(s) of Caution Knowledge**	**Key Relevant Conclusions**
2. Everington & Fulero (1999). USA.	Defendants. • N: 30 (25m, 5f). • Age: M = 33.5 (—, 19-67). • Prior Convictions: M= 3.33 (—, 1-9).	No IQ Assessment "Assumed average intelligence."	Modified GSS	CMR	• 17% did not meet 'minimum' criteria for competence. • Suggest relationship between increasing suggestibility with reducing caution comprehension scores. • No cognitive measures used. • No assessment with prior convictions.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
3. Fenner, Gudjonsson & Clare (2002). England & Wales.	Suspects in Police Detention. • N: 30 (28m, 2f). • Age: M = 27.5 (—, 17-64). • Prior Arrests: M = 15.7 (17.4; 0-70). • Prior Cautions: M = 17.6 (22.4; 0-100).	3 Subtest WAIS-R FSIQ: M = 78.6 (9.1; 66-98). Verbal IQ: M = 79.0 (9.6; 65-105). Performance IQ: M = 81.7 (13.7; 57-114).	None.	Method based on Grisso (1981) & Brown (1997).	• No participants demonstrated complete understanding of the caution when presented in its entirety. • No significant correlation between caution understanding and number of previous caution exposures. • Only 1 participant indicated a lack of understanding. • No assessment of cognitive measures against caution understanding.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
4. Viljoen, Roesch & Zapf (2002). Canada.	Defendants (Inpatients, Pre-Trial). • N: 212 (gender not provided) • M Age: 31.95 (no overall SD; —). • 89% report previous arrests.	WAIS-R (Block Design & Vocabulary) -M FSIQ: 93.85 (no overall SD; —).	SCID-P Information held on prior mental health experiences e.g. psychiatric hospitalisations, previous contact with mental health services.	ToCC	• IQ had a significant positive relationship with caution comprehension. • Defendants with "broad types of psychotic disorders" had impaired performance on the ToCC recognition task, but not on other caution comprehension tasks, compared to other mental health diagnoses. • Age unrelated to performance. • Right to silence better understood than right to counsel. • No analysis considering prior arrests.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
5. Rogers, Harrison, Hazelwood & Sewell * (2007). USA.	Mentally Disordered Defendants. • N: 107 (84m, 23f). • M Age: 38.95 (11.45; —). • Prior Arrests: M=11.69 (11.45; —). • Years of Education: M=11.42 (2.17; —)	<u>WASI</u> FSIQ: M = 81.08 (14.45; —). Verbal IQ: M = 78.61 (14.52; —). Performance IQ: M = 86.55 (15.14; —). <u>WIAT – 2nd Edition</u> M Listening: 75.28 (18.65; —). M Reading: 67.51 (16.62; —).	<u>SADS</u> Global Assessment of Functioning: M = 43.70 (12.20; —). <u>GSS</u>	<u>MSS</u> <u>MRS</u>	• Difficulties in caution comprehension across all participants. • Lower IQ and achievement related to poorer performance in caution understanding. Verbal IQ and listening comprehension strongest predictors. • Some evidence of negative impact of impaired global psychological function and mania on performance. • Prior experience in the criminal justice system did not impact comprehension. • Reported years of education did not impact comprehension.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
6. Rogers, Hazelwood, Sewell, Blackwood, Rogstad & Harrison * (2009). USA.	Defendants (Recently Arrested, Mentally Disordered, Detainees) • N=488 (370m, 118f) • M Age: 33.31 (no overall SD; —). • Prior Arrests: M=10.66 (no overall SD; —). • Years Education: M=11.71 (no overall SD; —).	<u>WASI</u> FSIQ: M=89.46 (no overall SD; —). Verbal IQ: M=87.05 (no overall SD; —). Performance IQ: M=93.57 (no overall SD; —). <u>WIAT-II</u> M Listening: 85.51 (no overall SD; —). M Reading: 80.22 (no overall SD; —).	<u>SADS-C</u> Global Assessment Scale: M=57.30 (no overall SD; —).	<u>MSS</u> <u>MVS</u> (Paper is describing development of this scale)	• Verbal IQ is strongly related to understanding of Miranda vocabulary. Performance IQ significant relationship, but less so. • Reading and listening comprehension are strongly related to understanding of caution vocabulary. • Reduced psychological impairments associated with understanding caution vocabulary, but much less than cognitive abilities. • Years of education had a small correlation with understanding caution vocabulary. • No analysis considering prior arrests.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
7. Rogers, Harrison, Rogstad, LaFortune & Hazelwood * (2010). USA.	Pre-Trial Defendants (Recently Arrested, Mentally Disordered, General). • N=488 (370m, 118f). • M Age: 32.60 (10.98; —). • M Years Education: 11.76 (21.52; —). • M Prior Arrests: 11.45 (21.52; —).	WASI -Overall scores not provided. WIAT-II -Overall scores not provided.	SADS - Change Version GSS	MSS MVS MRS	• Positive correlation between vocabulary, Verbal IQ, reading comprehension and listening comprehension with scores on caution vocabulary. • Psychological impairment not related to caution comprehension. • Reducing suggestibility only a very small correlation with cautions considered easy and moderately complex. • Defendants within 48hr of their arrest had results comparable to those detained several months.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
8. Rogers, Rogstad, Steadham & Drogin* (2011). USA.	Pre-Trial Defendants (Recently Arrested, General). • N: 416 (314m, 102f). • M Age: 30.77 (10.11; 17-61). • 46.6% achieved high school diploma or equivalent. • M Prior Arrests: 11.19 (18.58, —).	<u>WASI</u> FSIQ: M = 94.75 (11.97; —). Verbal IQ: M = 92.14 (12.37; —). Performance IQ: M = 92.28 (12.77; —). <u>WIAT-II</u> -M Reading: 9.84 (12.77; —). -M Listening: 9.68 (2.64; —).	Not Assessed.	<u>MSS</u> <u>MVS</u>	• Vocabulary considered greater predictor of caution comprehension. But matrix reasoning also significant relationship. • Minor role of listening comprehension on understanding of caution. • Minor effect of education, but only on cautions considered of minimum complexity. • No relationship found between number of prior arrests and caution understanding.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
9. Frumkin, Lally & Sexton (2012). USA.	Pre-Trial Defendants. • N=263 (Gender not specified for group). • M Age: 28.4 (11.1; 17-74). • M Education Grade Level: 9.9 (222; 1-15).	Only where available from prior testing. WAIS-R / WAIS-III FSIQ: M = 79.6 (14.1; —). Verbal Comprehension: M = 81.8 (14.3; —).	Not Assessed.	Lack of distinction between verbal and non-verbal presentation. CMR FRI	• Significant positive relationship between verbal comprehension and caution understanding. • Small negative correlation between caution understanding and scoring on suggestibility. • Age was not a predictor of caution understanding.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
10. Rogers, Fiduccia, Robinson, Steadham & Drogin* (2013). USA.	Defendants (Pre-Trial Detainees). • N: 133 (Gender not specified). • M Age (across full sample [n=260]): 33.31 (10.75; —). • 81.9% completed high school or GED equivalent (across full sample [n=260]). • M Previous Arrests (across full sample [n=260]): 13.28 (32.64; —).	Across full sample (N=260). WASI -FSIQ: M = 90.33 (11.86; —). WIAT II -M Reading: 8.38 (no overall SD; —). -M Listening: 8.92. (no overall SD; —).	SADS	MQ MSS MVS	• Poor performance on knowledge of caution, regardless of education or experience in the criminal justice system. • No assessment of WASI, WIAT-II or SADS against caution understanding.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
11. Chaulk, Eastwood & Snook (2014). Canada.	Offenders • N: 60 (57m, 3f). • M Age: 37.75 (12.33; 19-74). • M Years Education: 11.45 (2.53; 7-19). • Self-reported caution exposures: M = 16.32 (20.90; —).	<u>WAIS-IV</u> Vocabulary sub-test: M = 5.67 (2.91; 1–14) Digit Span sub-test: M = 7.13 (2.83; 1-14). <u>WJ-III</u> Listening Comprehension: M = 6.41 (3.37; 1-18)	Not Included.	Used video of caution being read out. Knowledge assessed using method developed in study.	• Participants understood around 30% of components making up caution. • Small positive association between vocabulary (verbal comprehension) and score in caution understanding. Smaller relationship between digit span (verbal working memory) and score in caution understanding. • Listening comprehension has small association with caution comprehension. • Performance significantly better in comprehension of right to silence, compared to right to legal counsel. • Suggest no association between experience in criminal justice system and knowledge, though no apparent analysis.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
12. Rogers, Henry, Sharf, Robinson & Williams* (2017). USA.	Offenders. Data across full sample • N: 129 (74m, 55f). • M Age: 34.32 (11.40; 18-67). • M Years Education: 11.75 (1.79; —). • M Prior Arrests: 10.34 (11.54; —).	WASI-II Verbal Comprehension (across full sample, n=129): M=86.22 (10.29; —).	32.6% had previously been admitted to a psychiatric hospital at least once.	MQ MVS	• Those participants considered to have impaired IQ VCI scored significantly lower in the measures of caution understanding.

Authors (Year of Publication) Country	Sample Relevant to Research Question	Cognitive Measure(s)	Other Psychological / Psychiatric Measure(s)	Assessment(s) of Caution Knowledge	Key Relevant Conclusions
13. Rogers, Robinson & Henry* (2017). USA.	Detainees. • N: 70 (35m, 35f). • M Age: 33.14 (10.87; —). • M Years Education: 11.25 (2.21; —). • M Lifetime Arrests: 10.30 (7.00; —).	WASI-II FSIQ: M = 86.66 (12.23; —).	Not Included.	MQ MVS	• Detainees had most difficulty remembering continuing legal rights. The right to silence was best remembered of the legal rights.

*Part of larger funded project, National Science Foundation Law & Social Sciences Programme.

NOTES: * (Standard Deviation; Range). —, used to indicate that details of this were not reported in article.

Cognitive Measures: WAIS-R, WAIS-III, Wechsler Adult Intelligence Scale (Wechsler, 1981, 1997); WASI, WASI-II, Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999, 2011); WIAT-II, Wechsler Individual Achievement Test (Psychological Corporation, 2002); WJ-III. The Woodcock-Johnson Tests of Achievement – Third Edition (Woodcock, McGrew & Mather, 2007).

Psychological/Psychiatric Measures: SCID-P, Structured Clinical Interview for DSM-III-R (Spitzer, Williams, Gibbon, & First, 1990); SADS, Schedule for Affective Disorders & Schizophrenia (Spitzer & Endicott, 1978); GSS, Gudjonsson Suggestibility Scale (Gudjonsson, 1984, 1997); ILK, Inventory of Legal Knowledge (Otto, Musick, & Sherrod, 2010).

Assessments of Caution Knowledge: CoCT (Cooke & Philip, 1998); CMR (Grisso, 1981, 1986); ToCC (Olley et al., 1993); MSS (Rogers, 2005); MRS (Rogers, 2006); MVS (Rogers et al., 2009); MQ (Rogers et al., 2010); FRI (Grisso, 1998).

This systematic review utilizes a narrative approach to reviewing the literature. It is recognised that this descriptive approach to data synthesis has drawbacks; for example, drawing out potential small effects and it presents a risk of researcher bias in reporting/conclusions (Rumrill & Fitzgerald, 2001; Petticrew, 2003). However, the included literature is heterogeneous and uses various measures and methodologies that preclude pooling together of data, for example by using a meta-analytical approach.

Quality Ratings

The standard of papers was generally limited (Table 3). This was most apparent in a lack of consideration and/or reporting of confounding variables, determination of sample size or adequate acknowledgement of study limitations. However, they did generally include a clear, relevant development of rationale with explicit objectives and reported conclusions. The samples were typically representative of the populations being considered. No studies were remarkably better methodologically than the others and could not be considered to have more robust findings, therefore no greater weight was placed upon the conclusions of any one study over another.

Table 3. Table of Quality Checks

Papers:	1	2	3	4	5	6	7	8	9	10	11	12	13
	Cooke & Philip (1998)	Everington & Fulero (1999)	Fenner, Gudjonsson, & Clare (2002)	Viljoen, Roesch, & Zapf (2002)	Rogers, Harrison, Hazelwood, & Sewell (2007)	Rogers, et al. (2009)	Rogers, Harrison, Rogstad, LaFortune, & Hazelwood (2010)	Rogers, Rogstad, Steadham, & Drogin (2011).	Frumkin, Lally, & Sexton (2012).	Rogers, Fiduccia, Robinson Steadham, & Drogin (2013).	Chaulk, Eastwood, & Snook (2014).	Rogers, Henry, Sharf, Robinson, & Williams (2017).	Rogers, Robinson, & Henry (2017).
Criterion 1. The study considers and discusses relevant literature.	2	2	2	2	1	2	2	2	2	1	2	2	2
Criterion 2. The study addresses appropriate and clearly focused question(s), objective(s) or hypothes(es).	1	1	1	2	1	1	1	1	2	1	2	2	2
Criterion 3. Sample recruited in an acceptable way.	1	1	1	2	1	1	1	1	1	1	1	0	1
Criterion 4. The sample was representative of the population being considered.	0	1	1	2	1	2	2	2	2	2	1	1	1

Papers:	1	2	3	4	5	6	7	8	9	10	11	12	13
Criterion 5. Appropriate methods applied to determine sample size.	0	0	0	0	0	0	0	0	0	0	0	0	0
Criterion 6. The measure of caution comprehension is valid and reliable.	1	1	1	1	1	1	1	1	1	1	0	1	1
Criterion 7. The measure of IQ is reliable and comprehensive.	1	0	1	1	1	1	1	1	1	1	1	1	1
Criterion 8. The cognitive measure(s) used (other than IQ) are reliable.	—	0	—	—	2	2	1	2	—	2	1	—	—
Criterion 9. Other Psychological / Psychiatric measure(s) used are reliable.	—	—	—	1	2	2	2	—	—	2	—	—	—
Criterion 10. The method of analysis is considered appropriate for the research question(s) and is clearly reported.	0	1	1	1	1	1	1	1	2	1	1	2	2
Criterion 11. The main potential confounders identified and considered in the design and analysis to minimise bias.	0	0	0	0	0	0	0	0	0	0	0	0	0

Papers:	1	2	3	4	5	6	7	8	9	10	11	12	13
Criterion 12. Effect sizes & confidence intervals reported as appropriate.	0	0	0	1	1	1	2	1	1	1	1	2	2
Criterion 13. Conclusions drawn appropriate to study results.	1	1	1	2	2	2	1	2	1	2	2	2	2
Criterion 14. The study recognizes and reports its limitations.	0	1	0	2	1	0	1	1	1	1	1	1	1

NOTE: —, used to indicate criterion is not applicable to article.

Sampling

Studies tended to apply minimal inclusion criteria, which increased the potential for confounding variables that may influence scoring across participants. The Rogers et al. papers did not provide ranges for assessed IQ for example (Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009, 2013; Rogers, Harrison et al., 2010; Rogers, Rogstad et al., 2011; Rogers, Henry et al., 2017; Rogers, Robinson, & Henry, 2017), two papers included participants with IQs below 70 (Cooke & Philip, 1998; Fenner et al., 2002) and the Everington and Fulero (1999) paper "assumed average intelligence" of their relevant sample, without formal evaluation.

Although classification of an intellectual disability requires more than an assessment of IQ (World Health Organisation, 1992), it is possible these samples include individuals who could be classified as such, for example Cooke and Philip (1998) included people in their sample who they described as finding it difficult to cope in prison, which, Cooke and Philip (1998) suggested was likely due to poor intellectual functioning. People with intellectual disabilities are a population for which evidence has suggested impaired performance on caution comprehension (e.g. Fulero & Everington, 1995; Everington & Fulero, 1999; O'Connell et al., 2005). As studies did not include stringent exclusion criteria, it is possible some participants would have other cognitive or neurodegenerative conditions, such as dementia, that may reasonably be assumed to influence performance. The review suggests potential confounders were not adequately controlled for within the analyses of any included articles. Therefore, without explicit consideration of these and related features, impact of potential confounders on comprehension cannot be explored or excluded.

A broad range of ages were represented across the studies. Only two included articles considered any association with assessment of caution comprehension (Viljoen et al., 2002; Frumkin et al., 2012), with no relationship found. This contrasts with an apparent positive association suggested from performance amongst juvenile offenders (e.g. Frumkin et al., 2012; Zelle et al., 2015), indicating this effect potentially plateaus as individuals reach adulthood (Frumkin et al., 2012), albeit suggested from only a limited literature base.

Most studies did not match for gender. Over the ten studies where the gender split was provided, or possible to derive, 31.6% were female. Although a rudimentary comparison, this is considerably higher than the proportion (6.9%) in US prisons, according to the Federal Bureau of Statistics (2018). None of the included studies analysed the impact of gender on performance, however, statistically small differences between sex on verbal and working memory abilities would suggest differences may be unlikely, as these are currently considered central cognitive components to understanding (e.g. Hyde & Linn, 1988; Lynn & Irwing, 2008; Wallentin, 2009).

In considering years of education, this was shown to have little (Rogers, Rogstad et al., 2011) to no (Rogers, Harrison, Hazelwood et al., 2007) impact on comprehension, or possibly only with caution vocabulary (Rogers et al., 2009). Notably, of the included articles, this relationship was only considered in the Rogers et al. papers.

Cognitive Influences

The studies reviewed repeatedly suggested a relationship between IQ and performance on assessments of caution comprehension. The quality of IQ assessments varied across studies, with one study drawing from previously assessed IQ using a comprehensive measure (Frumkin et al., 2012), whilst others used only abbreviated or prorated versions (Cooke & Philip, 1998; Fenner et al., 2002; Viljoen et al., 2002; Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009, 2013; Rogers, Harrison et al., 2010; Rogers, Rogstad et al., 2011; Rogers, Henry et al., 2017; Rogers, Robinson, & Henry, 2017). In considering the versions used, the original WASI (Wechsler, 1999) was most common across the articles (Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009, 2013; Rogers, Harrison et al., 2010; Rogers, Rogstad et al., 2011), which has had its validity, in relation to a full assessment of intellectual functioning, questioned (Axelrod, 2002). The WASI II (Wechsler, 2011) however, as used twice (Rogers, Henry, et al., 2017; Rogers, Robinson, & Henry, 2017), has been suggested to have improved validity (Irby & Floyd, 2013).

When the domains contributing to overall IQ were considered separately, their respective assessments of verbal abilities were repeatedly identified as having the greatest relationship with comprehension (Cooke & Philip, 1998; Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009; Rogers, Harrison et al., 2010; Rogers, Rogstad et al., 2011; Rogers, Henry et al., 2017; Frumkin et al., 2012; Chaulk et al., 2014), which is logical when considering understanding of verbally presented information. This has also been found in studies assessing non-adult offender samples (e.g. Grisso, 1981; Fulero & Everington, 1995; Johnson, Citron-Lippmann, Massey, Raghavan, & Kavanagh, 2015). Of those studies included in the present review, only Chaulk et al. (2014) specifically considered performance in WAIS subtests. They found verbal working memory, as assessed by the digit span test, indicated a possible relationship with comprehension, but less so than verbal comprehension (as assessed by the vocabulary subtest).

Listening comprehension may have a predictive role in understanding an oral caution (Rogers, Harrison, Hazelwood et al., 2007; Rogers, Rogstad et al., 2011; Chaulk et al., 2014), with reading and listening comprehension related to understanding of caution vocabulary (Rogers et al., 2009; Rogers, Harrison et al., 2010). However, the range of studies considering this remains limited.

Two studies reported a small negative relationship between suggestibility and caution comprehension (Everington & Fulero, 1999; Rogers, Harrison et al., 2010). Suggestibility, in the assessed context, is the likelihood that a person's recollection of an event will be modified based on exposure to subsequent information, from leading questions for example (Clare & Gudjonsson, 1993). This association must be considered carefully, as the Gudjonsson (1984, 1997) assessment tool used in both studies requires memory of a read fictional story, possibly a proxy measure of verbal ability and memory capacity, as opposed to exclusively suggestibility (Willner, 2011). This possibility was recognised by Gudjonsson (1984), but not empirically explored, and is perhaps most pertinent to individuals with challenges in memory capacity, such as those with intellectual disabilities (Beail, 2002; Willner, 2011).

Psychiatric Influences

Consideration of the impact of psychiatric diagnoses on caution comprehension was limited to four included articles (Viljoen et al., 2002; Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009; Rogers, Harrison et al., 2010). They indicated that the influence of psychological impairment or psychiatric diagnoses on performance was limited (Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009; Viljoen et al., 2002) to none (Rogers, Harrison et al., 2010). This first appears counter to the suggestion that mental illness can impair cognitive functioning (Clements, Corney, Humin, Karmas, & Henderson, 2015). However, the ethical requirement of participant capacity to consent to taking part in the studies prevents opportunity to include participants who may be more severely cognitively impaired by their illness, such as the floridly psychotic or severely depressed (Amer, 2013; Clements et al., 2015). The lack of association between mental illness and comprehension therefore cannot reasonably be concluded because people were unlikely to be experiencing active symptoms of mental illness.

Influence of Prior Arrests

The studies repeatedly indicated the number of self-reported prior arrests, and therefore presumable prior experience of cautioning, were not related to performance in assessment of comprehension (Rogers, Harrison, Hazelwood et al., 2007; Rogers, Rogstad et al., 2011). This association was also found when Fenner et al. (2002) explicitly asked about numbers of prior caution exposures and Cooke and Philip (1998) considered the number of self-reported prior offences. The association is in keeping with Rogers et al. (2013) study, where they did not find experimentally repeated exposures improved performance in assessment of caution comprehension. However, it is possible that participant reports of prior arrests could be minimised or exaggerated and it is unlikely all participants would necessarily know, especially when reported figures can be over 100 for example. It is also possible a number of these participants had the caution explained to them in the past, which may have affected their performance at assessment. Only Fenner et al. (2002) explicitly asked this and found that explanations had occurred 0.34 (1.67; 0-9) times across participants. However, the suggestion that prior experience of cautioning was not related to current comprehension was repeatedly found,

regardless of study quality. This is converse to Grisso's (1980) original development of an assessment of caution understanding that did suggest prior arrests were related to understanding.

Experimental Method

All the studies included have arguably limited ecological validity. The assessments were completed by researchers and not the police, with absence of the stress typical of police interrogation (e.g. "unhurried" assessment sessions in a "nonadversarial setting", Rogers, Harrison, Hazelwood et al., 2007). Stress has been shown to negatively impact cognitive functioning (Eysenck, Derakshan, Santos, & Calvo, 2007; Moran, 2016) and therefore presumably affect caution comprehension (Rogers, Gillard et al., 2011; Scherr & Madon, 2012).

The measures used to assess comprehension were varied, but there was generally a lack of psychometric data to support their validity and/or reliability. The measures may not provide information regarding participant understanding of the implications of choices being made or real-life action (Grisso, 1998). Some studies have also included assessments considering this, such as the Function of Rights in Interrogation (Grisso, 1998). It is possible, where participants do not say or describe certain aspects of the caution, that responses do not always reflect misunderstanding. However, it is recognised that free recall is a commonly used indirect method of knowledge assessment and the general consistency of the findings would suggest this potential effect is limited (Chaulk et al., 2014). The specific wording and complexity of the cautions would also vary depending on the assessments used in each study, with some studies assessing more than one version in the one assessment session. The Miranda Statements Scale (Rogers, 2005), for example, assessed various versions of a caution ranging from easy to difficult in complexity. This variability in wording may be considered more reflective of the real-life situation where police can typically use non-prescribed phrasing to communicate interrogation rights, whilst the rights are often consistent across jurisdictions (The Law Library of Congress, 2016).

When comparing performance in understanding of the right to silence and access to a lawyer, the limited studies suggested the right to silence was the most commonly

reported and understood of the rights (Viljoen et al., 2002; Rogers, Robinson & Henry, 2017). This is consistent with the suggestion that phrasing of this right is typically the least complex (Rogers, Harrison, Shuman et al., 2007; Rogers et al., 2008).

Discussion

The conclusions drawn in the reviewed papers should be considered carefully. They typically used limited sampling controls and vary in the quality of cognitive and psychiatric assessment tools used. More generally, they had limited ecological validity and therefore perhaps overestimated understanding, where situational factors may play a role. However, it is suggested that individual characteristics that had historically been considered most relevant to potential challenges in caution comprehension may not always be empirically supported (Ryba et al., 2007).

Findings across the studies suggested performance on assessments of caution comprehension was limited, with an individual's IQ and verbal abilities considered most closely associated to this. Although it may be theoretically assumed adequate verbal working memory is required to help understand verbally presented information (Ferreira & Patson, 2007; Baddeley, 2012), only one study considered this and found a small association with comprehension (Chaulk et al., 2014). Years of education, age (within adults) and prior experience of cautioning all had limited to no bearing on understanding. There is also limited to no suggested impact of mental illness on performance, although the most ill are unlikely to have been considered suitable for participation due to concerns regarding capacity to consent (Amer, 2013; Clements et al., 2015).

Limitations of Systematic Review

Nine of the articles included in this review were from the USA, with two from Canada and two the UK. Seven of the USA articles were funded by the National Science Foundation Law & Social Sciences Programme. A number of those articles from the Programme explored performance in certain tests that were part of a larger assessment battery completed with each participant (e.g. Rogers, Harrison, Hazelwood et al., 2007; Rogers et al., 2009, 2013; Rogers, Harrison et al., 2010;

Rogers, Rogstad et al., 2011). Therefore, it is possible, though not always clear, that findings over these articles were pooled from the same sample, which would bias results. The poor variability of countries may limit generalisation of this review's conclusions, however, the suggestion that the rights being communicated are generally consistent across jurisdictions would indicate this may not be such a concern (The Law Library of Congress, 2016). This lack of variability may have been a product of the search strategy; however broad search terms were used to increase the volume of studies retrieved and a review of reference lists only indicated one further (USA) study. This suggests the strategy captured appropriate studies well.

The inclusion criteria permitted both convicted offenders and suspects to be included in the assessments. The themes did appear to run across the samples of people involved in the criminal justice system, however, it is still theoretically possible that participants who had not yet been tried for a suspected crime, would be more likely to feign or potentially have something to gain from not understanding (Cooke & Philip, 1998). Indeed, Rogers, Henry, et al. (2017; Rogers, Robinson & Henry, 2017) have been working on developing an instrument to help indicate those individuals who may be feigning misunderstanding.

Implications

The findings suggest a need to truly consider the rationale for providing a caution verbally, when studies repeatedly indicated insufficient understanding amongst those individuals for whom it is intended. It may reasonably be suggested that a full assessment of caution comprehension should be conducted for all defendants as a standard practice (Rogers, Rogstad et al., 2010).

This potential for misunderstanding one's interrogation rights is concerning when one considers the power a confession carries in jury decision making. Kassin et al. (2010) explored police interrogation practices and described inappropriate strategies that some officers may utilise to achieve such confessions. A concern when there have been some examples of increasing scientific advances disproving confessions obtained by individuals for crimes they did not commit (Sangero & Halpert, 2007; Kassin et al., 2010). It had also been suggested that there is a potential for this knowledge of misunderstanding caution wording to be misused, for example police

using complex language or phrasing, not further checking understanding when the accused indicates comprehension or expressing the caution in a way that gives the impression it is a procedural step that does not carry much weight (Kassin et al., 2010; Rogers, Rogstad et al., 2011).

Future Directions

It is suggested future research could focus on situational factors that may influence comprehension, for example using more naturalistic experimental methods, such as mock interrogation (e.g. Rogers, Gillard et al., 2011; Scherr & Madon, 2012; Snook et al., 2016). It is also important to consider alternative means of communicating rights, such as always including a written version (e.g. Eastwood & Snook, 2010; Rogers, Rogstad et al., 2011; Hughes et al., 2013) or applying techniques to a spoken caution that are considered to improve the understanding of verbally presented information (e.g. Eastwood & Snook, 2012; Snook, et al., 2016).

It is important to ensure caution delivery is monitored and appropriate training is provided, i.e. appropriate wording, presentation and knowledge checking that goes beyond a closed yes/no question (Cooke & Philip, 1998; Fenner et al., 1999), perhaps by asking individuals to explain their understanding. This can prevent the dismissal of important evidence, which is based on later discovery of caution misunderstanding, or even the potential of feigned miscomprehension being used to manipulate the system (Rogers, Henry, et al., 2017; Rogers, Robertson & Henry, 2017).

Conclusions

The quality of literature exploring comprehension of a verbal caution within adults in the criminal justice system was considered generally limited, with inconsistent focus on potential predictor variables. The outcomes currently suggest that IQ and verbal abilities are most closely related to understanding. However, the quality of the reviewed literature limits the extent to which this can be adequately inferred. There is not enough evidence of a relationship between understanding and education or psychiatric diagnoses, with no reported relationship between age or experience in the criminal justice system. This is important to consider when a number of these

variables seem intuitively pertinent to caution understanding. Research should continue to identify variables, individual and situational, that may impact comprehension, but also focus effort toward methods of providing a caution that can support understanding.

Declaration of Interest

The authors report no declarations of interest.

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4 Empirical Paper

Understanding the Scottish police caution: Do individuals with intellectual disabilities understand a verbally presented police caution and can comprehension be improved?

This paper is written in accordance with the author guidelines for the Psychiatry, Psychology and Law journal (Appendix 1).

Abstract

Research has indicated people with intellectual disabilities have difficulty understanding a spoken police caution, which communicates one's interrogation rights. This study considers comprehension amongst this population using a Scottish police caution. It applies techniques to the caution that are suggested to increase its 'listenability,' to examine if this could be a successful method of improving understanding. It examined comprehension amongst a sample of 30 people, with half being assessed on the original version and half on the modified version. Participants were additionally assessed using an abbreviated IQ assessment, a measure of working memory and measure of state anxiety to consider potential predictors of performance. The modified version did not improve performance, with no participants judged to have adequate understanding in either version. The results indicated a positive relationship between understanding of the caution elements and specific words with verbal comprehension, with a converse relationship between age and understanding of elements.

Key Words: Police Caution; Common Law Caution; Intellectual Disability; Learning Disability; Comprehension.

Introduction

In Scotland, under Section 3 of the Criminal Justice (Scotland) Act 2016, the police must inform an accused individual of their right to remain silent prior to questioning and throughout legal procedures, a process known as cautioning (Police Scotland, 2015). Under the Act, the accused has the option to waive his or her right to silence and is only required to provide certain demographic information, such as their name and address (Section 34). A decision to waive these rights must be made in an "informed," "voluntary" and "unequivocal" way, otherwise any provided information may not be admissible as evidence (Police Scotland, 2015). Therefore, understanding caution wording is central to achieving these requirements.

An increasing body of empirical research, predominately conducted in the USA, Canada and UK, has considered caution intelligibility and begun to question whether cautions are reliably communicating these rights as intended. Challenges in comprehension have been found amongst adults from general (e.g. Clare, Gudjonsson, & Harari, 1998; Hughes, Bain, Gilchrist, & Boyle, 2013; Patry, Connors, Adams-Quackenbush, & Smith, 2017) and higher education (e.g. Eastwood & Snook, 2010; Scherr & Madon, 2012; Luther, Snook, MacDonald, & Barron, 2015) populations. However, one group that has been repeatedly found to have the most considerable challenge are adults with an intellectual disability (ID) (e.g. Fulero & Everington, 1995; Everington & Fulero, 1999; O'Connell, Garmoe, & Goldstein, 2005).

People with Intellectual Disabilities & the Criminal Justice System

The accepted definition of ID requires an individual to have significantly impaired cognitive ability and adaptive behaviour, in comparison to the general population, with onset during the developmental period (World Health Organisation, 1992). It is suggested there is a 0.52% prevalence of ID, amongst the general adult population in Scotland, which is likely an under-representative figure based on those known to local authorities (Scottish Commission for Learning Disability, 2017). This figure is also lower than the suggested prevalence amongst prisoners, where a UK study indicated figures ranging from 5-9.6% based on a screening measure (Murphy, Gardner, & Freeman, 2015). This emphasises the need for ensuring services are

considering potential vulnerabilities or disadvantages this population may face, in line with Scotland's current strategic drive (Scottish Government, 2013).

Research has indicated people with ID are particularly vulnerable within police interviews, where the experience of stress in interrogation can negatively impact already impaired cognitive abilities (see Herrington & Roberts, 2012). People with ID, possibly because of reduced opportunities for self-direction and perceived power imbalances, are more likely to provide answers they believe are desired by an interviewer (Goldsmith & Skirton, 2015; Corby, Taggart, & Cousins, 2015), with suggested bias toward responding in the affirmative when faced with uncertainty or complex communication (Finlay & Lyons, 2002), and avoidance of admitting a lack of knowledge or understanding (Herrington & Roberts, 2012). There is also perhaps a positive response bias to questions, even when question content is considered simple (Sigelman, Winer, & Schoenrock, 1982; Clare & Gudjonsson, 1993).

Some people with ID may be reluctant to share their diagnosis with police officers, possibly due to fear of stigmatisation or victimisation (Williams, Swift & Mason, 2015). Therefore, to minimise potential vulnerabilities, it is important people with ID are identified. However, identification is a task that police reportedly find challenging and often this does not occur until the individual has reached the police station, if at all (Young, Goodwin, Sedgwick, & Gudjonsson, 2013; Parsons & Sherwood, 2016). The accused may have already been verbally cautioned by this point, the primary method of communicating their rights, particularly in the community (Rogers et al., 2009).

Comprehending Verbal Communication

Comprehension of verbal information perhaps requires greater cognitive resource than written, due to the individual having reduced opportunity to review information and control pacing (Shohamy & Inbar, 1991). It is suggested that comprehension of verbal information requires a complex interaction of processes. There have been various conceptualisations regarding working memory and its relationship with short-term memory and further cognitive functions (Cowan, 2008). This study applies the idea that, at a minimum, working memory is not a separate capacity to short-term memory and performance in related measures that require attention would be

indicatory of the functioning of an individual's memory ability, at least due to attention affecting the ability to encode (Cowan, 2008).

Within the conceptual model of working memory (Baddeley & Hitch, 1974), it is theorised that verbally presented information triggers the phonological loop, which is responsible for the temporary storage, processing and ordering of verbal information. It holds this in mind via rehearsal, either vocally or sub-vocally, but is limited in capacity (Baddeley, 2012). The central executive, which is presumed to manipulate attention, interfaces with prior developed verbal knowledge stored within longer term memory, to update and decipher meaning, as more information is communicated (Daneman & Merikle, 1996; Baddeley, 2012). The nature of verbal working memory being temporary and limited in capacity suggests overload, via longer and/or complex words and sentences for example, puts greater pressure on capacity (Baddeley, 1994; Marton, Schwartz, Farkas, & Katsnelson, 2006). In ID, impaired working memory, and more specifically challenge in this updating process, via attention control (Carretti, Belacchi & Cornoldi, 2010), will make processing verbal information more challenging. In considering verbal caution comprehension, the requirement of adequate cognitive resource appears to align with the reported findings that increasing cognitive ability, as assessed by IQ and verbal skills are associated with caution understanding (e.g. Cooke & Philip, 1998; Rogers, Gillard, Wooley, & Fiduccia, 2011; Chaulk, Eastwood, & Snook, 2014). However, the potential role of working memory appears to be less explored, with one known study finding evidence of a possible association (Chaulk et al., 2014).

Attention control is not only presumed to be affected by an overload of information, but can also be disrupted via anxiety (Eysenck, Derakshan, Santos, & Calvo, 2007; Moran, 2016). The phonological loop, for example, may be specifically interrupted via worried inner self-talk (Rapee, 1993). A perceived threat, for example in police interrogation, may also direct cognitive resources away from the task of understanding and reduce the effectiveness and efficiency of cognitive processing (Eysenck et al., 2007). It should be noted there remains a debate regarding the suggested impact of anxiety on performance in cognitive tasks, whereby it is suggested performance may conversely be enhanced if the perceived threat is stimulated directly from the verbal information required to be interpreted (Eysenck et al., 2007). In the context of the caution, it may be suggested that anxiety would

focus cognitive resources toward understanding the verbal communication as the importance of comprehension could be considered a direct means of reducing perceived threat. On the other hand, the situation-driven anxiety of the interrogation process may hinder cognitive performance if it overwhelms the listener. Research thus far has indicated that anxiety, induced in a mock interrogation, has tended to further impair performance in caution understanding (Rogers, Gillard et al., 2011; Scherr & Madon, 2012). This would tend to support the latter hypothesis regarding a negative impact of anxiety on ability to sufficiently apply cognitive resource toward understanding.

Considering Complexity of the Police Caution

There are several elements typical of cautions that may influence cognitive burden and therefore reported understanding; these include:

- The length of cautions (Rogers, Harrison, Shuman, Sewell, & Hazelwood, 2007; Rogers, Hazelwood, Sewell, Harrison, & Shuman, 2008).
- The element of choice over waiving one's rights typically occurs at the beginning of a caution. Therefore, to make an informed choice, the listener must retain this whilst processing subsequent information (Hughes et al., 2013).
- The language used in cautions is often complex, with some versions including language equivalent to that expected at a postgraduate level of education (Rogers et al., 2007; Rogers et al., 2008).
- Cautions often contain words that are less commonly used outside the legal context, such as "obliged" and "bound" (Cooke & Philip, 1998; Rogers et al., 2007; Rogers et al., 2008; Hughes et al., 2013).
- Cautions will often conclude with a closed question that asks if someone understands, only requiring a yes or no answer, which may increase potential for acquiescence (Cooke & Philip, 1998; Fenner, Gudjonsson, & Clare, 2002; Hughes et al., 2013).

Adequate comprehension of a verbally presented caution is therefore suggested to require considerable cognitive ability, which may prove challenging for people with impaired cognitive abilities, such as ID (Fulero & Everington, 1995; Everington & Fulero, 1999; O'Connell et al., 2005).

Improving Caution Comprehension

Some effort has been directed toward strategies to improve caution comprehension. Improvement has been found when reducing the volume of information to be retained, by assessing comprehension separately for each individual element of the caution for example, as opposed to all at once (e.g. Shepherd, Mortimer, & Mobasheri, 1995; Clare et al., 1998). Another improvement was found when a written version of the caution complemented its verbal presentation, or was used instead (Eastwood & Snook, 2010; Rogers, Rogstad, Steadham, & Drogin, 2011; Hughes et al., 2013). These studies tend to include participants who are not identified as having an ID and/or would require the ability to read potentially complex language. It is also noted that initial cautioning is usually presented verbally (Rogers et al., 2007; Rogers et al., 2009).

In targeting verbal presentation alone, a Canadian study assessed whether comprehension of a caution could be improved using less complex vocabulary (Eastwood, Snook, & Chaulk, 2010), but did not report significantly improved performance. Subsequent studies applied linguistic techniques to the caution, intended to improve the 'listenability' of the information (Eastwood & Snook, 2012; Snook, Luther, Eastwood, Collins, & Evans, 2016). This method considers the challenges of comprehending verbally presented information, for example not knowing when the communication will close, or having the ability to pace or read over what is being shared (Rubin, 2012). However, the modified cautions in the studies had more words overall (Eastwood & Snook, 2012; Snook et al., 2016). This potentially does create a conundrum, since it could place greater demands upon the listener in terms of processing a larger volume of communication and the subsequent impact of its maintenance within memory (Baddeley, 1994; Marton et al., 2006). Alternatively, it is suggested this method structures verbal information in a way that primes and supports the listener to organise and process it more efficiently (Rubin, 2012).

The three techniques used in the studies were instructions, listing and explanations. Instructions help make the listener aware of what to expect, and in the context of the caution, it primes the listener toward being asked about what they have understood. Listing information into an explicit order helps the listener prepare for how many elements of information are expected within the exchange and to explicitly group

these. Further explanations of each element then provides a second opportunity to determine meaning for each element, with alternative wording that may help mitigate challenges with understanding from initial phrasing. In the context of the caution, the wording of the explanation is typically considered less complex than that often found in the original versions (Eastwood & Snook, 2012; Snook et al., 2016). These modifications reportedly improved comprehension by up to 30% amongst the undergraduate university students taking part in the study (Eastwood & Snook, 2012), whilst remaining untested amongst people with IDs.

Study Rationale

People with ID are over-represented within the criminal justice system in Scotland. This population experience significant challenges in comprehending a verbally presented police caution, likely due to its linguistic complexity and therefore the cognitive ability required to achieve understanding. This would be alongside vulnerabilities in police interrogation, including the impact of anxiety on functioning. The study intends to apply listenability techniques to the Scottish police caution to determine whether these modifications increase comprehension amongst people with impaired cognitive ability. It will assess caution understanding by adapting previously developed methods (e.g. Grisso, 1981; Olley et al., 1993; Cooke & Philip, 1998). The method includes assessment of participant understanding following full presentation of a caution and then each of its individual elements separately, understanding of specific key words and finally whether sentences mean the same or something different to each element.

The primary study hypothesis is as follows

(1) The use of a modified version of the caution, using listenability techniques, will improve performance across each measure of comprehension.

The secondary hypotheses are

(1) Performance across each measure of comprehension will be positively correlated with IQ, across both the standard and modified cautions.
(2) Performance across each measure of comprehension will be positively correlated with verbal working memory and verbal comprehension, across both versions of the caution.

(3) Higher scores in state anxiety will be negatively correlated with caution comprehension across both versions of the caution.
(4) There will be no association between participant reported knowledge and actual performance in assessment of comprehension.

Method

Design

The study utilised a between-subjects design, with caution version as the independent variable and caution understanding as the primary outcome variable. The influence of demographic and cognitive variables was examined through correlation analyses as a secondary element of the study.

Ethics

The project received ethical approval from the University of Edinburgh Health in Social Science Research Ethics Committee (Appendix 4) and adhered to required security policies. Participant Consent Forms (Appendix 5) were stored separately from anonymised data. Recordings were transcribed, anonymised and deleted following completion of the study. All participants had capacity to consent and were made aware of their right to withdraw from the study at any time.

Inclusion Criteria

Participants were required to have an ID, with IQ between 50 and 70, but able to provide informed consent to taking part. They had to be aged 16 years or over and fluent in English. Exclusion criteria were: significant hearing impairment, current symptoms of psychotic illness, substance misuse, the presence/suspected presence of a progressive neurological disorder or prior personal experience of being cautioned by the police.

Determination of Sample Size: Power Calculation

No prior studies have compared understanding of a modified (listenability) version of a caution against its standard presentation amongst ID participants. Therefore, to determine an appropriate sample size, a power calculation was completed informed by a similar study completed with university students (Snook et al., 2016).

An appropriate alpha (α) was determined by applying the Holm-Bonferroni method (Holm, 1979), to account for the family-wise error of completing multiple analyses. Four methods are used to make up the assessment of understanding (below), therefore the adjusted α=.0125. The initial assessment method is participant understanding of the caution presented in full, which is the primary measure of understanding, and for which the results of the Snook et al. (2016) study had an effect size (*d*) of 1.02. A power calculation applied to these figures, using the G*Power calculator (Faul, Erdfelder, Lang, & Buchner, 2007, Verson 3.1.9.2) at a power (β) of 80%, suggested a total sample size of 40 (two groups of 20) for an independent-samples t-test.

Recruitment

The lead investigator attended various Third Sector events attended by Scottish organisations working with people who have an ID, as well as local advocacy groups to increase awareness of the project. Leaflets containing information for services (Appendix 6) and easy-read information for participants (Appendix 7) were provided, containing contact details of those involved in the study. An experienced Speech and Language Therapist reviewed the easy-read document and considered it appropriate for the intended audience. Those who wished to take part, or a nominated person, could then make contact, to find out more about the study. The lead investigator then contacted the potential participant or liaised with relevant facilitator(s) from the services, to arrange initial meetings.

Recruitment presented challenges. Therefore, recruitment efforts were increased during the conduct of the study. This included extension to include a wider geographic area and approaching more services and organisations than had originally been envisaged. Email contact, including project information, was made with key individuals from twenty-six appropriate agencies that work with people with

IDs, including follow-up telephone calls where possible. Telephone contact was also made with a local college and regular meetings with a manager from local social services. Ultimately, Dumfries and Galloway Social Services and seven Third Sector organisations supported recruitment, over south Scotland and the central belt (City of Edinburgh, Dumfries & Galloway, East Dunbartonshire, East Lothian and Glasgow City). Approval for recruitment was achieved from relevant managers within these services.

Consent & Participant Wellbeing

Capacity to consent was an inclusion criterion for the study and was reviewed by the lead investigator throughout the recruitment and assessment process. The police caution may have been considered a sensitive topic for some individuals, therefore participants were reminded it was only read as part of the study, both at consent and debrief. If any participant displayed signs of distress or significant anxiety during the session, the lead investigator would sensitively end the session, direct them to appropriate support and securely destroy any data. No participants expressed discomfort, nor was any observed by the lead investigator. If participants appeared fatigued in session, they were offered the opportunity to split the assessment in to two separate sessions. It was not necessary to do this for any participant.

Development of the Standard & Modified Cautions

Various steps were taken to ensure a representative current version of the caution was used in the study and the application of listenability techniques was appropriate.

Standard Caution. There is no specified wording for communicating interrogation rights in Scotland. Therefore, the lead investigator communicated with Police Scotland to request recommended wording (personal communication, 10 February 2016; Appendix 8). The response provided direction to the Common Law Caution as provided in the Police Service of Scotland Solicitor Access Guidance Document (Police Scotland, 2015). It was decided a theft would be used as the participant's hypothetically accused crime in the study, as this was considered to have less strong emotive connotations than other crimes, such as physical violence.

The caution was divided into four distinct elements, as used for assessment, and was: *I am now going to ask you questions about [the theft], (1) you are not obliged to answer any questions, (2) but anything you do say may be noted, may be audio and visually recorded, (3) and may be used in evidence. (4) Do you understand that?*

Modified Caution. In the development of the modified version, the lead investigator first applied the listenability (instructions, listing, and explanations) techniques (Eastwood & Snook, 2012) to the Common Law Caution. Two experienced Clinical Psychologists then reviewed the wording and suggested minor changes to words, such as: *three pieces of information* being replaced with *three things*. The lead investigator then liaised with a specialist Speech and Language Therapist, who checked adherence to the listenability techniques and suggested areas for improvement, which were applied collaboratively. These included modifying the way it was written for the reader, with new sentences on separate lines that encouraged pauses (see Appendix 9), as well as some phrasing that was considered more appropriate, for example: *This means that you can choose whether or not to answer any questions, but you do not have to*, was changed to *This means that you can choose. You can choose to answer questions or you can choose not to answer questions. You can decide.* A lawyer then reviewed this penultimate version and stated this version covered the rights appropriately. Therefore, a final planned check, following feedback from the lawyer, was not required.

The final modified caution, with its corresponding four parts was: *I am going to tell you the police caution. The police caution tells you about what you can do when being interviewed by the police. I want you to listen carefully to the caution as I say it. I want you to 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 saying it. I will tell you the caution now.*

I am going to ask you questions about [the theft]. There are <u>three</u> things that you need to know about. (1) First, you are not obliged to answer any questions. This means that you can choose. You can choose to answer questions or you can choose not to answer questions. You can decide. (2) Second, anything that you say may be noted and may be audio and visually recorded. This means what you say

might be written down, your voice may be recorded speaking or a video camera may record what you say and do. (3) Third, this may be used in evidence. This means what you tell me may be used for or against your case. (4) Do you understand that?... Can you tell me about what I have just said?

Assessment of Caution Comprehension

Three questions were asked pertaining to participants' prior knowledge of interrogation rights at police questioning. A brief scenario was provided where a male was questioned by the police after throwing a brick through a window, with a visual cartoon image of the suspect, John, and a policewoman (see Appendix 9). The three questions were: (i) *Does John have to tell the policewoman about what happened?* (ii) *Will John get in more trouble if he says nothing?* (iii) *Will the policewoman write down what John says to her?* This assessment was added after two initial participants had completed the experimental protocol.

Table 1 provides an overview of the method used to assess participant caution comprehension, informed by prior study methods (Grisso, 1981, 1986; Olley et al., 1993; Cooke & Philip, 1998). The lead investigator transcribed all session recordings verbatim. A scoring rubric was developed and applied to score the transcribed responses, which was reviewed by a member of the research team (Appendix 10),

Table 1. Scoring in Assessment of Caution Knowledge

Method	Presentation in Assessment	Scoring
Understanding of Caution Presentation in Full	Participant asked to explain meaning of caution presented in its entirety.	For each element (2) Full Understanding (1) Partial Understanding
		Maximum Score: 8
Understanding of Elements	Participant asked to explain meaning of each element presented individually.	(2) Full Understanding (1) Partial Understanding
		Maximum Score: 8
Definitions	Participant asked to explain meaning of four key words from the caution (obliged, audio recorded, visually recorded, evidence).	(2) Full Understanding (1) Partial Understanding
		Maximum Score: 8
Same / Different	Participant asked to decide whether a presented sentence means the same or something different to each element. There is one sentence that means the same and one that means something different for each element.	For each element (2) Correctly identifies the sentence that means the same and the sentence that means something different. (0) If only identifies one correctly, or both incorrect.
		Maximum Score: 8
		Maximum Total Score: 32

Materials

Demographic Information (Appendix 11). Participants were verbally requested to provide information relating to their age, gender, level of support required in daily living and current employment status.

Assessment of State Anxiety. An amended Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), with wording considered appropriate for individuals with an ID, was used (Dagnan et al., 2008; Appendix 12). This included a visual representation of answer options to further assist participant understanding (Shackleton, 2017). Only those questions pertaining to anxiety were included, which left 7 questions, rated from 0 to 3 (not at all to very much). The scale had a maximum score of 21, where higher scores indicated greater state anxiety. In considering the internal reliability of those questions pertaining to anxiety, Dagnan et al. (2008) found the scale had an alpha coefficient of .85. There is no known

published data on the validity of these modified questions for this population. The suggested cut-off score is 8 for clinical significance.

Assessment of Intellectual Functioning. The Wechsler Abbreviated Scale of Intelligence (2nd Edition, WASI-II) Two-Subtest Version (Wechsler, 2011) was used to indicate cognitive functioning. The authors suggest adequate reliability for the Vocabulary (verbal comprehension; r=.92) and Matrix Reasoning (perceptual reasoning; r=.90) subtests and overall Full-Scale Intelligence Quotient (FSIQ; r=.94). The authors suggest the two-test version correlated moderately (r=.84) with the non-abbreviated Wechsler Adult Intelligence Scale (4th Edition; WAIS-IV; Wechsler, 2008). The assessment was used to consider any relationship between IQ and caution understanding, but also as a screener of ID.

Assessment of Verbal Working Memory. The Digit Span subtest of the WAIS-IV (Wechsler, 2008) was used as a measure of an aspect of working memory, the phonological loop. The validation process of the WAIS-IV included people with ID. The factor loading, when considering the full standardization sample, suggested an intercorrelation with the working memory construct of .76. Wechsler (2008) also describes the Digit Span test to have good test-retest stability (r=.82).

Procedure

Assessments took place within a quiet room. The location, such as a local community resource centre, was arranged with the participant or someone who supported them. If a mutually convenient location could not be arranged, the lead investigator would complete assessments at the participant's home. Five participants were assessed at home, with risk assessments completed in advance (Appendix 13). Participants were given the opportunity to have a second person with them in assessment. This person could not be planning to participant in the study and was requested to remain silent throughout assessment. Four participants elected to have someone join them.

The lead investigator completed all assessments. This began with the Participant Information Sheet being read through, to ensure understanding of the study aims

and process. The Participant Consent Form was then reviewed and signed by the participant and lead investigator.

Participants were randomly assigned to either the standard or modified caution group using a random number generator (Haahr, 1998). Initially, this was planned for a full set of forty, in accordance with the power calculation, however due to apparent challenges in recruitment; this was then calculated for sets of fifteen. The relevant Administration Protocol (Appendix 9) procedure was then followed. Demographic information was first gathered, followed by the measure of situational anxiety and assessment of prior knowledge of the caution. The audio recorder was then started, and the participant reminded that this section of the assessment would be recorded. The participant was first informed that as part of the study, they were to pretend the police thought they had stolen a handbag, then the caution was read aloud and all questions were asked verbally. The protocol permitted enthusiasm and praise for the participant effort and avoidance of comments on performance, as informed by the WASI-II administration manual (Wechsler, 2011). Prior to switching off the audio recorder, the participant was asked if they had heard something like the caution before. If the participant tried to share direct personal experience of being cautioned, they were stopped and this was not discussed further.

The WASI-II and digit span were then completed, prior to debrief. Debrief involved sharing the purpose of the study, checking participant wellbeing and opportunity for questions. No individual indications of performance were provided to participants. Full procedure completion time was around 45 to 60 minutes

Data Input

The anonymised data was stored on an NHS approved encrypted USB and the University of Edinburgh data store.

Statistical Analysis

All analyses were completed using Statistical Package for the Social Sciences (SPSS) (IBM Corp, 2015, Version 23.0).

The study's primary objective was to establish whether a modified caution would increase understanding, in comparison to the original caution. For this, a series of between-group comparisons on the sub-elements of caution knowledge (understanding of presentation in full, element understanding, definitions, same/different) were planned.

Results

Sample Characteristics

A total of 33 people participated, however two were removed prior to analyses due to having personal experience of being cautioned, and one because their IQ exceeded 70. Table 2 provides demographic data, cognitive and mood measures. No statistically significant differences between groups were found, suggesting that the groups were equivalent on the key variables of interest.

Table 2. Participant descriptive data and comparison between caution versions

	Standard Group *N* = 15	**Modified Group** *N* = 15	**Group Comparisons**
Gender (Male : Female)	11:4	8:7	*X*(1)=2.20, *p*=.138
Age	*Mdn*=43 *IQR*:33-51	*Mdn*=41 *IQR*:31-53	*U*=108.50, *z*=-0.17, *p*=.868, *r*=-.03
Support Hours (per week)	*Mdn*=10 *IQR*: 1-30	*Mdn*=4 *IQR*: 0-10	*U*=79.50, *z*=-1.38, *p*=.169, *r*=-.25
State Anxiety Score (out of 21) *	*Mdn*=3 *IQR*: 2-4	*Mdn*=4 *IQR*: 2-5	*U*=86.00, *z*=-1.12, *p*=.265, *r*=-.20
Full Scale IQ (2 sub-test)	*Mdn*=59 *IQR*:57-64	*Mdn*=62 *IQR*:59-66	*U*=79.00, *z*=-1.40, *p*=.162, *r*=-.26
Vocabulary Subtest (Raw Score)	*Mdn*=19 *IQR*:16-21	*Mdn*=19 *IQR*:17-21	*U*=102.50, *z*=-0.42, *p*=.677, *r*=-.08
Matrix Reasoning Subtest (Raw Score)	*Mdn*=6 *IQR*:5-8	*Mdn*=7 *IQR*:5-9	*U*=89.50, *z*=-0.97, *p*=.334, *r*=-.18
Digit Span (Raw Score)	*Mdn*=13 *IQR*:10-17	*Mdn*=19 *IQR*:13-19	*U*=79.50, *z*=-1.37, *p*=.170, *r*=-.25

*A higher score indicates increased anxiety

Previous Hearing of Caution & Prior Knowledge

Most participants reported hearing the words of the caution, or similar, before, generally from television (Table 3). In the given hypothetical scenario, where a man had been questioned by a policewoman after throwing a brick through a window, participants evidenced a lack of knowledge, except that the policewoman would write down what the accused had said (Table 3).

Table 3. Participant prior experience and prior awareness of caution elements

	Yes	**No**
Previously Heard Caution Where:	*N*=23 (77%) Television, *N*=20 (87%) Someone Else, *N*= 1 (4%) Unsure, *N*=2 (9%)*	*N*=7 (23%)
Prior Knowledge		
(1) John will have to tell police	*N*=25 (83%)	*N*=5 (17%)
(2) More trouble if says nothing	*N*=25 (83%)	*N*=5 (17%)
(3) Policewoman write down what is said	*N*=28 (100%)	*N*=0 (0%)

*They had not themselves been cautioned at any time previously

Scoring Check of Recall and Comprehension of Cautions

An Assistant Psychologist independently rated 10 randomly selected participant transcriptions as a validity measure of the scoring method for caution comprehension. The same/different assessment was removed from analysis of agreement, due to being closed questions that achieved perfect agreement, which would skew overall scoring. There was 83% agreement in scoring and Cohen's κ indicated this agreement was moderate, $\kappa=.75$, $p<.001$ (McHugh, 2012), with a comparable figure to previous studies using a similar method (e.g. Eastwood et al., 2010; Freedman, Eastwood, Snook, & Luther, 2014). The lead investigator and Assistant Psychologist jointly considered discrepancies and decided final scores prior to analyses. There were no common discrepancies and all were differences between ratings of 1 or 2.

Recall and Comprehension of Cautions

As can be seen in Table 4, participants had considerable difficulty understanding both versions of the caution, throughout all methods of assessment. This was particularly evident in assessed understanding following full presentation, where most participants (80%) scored 0. There were no significant differences between scoring on all methods of assessment, regardless of caution version. Despite poor performance, all participants reported they had understood the caution. Only four

participants indicated they were unsure to any extent (e.g. "…it's a bit complicated," "I think so"), but when requested to decide yes or no, they all opted for yes.

Table 4. Comparison of scoring between cautions.

	Standard Caution *N*=15	**Modified Caution** *N*=15	**Difference**
Full Presentation (out of 8)	*Mdn*=0 *IQR*: 0-0	*Mdn*=0 *IQR*: 0-1	*U*=97.00, *z*=-0.92, *p*=.357, *r*=-.17
Understanding of Elements (out of 8)	*Mdn*=3 *IQR*:0-4	*Mdn*=2 *IQR*:1-4	*U*=112.00, *z*=-0.21, *p*=.983, *r*=-.04
Definitions (out of 8)	*Mdn*=2 *IQR*: 0-3	*Mdn*=3 *IQR*: 2-5	*U*=80.50, *z*=-1.36, *p*=.173, *r*=-.25
Same/Diff (out of 8)	*Mdn*=2 *IQR*: 2-4	*Mdn*=2 *IQR*: 2-4	*U*=106.00, *z*=-0.29, *p*=.772, r=-.05
Total (out of 32)	*Mdn*=9 *IQR*:3-11	*Mdn*=8 *IQR*:5-8	*U*=102.00, *z*=-0.44, *p*=.66, *r*=-.08
Self-Reported Understanding (Questioning of Understanding)	*N*=15, 100% (*N*=1, 6.67%)	*N*=15, 100% (*N*=3, 20%)	

Post-Hoc Consideration of Assessment Method

There was no statistically significant difference in participant performance between the standard and modified versions of the cautions, therefore the groups were collapsed and subsequent analyses of assessment methods were considered across the entire sample.

It was apparent that performance significantly improved when participant understanding of the individual caution elements were asked separately (Table 5).

Table 5. Comparison between performance in understanding of full presentation and understanding of elements as presented individually

	Full Presentation	**Understanding of Elements**	**Difference**
Score (Out of 8)	*Mdn*=0 *IQR*: 0-0	*Mdn*=2.5 *IQR*: 0.75-4	T=-4.13, p<.001, r=.75

The highest scoring, on average, for defining key words was for audio recorded, then evidence, visually recorded and finally obliged (Table 6).

Table 6. Consideration of key words

Definitions:	**Obliged**	**Audio Recorded**	**Visually Recorded**	**Evidence**
Scoring: (out of 2)	*M*=0.23 (*SD*=0.43) Range: 0-1 *Mdn*=0	*M*=0.87 (*SD*=0.78) Range: 0-2 *Mdn*=1	*M*=0.5 (SD=0.63) Range: 0-2 *Mdn*=0	*M*=0.73 (*SD*=0.64) Range: 0-2 *Mdn*=1

Consideration of Potential Predictive Variables on Understanding

Table 7 considers the associations between the dependent variables and performance across the assessment methods. This was completed using the full sample (both groups collapsed together). To account for the number of correlations and therefore potential family-wise error rate, a Holm-Bonferroni procedure was followed (Holm, 1979). From this, vocabulary remained a significant positive correlate for definitions and understanding of elements. Age was a significant negative correlate for understanding of elements.

Table 7. Consideration of associations between sample characteristics and caution comprehension

	Full Presen-tation	Elements	Definitions	Same / Different	Total Score
Age	τ_b=-.33, *p*=.031	τ_b=-.41* *p*=.003	τ_b=-.31, *p*=.027	τ_b=-.11, *p*=.463	τ_b=-.33, *p*=.012
State Anxiety	τ_b=.07, *p*=.657	τ_b=-.02, *p*=.912	τ_b=.06, *p*=.681	τ_b=-.02, *p*=.876	τ_b=-.01, *p*=.956
Full Scale IQ (2 sub-test)	τ_b=.04, *p*=.776	τ_b=.10, *p*=.475	τ_b=.20, p=-165	τ_b=.00, *p*=1.00	τ_b=.11, *p*=.438
Vocabulary Subtest (Raw Score)	τ_b=.33, *p*=.032	τ_b=.39*, *p*=.006	τ_b=.48**, *p*=.001	τ_b=.11, *p*=.473	τ_b=.34, *p*=.01
Matrix Reasoning Subtest (Raw Score)	τ_b=.09, *p*=.549	τ_b=.14, *p*=.319	τ_b=.14, *p*=.333	τ_b=.17, *p*=.329	τ_b=.170, *p*=.217
Digit Span (Raw Score)	τ_b=.09, *p*=.519	τ_b=.10, *p*=.519	τ_b=.28, *p*=.051	τ_b=.14, *p*=.343	τ_b=.24, *p*=.072

*****significant at *p*-level, as corrected for multiple comparisons

Discussion

The primary aim of the study was to establish whether the application of listenability techniques to a verbally presented caution in Scotland would improve comprehension amongst people with an ID. However, the study failed to replicate findings of similar Canadian studies amongst student samples (Eastwood & Snook, 2012; Snook et al., 2016), where a significant positive effect was found.

It is possible this lack of an effect is due to the increased volume of words contained within the modified version, when compared to the original version (204 v. 33). This may in itself demand too much of the listener with regard to processing and manipulating the communicated information (Baddeley, 1994; Marton et al., 2006). It is possible the listenability techniques fail to adequately mitigate this challenge for people with an ID. The refreshing process of working memory, for example, is considered to be more impaired amongst people with an ID, when performance is compared to a sample of fluid-intelligence matched, typically developing children

(Carretti et al., 2010). Therefore, the intended impact of the listenability informed techniques, which required an increase in the volume of verbal information, may continue to overwhelm the listener due to a delayed updating process. In addition, the techniques used may not have had the same intended impact, for example explanations may not provide the intended benefit of repeated exposure. This is suggested because, as suggested from participant performance in the original version, the wording of the original version was too complex for this population to understand anyway, as the initial exposure. This could make it redundant, yet the listener would continue to expend cognitive resource toward trying to make sense of it. Within the published literature, the impact of these techniques on comprehension of verbal communication remains unexplored through empirical study, when specifically considering people with ID. This suggests further work on this area, with this population, is required.

The poor performance across participants in this study is stark. There was evidence of floor effects across both versions of the caution, where almost everyone scored zero on understanding of the caution presented in full and no-one was assessed as providing an adequate description of all four elements, even when each was presented individually. Poor performance is reflective of earlier studies of caution comprehension amongst people with ID (e.g. Everington & Fulero, 1999; O'Connell et al., 2005) and suggests there is a fundamental problem with communicating this information verbally.

Although performance remained poor when the caution elements were presented and assessed separately over both versions, it was significantly better than when these were presented in their entirety, as found in prior studies (e.g. Shepherd et al., 1995; Clare et al., 1998). It may be the result of practice effects or instead indicate that some people can potentially grasp concepts of the caution, when the overall load of information is reduced (Baddeley, 1994; Marton et al., 2006). More specifically, it is possible the caution may be understandable to a greater number of people with ID, but to achieve this it needs to be presented differently.

In considering the key words of the caution, on average participants scored best on audio recorded and poorest for obliged. In the Cooke and Philip (1998) study of

offender understanding, they found the word tape-recorded was considerably better understood than obliged, which is a similar finding.

The secondary aim of the study was to explore possible predictors of caution comprehension. Performance in understanding of the elements tended to deteriorate as age increased and this differs from other studies amongst adults, where performance across assessments has not shown any association with age (e.g. Viljoen, Roesch, & Zapf, 2002; Frumkin, Lally, & Sexton, 2012). The reason for this association is unclear, although - speculatively - may be reflective of deteriorating verbal memory as people age (Park et al., 2002; Davis et al., 2003), which is perhaps more marked in ID where baseline cognitive function would typically be lower (Burt et al., 2005). However, it is acknowledged that this is purely supposition at this point. The finding that assessed skills in vocabulary were positively associated with performance in understanding of elements and definitions was expected, as the method used to assess comprehension is essentially measuring vocabulary skills. However, it does add to the study method's validity as it matches findings of prior studies (e.g. Fulero & Everington, 1995; Cooke & Philip, 1998; Chaulk el al., 2014) and makes intuitive sense. Presumably the individual must have adequate ability in verbal skills, before other cognitive abilities can enhance performance in understanding (Rogers et al., 2009). Participant scoring on digit span (a measure of verbal working memory), state anxiety, IQ and matrix reasoning (a measure of perceptual reasoning) had no significant association with performance in this study.

Participant Reported Understanding

All participants claimed they had understood the caution, when asked using a closed question. It is possible a familiarity with the wording, from reported exposure in popular media, has misled participants into thinking they understand (Nguyen, 2000; Chaulk et al., 2014). Prior research has also indicated that people with ID are more likely to respond affirmatively to posed questions (Sigelman et al., 1982; Clare & Gudjonsson, 1993), particularly if they do not understand information being communicated (Finlay & Lyons, 2002). In the study context, this acquiescence may result in an individual proceeding to be questioned by police, whilst they did not understand their communicated rights. This may be unfair to the accused, and risk

gathered evidence from interviews being considered inadmissible (Cooke & Philip, 1998; Fenner et al., 2002).

Study Limitations

Study findings must be considered carefully, as the sample size was less than the suggested figure achieved from a power calculation. This was despite increased recruitment efforts, such as widening the geographical area covered and number of services approached. These challenges are common in research with people with ID, particularly due to necessary ethical processes and indirect access to participants (Cleaver et al., 2010). Therefore, it is possible there are small effects between the caution versions, but given the limited number of people who participated in this study, the likelihood of detecting any effect was considerably reduced.

The study procedure used the WASI-II (Wechsler, 2011) as a screening measure of ID and did not include the full assessment required for classification. However, the use of this screening measure and the recruitment method, through services for people with ID for example, was considered adequate for the purposes of this study, whilst it ensured appropriate assessment duration for participants. It is acknowledged the assessment of verbal working memory, using a verbally presented digit span test, is a limited measure of the phonological loop, which restricts conclusions that can be drawn with regard to verbal memory. Research has also indicated the contribution of the phonological loop to auditory comprehension is perhaps more limited than the influence of the central executive. Therefore, future research may benefit from including a measure of central executive functioning (Chrysochoou & Bablekou, 2011). Regarding the digit span measure, it has been argued performance may be typically greater than is found in other measures, due to prior real-life experiences of remembering random number sequences (Jones & Macken, 2015). It is also less accurate than the digit span being administered via a computer programme (Woods et al., 2011). However, again, due to assessment duration and available resource, the study elected for the method ultimately used, but it is acknowledged that this is a shortcoming of the methodology employed.

The study used, and modified, a single version of caution wording, as provided by Police Scotland. This limits the generalising of findings to some extent, as police

officers can independently construct caution wording, with the requirement that the basic concepts of the rights are communicated (Police Scotland, personal communication, 10 February 2016; Appendix 8). However, the right being communicated is the same or like those in jurisdictions across the world (The Law Library of Congress, 2016). This study only assessed understanding of the legal right to silence (Common Law Caution), whereas prior published, non-Scottish, studies have assessed cautions that include other interrogation rights, such as access to legal advice. These studies found the right to silence is repeatedly assessed as the best understood of the rights (e.g. Viljoen et al., 2002; Rogers et al., 2008; Chaulk et al., 2014), which emphasises the extent of the deficit found in the present study.

The method of assessing caution understanding was adapted from prior study methodologies. However, it is acknowledged there are limits to this. There are multiple opportunities to display understanding as the caution is read repeatedly and assessed in various ways for example, albeit without feedback, which could lead to practice effects. To minimise this potential influence, the order of each assessment method was intentional, for example the same/different assessment was kept as a final measure of knowledge, as potential answers are provided by the lead investigator that could inform subsequent responses. It could also be argued that assessment through a description of perceived understanding may not always be the most helpful indicator of actual understanding, as non-reporting may not always reflect a lack of understanding in an element (Chaulk et al., 2014). But again, even with the multiple methods of assessment, overall understanding was markedly low.

The experimental method took care to ensure participants felt comfortable in assessments. However, this likely reduced ecological validity. The real-life experience of being arrested by a police officer would presumably be anxiety provoking and therefore impact processing of information (Eysenck et al., 2007; Moran, 2016). Self-reported state anxiety was low in the study and was not found to be associated with performance in assessment of caution comprehension. However, the adapted assessment used has not been appropriately validated. It is also based on self-report, which is known to under-represent experience, more so when considering people with ID who may struggle to understand the included concepts (Emerson, Felce, & Stancliffe, 2013).

Study conclusions are limited to participant understanding of caution wording and cannot truly reflect waiver decision-making. The assessment of prior knowledge did vaguely consider this, where it indicated people generally did not know they could elect to remain silent in police questioning and that their silence would not result in negative consequences. Prior studies have included an assessment of the wider reaching implications of interrogation rights, such as the Function of Rights in Interrogation (Grisso, 1998) or Miranda Quiz (Rogers et al., 2010). A similar assessment possibly could have been included in the study. This was decided against as it would have increased assessment duration and was not considered central to the study objective.

Implications & Future Directions

The findings of this study are reflective of those before it, which repeatedly indicate limited understanding of cautions amongst various study samples. This raises the question of whether a verbally presented caution fulfils its intention of making the accused aware of their interrogation rights. Perhaps controversially, some authors have argued miscomprehension could be considered a benefit to interrogators; with the suggestion that police may present the caution as though it is a mere procedure that can be run through quickly (Gudjonsson, 2003, pp. 48-49; DeClue, 2007; Feld, 2013). This was experimentally considered with American students, whereby a waiver decision was presented to hold either important or trivial consequences (Scherr & Madon, 2013). Those participants who had it presented as trivial were more likely to waive their rights, but were also assessed as having poorer performance in assessed understanding of the caution.

One further concern is using a closed question to check comprehension. Every participant claimed to understand the caution in the study, but all participants were considered to perform poorly in assessment. Therefore, more effort should be directed, as part of standard procedure, to further verify comprehension, such as asking the individual to explain their understanding of the caution (Fenner et al., 1999; Snook et al., 2016; Clare et al., 1998).

Police should be encouraged to identify people with ID, as the study suggests this population is vulnerable to misunderstanding the caution. However, studies have

indicated identification as something police have difficulty with (Young et al., 2013; Parsons & Sherwood, 2016). Therefore, training efforts should be directed to improving awareness and confidence amongst officers to recognise any potential indicators or explicitly ask the accused regarding possible presence of ID, to help mitigate potential problems.

Future research efforts could consider the apparent negative association with age, to decipher if it is an ID specific association or merely a spurious finding of the study. The development of an assessment that explores understanding of the implications of wavering one's rights in Scotland may also be useful. Further consideration of other methods that may improve comprehension for people with ID is encouraged, for example the use of easy-read material (see Parsons & Sherwood, 2016) or development of resources that apply well-considered visual communication methods (Cameron & Matthews, 2017). Research with this population is recommended, as the relationship between assessed caution comprehension and verbal abilities would indicate that improvements in comprehension would benefit a wider range of individuals.

Conclusion

This study demonstrated that a sample of individuals with mild-to-moderate ID struggled to understand a version of the police caution as presented in Scotland, under optimal assessment conditions. This was despite self-reports of understanding. This was not improved by applying listenability techniques that have evidenced a positive effect on comprehension amongst a sample of university students. There was a positive association with performance on assessment of comprehension with verbal ability (as assessed by vocabulary) and negative relationship with age. Significant efforts are required to ensure that this population are not disadvantaged within the Criminal Justice System due to their disability (Scottish Government, 2013). Hence, continued work on increasing the accessibility of the caution is necessary. This may be supplemented by ensuring that police officers and other professionals within the Criminal Justice System are aware of the needs of individuals with IDs who they may encounter.

Declaration of Interest

The authors report no declarations of interest.

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6 Thesis Appendices

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Appendix 1. Author Guidelines: Psychiatry, Psychology and Law

Instructions for authors
Thank you for choosing to submit your paper to us. These instructions will ensure we have everything required so your paper can move through peer review, production and publication smoothly. Please take the time to read them and follow the instructions as closely as possible. Should you have any queries, please visit our Author Services website or contact us at authorqueries@tandf.co.uk.

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Your paper should be compiled in the following order: title page; abstract; keywords; main text (introduction, materials and methods, results, discussion); acknowledgments; declaration of interest statement; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figures; figure captions (as a list).

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Please include a word count for your paper. Papers should not usually exceed 12,000 words, including references, figure and table captions and notes.

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-Title Page (p.1) should contain the article title, authors' names and complete affiliations, footnotes to the title, and the address for manuscript correspondence (including e-mail, address and telephone and fax numbers), and a note, if applicable, of the conference at which the paper has been presented.
-Abstract (p.2) must be a single paragraph that summarizes the main findings of the paper in fewer than 150 words, including where appropriate the research methodology, findings and conclusions. After the abstract a list of up to 10 keywords that will be useful for indexing or searching should be included.
-Figures should be in a finished form suitable for publication and should be numbered consecutively with Arabic numbers in order of appearance in the text. Figures can be supplied as hard copy, but are preferred electronically in Adobe Illustrator, EPS or TIFF formats. They should be presented in black and white at a minimum print density of 600 dpi and should not include shaded areas of grey. Instead use repeated patterns of lines or crosses to distinguish, for example, different bars on a graph.

-Tables should be numbered consecutively with Arabic numbers in order of appearance in the text. Each table should by saved double-spaced on a separate page, with a short descriptive title typed directly above and with essential footnotes below.
-Psychological manuscripts should be prepared in accordance with the format and style specified in the 'Publication Manual of the American Psychological Association', fifth edition. Pages should be numbered consecutively. References should be cited in the text as specified in the Publication Manual of the American Psychological Association, fifth edition. A concise description of APA referencing style can be found here http://www.tandf.co.uk/journals/authors/style/layout/tf_1.pdf. Personal communications should be cited as such in the text and should not be included in the reference list.

References
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Appendix 2. Quality Criteria

Rationale		
Criterion 1	The study considers and discusses the relevant literature.	(2) Well Covered: The study explores the relevant data clearly, setting up the objectives (Criterion 2) appropriately. (1) Adequately Addressed: The literature is partially covered, not always apparently related to the objectives (NB. objective(s) assessed in Criterion 2) (0) Poorly Addressed: Literature not clearly related to the current study.
Criterion 2	The study addresses appropriate and clearly focused question(s), objective(s) or hypothes(es).	(2) Well Covered: The study explicitly states clear objectives. (1) Adequately Addressed: Only partially suggests objectives. Perhaps not suggesting direction, where would be appropriate based on rationale. (0) Poorly Addressed: No clarity.
Sample		
Criterion 3	Sample recruited in an acceptable way.	(2) Well Covered: Permits generalisability, e.g. multi-site recruitment. (1) Adequately Addressed: Partially generalisable, perhaps from appropriate population but one site. (0) Poorly Addressed: Does not appear relevant to study objective OR recruitment method not specified clearly (not addressed/reported).
Criterion 4	The sample was representative of the population being considered.	(2) Well Covered: Covers appropriately, e.g. age range, gender. Including the reporting of inclusion/exclusion criteria. (1) Adequately Addressed: Covers many areas, but not optimal. Or does not explicitly state inclusion/exclusion criteria. (0) Poorly Addressed: Too specific a group and therefore not generalizable. Not adequately addressed or reported.
Criterion 5	Appropriate methods applied to determine sample size.	(2) Well Covered: Describes power calculation. (1) Adequately Addressed: Paper uses a power calculation, as completed by another study/paper. (0) Absent: No power calculation or not reported.
Assessment		
Criterion 6	The measure of caution comprehension is valid and reliable.	(2) Well Covered: Good psychometric properties (1) Adequately Addressed: Informed by established measure and clear logic in method of assessment. (0) Poorly Addressed: Not clearly described or does not use established method.
Criterion 7	The measure of IQ is reliable and comprehensive.	(2) Well Covered: Full IQ assessment with adequate psychometric properties used, e.g. full WAIS. (1) Adequately Addressed: Prorated assessment of full IQ measure OR Abbreviated measure, but with adequate psychometric properties, e.g. WASI. (0) Poorly Addressed: IQ assessed by a less often used measure, without reporting or adequate psychometric properties. IQ derived from limited assessment, e.g. Verbal IQ alone. Out-of-date measure for the time of the study. (—) Not Applicable
Criterion 8	The cognitive measure(s) used	(2) Well Covered: Valid and reliable measure(s) with adequate and reported psychometric properties.

	(other than IQ) are reliable.	(1) Adequately Addressed: Psychometric properties are not reported or are poor. (0) Poorly Addressed: No standardised measure. (—) Not Applicable.
Criterion 9	Other Psychological / Psychiatric measure(s) used are reliable.	(2) Well Covered: Valid and reliable measure(s) with adequate and reported psychometric properties (1) Adequately Addressed: Psychometric properties are not reported or are poor OR No standardised measure, but other (less reliable) measure that has clear evidence of consistency e.g. structured interview with limited number of qualified interviewers, or based on records. (0) Poorly Addressed: Based on self-report, no standardised measure or method of assessment. (—) Not Applicable.
Analysis		
Criterion 10	The method of analysis is considered appropriate for the research question(s) and is clearly reported.	(2) Well Covered: Describes method of analysis and data handling (e.g. missing data) and method considered adequate. (1) Adequately Addressed: Some description of method of analysis and method considered adequate. (0) Poorly Addressed: Does not describe analysis method at all or method not clear.
Criterion 11	The main potential confounders identified and considered in the design and analysis to minimise bias.	(2) Well Covered: Clearly addressed and accounted for, e.g. Intellectual Disability, Sensory Impairments. (1) Adequately Addressed: Limited accounting for confounders. (0) Poorly Addressed: No acknowledgement of confounders in analysis.
Results		
Criterion 12	Effect sizes & confidence intervals reported as appropriate.	(2) Well Covered: Reported as appropriate. (1) Partially Covered: Not always reported. (0) Poorly Addressed: Not cited.
Conclusions / Discussion		
Criterion 13	Conclusions drawn appropriate to study results (“believable”).	(2) Well Covered: The study clearly reports its conclusions and draws this to previous related literature. (1) Partially Addressed: The study is vague in its conclusions and/or does has limited evidence of drawing this to the prior literature. (0) Poorly Addressed: No well covered as above.
Criterion 14	The study recognizes and reports its limitations.	(2) Well Covered: The study reports its limitations (as appropriate in considering above quality checks). (1) Partially Addressed: The study is vague in its reporting of study limitations and/or limited recognition of limitations. (0) Poorly Addressed: No reported limitations or poor reporting.

Appendix 3. Reason(s) for Exclusion

	Reference	Exclusion Criteria
1	O'Connell, M. J., Garmoe, W., & Goldstein, N. E. (2005). Miranda comprehension in adults with mental retardation and the effects of feedback style on suggestibility. *Law and Human Behavior*, *29*(3), 359–369.	-Intellectual Disability
2	Fulero, S. M., & Everington, C. (1995). Assessing competency to waive Miranda rights in defendants with mental retardation. *Law and Human Behavior*, *19*(5), 533–543.	-Intellectual Disability
3	Carroll, C. J. (1991). Self-implication and the Miranda Rights: Handicapped versus nonhandicapped individuals. *Dissertation Abstracts International*, *52*(5–A), 1707.	-Intellectual Disability -Not Peer Rev.
4	Bennett, A. D. (2006). The measurement of adjudicative competence: A comparison of three types of competencies in a sample of individuals with mental retardation. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *67*(1–B), 529.	-Intellectual Disability -Non- Offender -Not Peer Rev
5	Sharf, A. J., Rogers, R., Williams, M. M., & Drogin, E. Y. (2017). Evaluating juvenile detainees' Miranda misconceptions: The discriminant validity of the Juvenile Miranda Quiz. *Psychological Assessment*, *29*(5), 556–567.	-Juvenile (Offenders)
6	Zelle, H., Romaine, C. L., & Goldstein, N. E. S. (2015). Juveniles' Miranda comprehension: Understanding, appreciation, and totality of circumstances factors. *Law and Human Behavior*, *39*(3), 281–293.	-Juvenile (Offenders)
7	Viljoen, J. L., Zapf, P. A., & Roesch, R. (2007). Adjudicative competence and comprehension of Miranda Rights in adolescent defendants: A comparison of legal standards. *Behavioral Sciences & the Law*, *25*(1), 1–19.	-Juvenile (Offenders)
8	Rogers, R., Steadham, J. A., Fiduccia, C. E., Drogin JD, E. Y., & Robinson, E. V. (2014). Mired in Miranda misconceptions: a study of legally involved juveniles at different levels of psychosocial maturity. *Behavioral Sciences & the Law*, *32*(1), 104–120.	-Juvenile (Offenders)
9	Frumkin, I. B., Lally, S. J., & Sexton, J. E. (2012). A United States forensic sample for the Gudjonsson Suggestibility Scales. *Behavioral Sciences & the Law*, *30*(6), 749–763.	-Juvenile (Offenders)
10	Olubadewo, O. B. (2009). The relationship between mental health symptoms and comprehension of Miranda rights in male juvenile offenders. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *69*(9–B), 5788.	-Juvenile (Offenders) -Non- Offender -Not Peer Rev
11	Goldstein, N. E. S., Condie, L. O., Kalbeitzer, R., Osman, D., & Geier, J. L. (2003). Juvenile offenders' Miranda rights comprehension and self-reported likelihood of offering false confessions. *Assessment*, *10*(4), 359–369.	-Juvenile (Offenders)
12	Colwell, L. H., Cruise, K. R., Guy, L. S., McCoy, W. K., Fernandez, K., & Ross, H. H. (2005). The influence of psychosocial maturity on male juvenile offenders' comprehension and understanding of the Miranda warning. *Journal of the American Academy of Psychiatry and the Law*, *33*(4), 444–454.	-Juvenile (Offenders)
13	Rogers, R., Steadham, J. A., Carter, R. M., Henry, S. A., Drogin, E. Y., & Robinson, E. V. (2016). An Examination of Juveniles' Miranda Abilities: Investigating Differences in Miranda Recall and Reasoning. *Behavioral Sciences & the Law*, *34*(4), 515–	-Juvenile (Offenders)

	538.	
14	McLachlan, K., Roesch, R., Viljoen, J. L., & Douglas, K. S. (2014). Evaluating the psycholegal abilities of young offenders with foetal alcohol spectrum disorder. *Law and Human Behavior*, *38*(1), 10–22.	-Juvenile (Offenders)
15	Rogers, R., Sharf, A. J., Carter, R. M., Henry, S. L., Williams, M. M., & Robinson, E. V. (2017). Validity and Representative Data of the MRCI With Legally Involved Juveniles. *Assessment*, *24*(5), 591–602.	-Juvenile (Offenders)
16	Viljoen, J. L., & Roesch, R. (2005). Competence to Waive Interrogation Rights and Adjudicative Competence in Adolescent Defendants: Cognitive Development, Attorney Contact, and Psychological Symptoms. *Law and Human Behavior*, *29*(6), 723–742.	-Juvenile (Offenders)
17	Goldstein, N. E. S., Romaine, C. L. R., Zelle, H., Kalbeitzer, R., Mesiarik, C., & Woldbransky, M. (2011). Psychometric properties of the Miranda rights comprehension instruments with a juvenile justice sample. *Assessment*, *18*(4), 428–441.	-Juvenile (Offenders)
18	Vidal, S., Cleary, H., Woolard, J., & Michel, J. (2017). Adolescents' Legal Socialization: Effects of Interrogation and Miranda Knowledge on Legitimacy, Cynicism, and Procedural Justice. *Youth Violence and Juvenile Justice*, *15*(4), 419–440.	-Juvenile (Offenders)
19	Sharf, A. J., Rogers, R., & Williams, M. M. (2017). Reasoning your way out of Miranda rights: How juvenile detainees relinquish their fifth amendment protections. *Special Issue: Psychology and the Legal System*, *3*(2), 121–130.	-Juvenile (Offenders)
20	Goldstein, N. E. S., Condie, L. O., Kalbeitzer, R., Osman, D., & Geier, J. L. (2005). "Juvenile Offenders' Miranda Rights Comprehension and Self- Reported Likelihood of Offering False Confession": Errata. *Assessment*, *12*(4), 462.	-Juvenile (Offenders)
21	Kelley, S. L. (2015). Addressing relative criteria for Miranda waivers: A comparison of juvenile justice youths' and adult offenders' understanding and appreciation of the rights to silence and legal counsel during police interrogations. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *76*(2–B(E)), No-Specified.	-Juvenile (Offenders) -Not Peer Rev
22	Viljoen, J. L. (2005). Police interrogation and criminal adjudication of child and adolescent defendants: Legal abilities, decisions, and standards. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *66*(6–B), 3460.	-Juvenile (Offenders) -Not Peer Rev
23	Osman, D. A. (2005). Relationship between academic achievement and Miranda rights comprehension and false confessions. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *66*(3–B), 1731.	-Juvenile (Offenders) -Not Peer Rev
24	Manoogian, S. T. (1979). Factors affecting juveniles' comprehension of Miranda rights statements. *Dissertation Abstracts International*, *39*(10–B), 5078–5079.	-Juvenile (Offenders) -Not Peer Rev
25	Scherr, K. C., Agauas, S. J., & Ashby, J. (2016). The Text Matters: Eye Movements Reflect the Cognitive Processing of Interrogation Rights. *Applied Cognitive Psychology*, *30*(2), 234–241.	-Juvenile -No Oral Presentation
26	McLachlan, K., Roesch, R., & Douglas, K. S. (2011). Examining the Role of Interrogative Suggestibility in Miranda Rights Comprehension in Adolescents. *Law and Human Behavior*, *35*(3), 165–177.	-Juvenile
27	Redlich, A. D., Silverman, M., & Steiner, H. (2003). Pre-adjudicative and adjudicative competence in juveniles and	-Juvenile -Non- Offender

	young adults. *Behavioral Sciences & the Law*, *21*(3), 393–410.	
28	Eastwood, J., Snook, B., Luther, K., & Freedman, S. (2016). Engineering Comprehensible Youth Interrogation Rights. *New Criminal Law Review*, *19*(1), 42.	-Juvenile
29	Perry, A. (2011). *The influence of maturity on the understanding and appreciation of Miranda warnings for juvenile offenders*. *Masters Abstracts International*.	-Juvenile -Not Peer Rev
30	Dertsakyan, S. S. (2013). Comprehension of the general Miranda warning and the proposed model Miranda warning. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *74*(6–B(E)), No-Specified.	-Juvenile -Non- Offender -Not Peer Rev
31	Wall, S. M., & Furlong, M. (1985). Comprehension of Miranda rights by urban adolescents with law-related education. *Psychological Reports*, *56*(2), 359–372.	-Juvenile -Non- Offender
32	Clare, I. C. H., Gudjonsson, G. H., & Harari, P. M. (1998). Understanding of the current police caution (England and Wales). *Journal of Community & Applied Social Psychology*, *8*(5), 323–329.	-Juvenile -Non- Offender
33	Zaremba, B. A. (1993). Comprehension of Miranda rights by 14-18-year-old African-American and Caucasian males with and without learning disabilities. *Dissertation Abstracts International*, *54*(6–A), 2304.	-Juvenile -Non- Offender -Not Peer Rev
34	Freedman, S., Eastwood, J., Snook, S., & Luther, K. (2014). Safeguarding youth interrogation rights: The effect of grade level and reading complexity of youth waiver forms on the comprehension of legal rights. *Applied Cognitive Psychology*, *28*(3), 427–431.	-Juvenile -No Oral Presentation
35	Kalbeitzer, R. (2008). Evaluating legal learning: The effects of time and development on adolescents' understanding of legal rights. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *69*(3–B), 1981.	-Juvenile -Not Peer Rev
36	Salseda, L. (2013). Evaluating the role of the relationship between age and verbal IQ in Miranda rights comprehension in typically developing adolescents. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *73*(8–B(E)), No-Specified.	-Juvenile -Not Peer Rev
37	Woolard, J. L., Cleary, H. M. D., Harvell, S. A. S., & Chen, R. (2008). Examining adolescents' and their parents' conceptual and practical knowledge of police interrogation: A family dyad approach. *Journal of Youth and Adolescence*, *37*(6), 685–698.	-Juvenile -Non- Offender
38	Clomax, T. D. (2017). The effects of education on Miranda rights comprehension in juveniles. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *78*(6–B(E)), No-Specified.	-Juvenile -Not Peer Rev
39	Hazelwood, L. L. (2010). Deficits in Miranda comprehension and reasoning: The effects of substance use and attention deficits. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *71*(3–B), 2049.	-Non- Offender -Not Peer Rev
40	Cooper, V. G., & Zapf, P. A. (2008). Psychiatric patients' comprehension of Miranda rights. *Law and Human Behavior*, *32*(5), 390–405.	-Non- Offender
41	Cooper, V. G. (2005). Waiver of Miranda rights in psychiatric patients. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *65*(12–B), 6645.	-Non- Offender (Mental Health) -Not Peer Rev
42	Harrison, K. S. (2008). Totality of the circumstances: Factors affecting competence to waive Miranda rights. *Dissertation Abstracts International: Section B: The Sciences and*	-Non- Offender (Mental Health) -Not Peer Rev

	Engineering, *69*(2–B), 1326.	
43	Seaborn, B., Andrews, J. F., & Martin, G. (2010). Deaf adults and the comprehension of Miranda. *Journal of Forensic Psychology Practice*, *10*(2), 107–132.	-No Oral Presentation -Deaf Participants
44	Hughes, M., Bain, S. A., Gilchrist, E., & Boyle, J. (2013). Does providing a written version of the police caution improve comprehension in the general population? *Psychology, Crime & Law*, *19*(7), 549–564.	-Non- Offender
45	Blackwood, H. L. (2009). A comparison of Miranda procedures: The effects of oral and written administrations on Miranda comprehension. *Masters Abstracts International*.	-No Oral Presentation -Not Peer Rev
46	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*(5), 392–401.	-No Oral Presentation -Non- Offender
47	Rogers, R., Rogstad, J. E., Gillard, N. D., Drogin, E. Y., Blackwood, H. L., & Shuman, D. W. (2010). "Everyone knows their Miranda rights": Implicit assumptions and countervailing evidence. *Psychology, Public Policy, and Law*, *16*(3), 300-318.	-No Oral Presentation.
48	Pritchard, E. J. (2017). The implications of misinterpretations and insufficient comprehension of Miranda rights in the underrepresented population of non-native English speakers of Farsi, Armenian, and Russian. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *77*(12–B(E)), No-Specified.	-Non-English-Speaking Participants -Non- Offender -Not Peer Rev
49	Rost, G. C., & McGregor, K. K. (2012). Miranda rights comprehension in young adults with specific language impairment. *American Journal of Speech-Language Pathology*, *21*(2), 101–108.	-Non- Offender
50	Eastwood, J., & Snook, B. (2010). Comprehending Canadian police cautions: are the rights to silence and legal counsel understandable? *Behavioral Sciences & the Law*, *28*(3), 366–377.	-Non- Offender
51	Eastwood, J., & Snook, B. (2012). The effect of listenability factors on the comprehension of police cautions. *Law and Human Behavior*, *36*(3), 177–183.	-Non- Offender
52	Scherr, K., & 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*(4), 275–282.	-Non- Offender
53	Snook, B., Luther, K., Eastwood, J., Collins, R., & Evans, S. (2016). Advancing legal literacy: The effect of listenability on the comprehension of interrogation rights. *Legal and Criminological Psychology*, *21*(1), 174–188.	-Non- Offender
54	Davis, K. M. (2010). *The right to silence: Investigating the comprehensibility of Canada's police caution*. *Masters Abstracts International*.	-Non- Offender -Not Peer Rev
55	Johnson, M. B., Citron-Lippmann, K., Massey, C., Raghavan, C., & Kavanagh, A. M. (2015). Interrogation Expectations: Individual and Race/Ethnic Group Variation Among an Adult Sample. *Journal of Ethnicity in Criminal Justice*, *13*(1), 16.	-Non- Offender
56	Luther, K., Snook, B., MacDonald, S., & Barron, T. (2015). Securing the admissibility of witness statements: Estimating the complexity and comprehension of Canadian "KGB warnings". *Journal of Police and Criminal Psychology*, *30*(3), 166–175.	-Non- Offender
57	Eastwood, J. (2012). Improving the comprehension of Canadian police cautions. *Dissertation Abstracts International: Section B:*	-Non- Offender -Not Peer Rev

	The Sciences and Engineering, *73*(5–B), 3314.	
58	Davis, K., Fitzsimmons, C. L., & Moore, T. E. (2011). Improving the comprehensibility of a Canadian police caution on the right to silence. *Journal of Police and Criminal Psychology*, *26*(2), 87–99.	-Non- Offender
59	Eastwood, J., Snook, B., & Chaulk, S. J. (2010). Measuring reading complexity and listening comprehension of Canadian police cautions. *Criminal Justice and Behavior*, *37*(4), 453–471.	-Non- Offender
60	Scherr, K. C. (2012). An examination of factors that influence suspects' Miranda comprehension and willingness to offer a waiver. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *72*(12–B), 7746.	-Non- Offender -Not Peer Rev
61	Patry, M. W., Connors, C. J., Adams-Quackenbush, N. M., & Smith, S. M. (2017). When both sides are mistaken: Layperson and legal professionals' misconceptions of Canadian suspects' legal rights upon arrest. *Journal of Police and Criminal Psychology*, *32*(1), 56–65.	-Non- Offender
62	Helms, J. L., & Holloway, C. L. (2006). Differences in the Prongs of the Miranda Warnings. *Criminal Justice Studies: A Critical Journal of Crime, Law & Society*, *19*(1), 77–84.	-Non- Offender
63	Blackwood, H. L. (2014). Miranda reasoning and competent waiver decisions: Are models of legal decision making applicable? *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *75*(6–B(E)), No-Specified.	-Not Peer Rev
64	Bishop, A. W. (1990). Comprehension of "Miranda" rights: Effects of intelligence, adaptive behavior, and age. *Dissertation Abstracts International*, *50*(11–A), 3546–3547.	-Not Peer Rev

Appendix 4. Project Ethical Approval.

SCHOOL of HEALTH in SOCIAL SCIENCE
CLINICAL and HEALTH PSYCHOLOGY

The University of Edinburgh
Medical School
Doorway 6, Teviot Place
Edinburgh EH8 9AG

Telephone 0131 651 3969
Fax 0131 650 3891
Email submitting.ethics@ed.ac.uk

Michael Rendall
Trainee Clinical Psychologist
University of Edinburgh

22 February 2017

Dear Michael,

Application for Level 2 Approval

Reference: CLIN332
Project Title: The Scottish Police Caution: Increasing comprehension for individuals with an intellectual disability
Academic Supervisor: Ken MacMahon

Thank you for submitting the above research project for review by the Department of Clinical and Health Psychology Ethics Research Panel. I can confirm that the submission has been independently reviewed and was approved on the 16th January 2017.

Should there be any change to the research protocol it is important that you alert us to this as this may necessitate further review.

Yours sincerely,

Kirsty Gardner
Administrative Secretary
Clinical Psychology

Appendix 5. Participant Consent Form

Understanding the Scottish Police Caution

PARTICIPANT CONSENT FORM

Before you decide to take part in this study, we need to check you understand what the study is about, and what it involves.

Please read the following, and IF YOU AGREE, add your initials to the box:

	INITIALS
I have been given information about this study	
I understand what this study is about	
All of my questions about the study have been answered	
I have had a chance to talk to someone else, like a friend, staff or family member about whether I should take part in the study	
I understand that I can say 'no' to taking part at any time	
I understand that I don't have to say why I don't want to take part	
I know that nobody will know that the	

information I have given is from me	
I agree to have a tape recorder on for some of the session. I know Michael will let me know when this is switched on and off.	
I understand that I will be read the police caution, but this does not mean I am in any trouble.	
I agree to take part in this research study:	
Signature:	
Name:	
Today's date:	
Researcher's signature:	

If you want to ask any more questions, or are worried about the study, please contact:

Mr. Michael Rendall
Principal Investigator / Trainee Clinical Psychologist
Department of Psychological Services
& Research (NHS Dumfries & Galloway)
Queensbury East, Crichton Hall,
Glencaple Road, Dumfries. DG1 4TG.

Email. s0790548@sms.ed.ac.uk
Phone. 01387 244 495

Or:

Bruce Kidd
Consultant Forensic
Clinical Psychologist
Dept. of Psychological Services
& Research (NHS D&G)
Queensbury East, Crichton Hall,
Glencaple Road, Dumfries.
DG1 4TG.

Email. wkidd@nhs.net
Phone. 01387 244 244

Ken MacMahon
Senior Lecturer /
Clinical Psychologist
University of Edinburgh
Health in Social Science
Old Medical School
EH8 9AG

Email. ken.macmahon@ed.ac.uk
Phone. 0131 651 3969

If you want to talk to someone else who knows about the study, but is not involved with it, please contact:

Angus Macbeth
Lecturer / Clinical Psychologist
University of Edinburgh
Health in Social Science
Old Medical School
EH8 9AG
Phone. 0131 651 3969

Appendix 6. Information Sheet for Services

Understanding the Scottish Police Caution

INFORMATION SHEET FOR SERVICES

Who is doing the research?
The research is being carried out by myself, Michael Rendall, Trainee Clinical Psychologist, as part of my qualification of Doctorate in Clinical Psychology at the University of Edinburgh. Dr Ken MacMahon, Clinical Psychologist and Senior University Lecturer, and Bruce Kidd, Consultant Forensic Clinical Psychologist, will supervise the research.

Who are we recruiting?
We are seeking to recruit individuals who fulfil the following criteria:

- An IQ above 50
- Aged 16 or over
- Fluent in English
- Able to provide informed consent to taking part

With the exclusion of those who have:

- A major mental illness, e.g. diagnosis of schizophrenia, current severe depression
- Presence/Suspected presence of a progressive neurological disorder, such as dementia
- Current substance misuse
- Previous or current involvement with the Criminal Justice System that involved being told the Police caution

What is the study about?
The law says that police officers must tell people accused of committing a crime their rights prior to asking them any questions. Studies in various countries have shown people find it difficult to understand what the caution means.
Some studies have changed the wording of the caution, to try and make it easier to understand. This research has not been completed in Scotland and has also not included people with a learning disability. This study aims to find out if it is possible to amend the caution, as given in Scotland, to make it more understandable for people with and without a learning disability.

Why is this study important?

- It is important to check people understand their legal rights as given in the caution.

- People with learning disabilities may come in to contact with the criminal justice system, and may be at risk of not understanding the caution.
- Outcomes from the study are likely to be of interest to people working in the Scottish legal system.

What will happen in the study?
If you give permission for the research to be carried out in your service / college, I would like to approach the keyworkers and / or care managers and ask them to identify groups of service users / students who may meet inclusion criteria. A short presentation regarding the study can be given to groups of potential participants. This would tell potential participants about the study and what they would be required to do if they took part.

Participant Information Sheets will be left with the group/service, and prospective participants can indicate their interest in taking part by filling-out a reply slip (to send back to me, or to be collected from your service), or by contacting me by phone or e-mail. The Participant Information Sheet has been reviewed by a Speech and Language Therapist as being broadly suitable for people with mild learning disabilities. The participant will be allowed to take the information away to consider. This method of approaching and recruiting potential participants is commonly used when people with a learning disability are involved in research.

When a potential participant has responded, I will contact them via their preferred method. I will not make contact until at least 24 hours after they had received the information. After a discussion, if the potential participant is considered suitable and feels willing to take part, I will arrange an appointment time to meet with them. This can take place at a location that is suitable to the participant, for example a room within college or at a community resource centre. It is possible to arrange a home visit if is it not possible or convenient to arrange an alternative location. However, NHS premises cannot be used.

When we meet, participants will again be told about the study, and their right to choose to take part or not, as well as their right to withdraw from the study at any time. If they consent, I will then ask them to sign a Consent Form before starting the study with them.

Participants are given one version of the caution (original or modified) and asked questions to check their understanding of this. This section will be audio recorded, as this will allow for a second person to score participant answers. They will also complete some cognitive ability measures and an anxiety measure. Some basic demographic information will also be recorded, such as age, gender and living arrangements (e.g., with or without support). These details will be anonymised when they are combined with the other data, in order to maintain confidentiality.

The participants' responses will be anonymous and the administration should last between 45 and 60 minutes in total. If required through fatigue or preference, the session may be split in two, with some parts being completed in the second session. If the researcher observes fatigue during assessment, the participant will be reminded of this option. Participants will be given the opportunity to receive further information about the results of the research, should they wish.

Do they have to take part?
Participation in this research is entirely voluntary. There will be no consequences should either the individual or the service choose not to participate. The individual will be reminded that they can withdraw at any time and without giving a reason.

Could anything in the research process cause any distress?
It is possible that asking about participant's understanding of the caution may be upsetting for some individuals as it is related to offending behavior, particularly if they believe they may be in trouble upon hearing the wording. Participants will be reminded they are hearing these words only as part of the study. It will be made clear that they are not in any trouble. It will be the researcher's responsibility to identify if the participant becomes distressed or upset during the session and the study would stop at that point. The researcher would check, sensitively, whether there are reasons for any distress, and direct the participant to identify appropriate support from others, such as a member of staff or their GP.

Who has reviewed the project?
The project has been reviewed and approved by the University of Edinburgh Health in Social Science Research Ethics Committee.

What will happen to the results of the project?
This study will be written up as part of my qualification of Doctorate in Clinical Psychology at the University of Edinburgh, and may also be written up in a Psychology journal. If you wish, I will send you a written summary of the results following completion of the research. An additional accessible summary of the results will be offered to all participants.

Risk management
Should information be disclosed regarding any risk of harm to the participant or risk of harm to others, this shall be managed with clinical judgment and with sensitivity. The duty to disclose such information will be made clear to the participant, both on the information sheet and verbally when consent is taken. Any issues in relation to this will be discussed with research supervisors and appropriate steps will be taken to safeguard individuals. It is the researcher's responsibility to manage disclosures appropriately, i.e. the welfare of the individual will be paramount, and appropriate processes, consistent with safeguarding the welfare of adults, will be followed.

How can I find out more?
Please find the research team's contact details at the end of this information sheet. We will be happy to answer any questions you may have regarding this research.

Thank you for taking the time to read this information and for considering this research.

Understanding the Scottish Police Caution

PARTICIPANT INFORMATION SHEET

Please read this information sheet. You can ask someone else, like a family member or support worker to help you.

My name is Michael Rendall. I am at University. I am learning to be a Psychologist.

I am doing some research as part of my University work.

What is the research about?

I want to find out if the words in the Scottish Police Caution are understandable. Or if changes to these words can make it more understandable.

The caution is the thing the Police say to people, to let them know what their rights are.

We hope that this research will help us suggest a way to help people understand their rights if they are questioned by the police. This is particularly important for those people with a learning disability.

Why have you asked me to take part?
We are asking people with learning disabilities if they would like to help with this research.

Do I have to take part?
No. It is your decision whether you want to take part or not.

You can change your mind about taking part, even if you have already started the study. It is also okay to change your mind later on if you decide you don't want to take part. You don't have to say why you don't want to take part.

How do I let you know that I want to take part?
If you want to take part, you can fill in the reply sheet and give it to me or your support worker / service manager / lecturer. You can also phone or email me. You can ask somebody to help you.

What will happen if I take part?

I will contact you and meet you to tell you more about the study. If you prefer, you can also ask to have someone else there with you too.

If you decide that you want to take part, I will ask you to sign a form.

I will meet with you for about an hour. I will ask you some questions about yourself and how you are feeling.

I will then switch on a recorder to record my voice and your reply. I will read a police caution and ask you some questions about it. I will then switch this recorder off. I am only reading this as part of the study; this is not because you are in any trouble.

I will also ask you to do some puzzles. You can have a break if you need to.

When I have finished asking you questions, there will be a chance for you to ask questions if you want. After this, I will thank you and the meeting will be finished.

If any part of the study makes you feel upset for any reason, you can tell the following people who will support you:

- Me
- A member of your staff
- Your GP

Will other people find out about what I say?

The answers you give to the questions will be private. This means that your answers will be written down, but your name will not be there so no one will know they are yours.

The only time that I might have to tell someone else about what you have said is if I think that you may be at risk. This will only happen if I am very worried about you or someone else. If this does happen, I will tell you first.

Is the research safe to do?

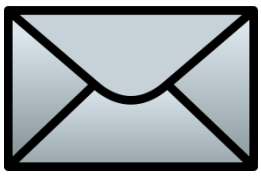
All research has to be checked by a special team of professionals to make sure it is safe to do. This team is called an ethics committee. The ethics committee from the University of Edinburgh have looked at this research and decided that it is ok to do.

What happens to the answers I give you?

Your answers will be put with everyone else's and will be studied to get the answer to the research question. I will write about what I find out from the research. Other people will be able to read this, but they won't know that you have taken part.

How can I find out about the research results?

If you want to know the results of the research, please tell me. I will send you this information when the research has finished.



Please keep this information sheet. You will also be given a copy of your consent form if you decide to take part.

Thank you for reading this information and thinking about taking part in this research.

You can ask me questions about this research. You can write to me or phone me. You can ask somebody else to do this with you.

Appendix 8. Communication with Police Scotland

NOT PROTECTIVELY MARKED

Date: 10 February 2016

Our Ref: IM-FOI-2016-0105

POLICE SCOTLAND
Keeping people safe

Phil Gormley QPM
Chief Constable

FREEDOM OF INFORMATION (SCOTLAND) ACT 2002

I refer to your recent request for information which has been handled in accordance with the Freedom of Information (Scotland) Act 2002.

For ease of reference, your request is replicated below together with the response.

Is there paper work that describes these different circumstances and what is to be said? I ask because I am aware of a study carried out by David Cooke in 1998 ('Comprehending the Scottish Caution: do offenders understand their right to remain silent?') which refers to Grampian Police force's "training manual" which provided examples of a caution and a caution with charge from which he derived the versions used for his study.

Your request for information has now been considered and I can advise you that Police Scotland does not hold the requested information. In terms of Section 17 of the Act, this letter represents a formal notice that information is not held.

By way of explanation, there are no documents that describe different circumstances of what wording to use when administering the police caution.

By way of information, I have attached a copy of the **Police Service of Scotland Solicitor Access Guidance Document.** This provides guidance for officers prior to conducting an interview of a suspect. Prior to conducting an interview officers read the pre-Interview Review of Rights to the Suspect (As seen in Appendix 'C', page 30) which includes the reading of the Common Law Caution (page 31) as follows:

I am now going to ask you questions about (crime/offence)
You are not obliged to answer any questions, but anything you say may be noted, may be audio and visually recorded and may be used in evidence.
Do you understand that?

Police officers have an Aide Memoir of the pre-interview review of rights which they use to read to a suspect.

Police officers also have a number of aide memoir pages to refer to for guidance within their police issue notebooks which include to name a few, wording of certain pieces of legislation, definitions of certain crimes, arrest/detention procedures, powers of search etc. Also contained is wording of the Common Law Caution/Charge as follows:

"I am going to charge you, but before I do so I must caution you that you do not

need to say anything in answer to the charge, but anything you say will be noted and may be used in evidence. Do you understand?" *(await reply).*

"The charge against you is that you did" *(specify wording of charge)*

"Do you understand the charge?" *(await reply)*

"Have you anything to say?" *(note any response)*

Should you require any further assistance concerning this matter please contact us on the number below quoting the reference number given.

If you are not satisfied with the way in which your request has been dealt with, you are entitled in the first instance, and within 40 working days of receiving this response, to request a review of the decision. Should you wish to do so, contact details are; Information Management (Disclosure), Police Scotland, Clyde Gateway, 2 French Street, Dalmarnock, G40 4EH - foi@scotland.pnn.police.uk

If you remain dissatisfied following the outcome of that review, you are thereafter entitled to apply to the Scottish Information Commissioner within six months for a decision. Contact details are; Office of the Scottish Information Commissioner, Kinburn Castle, Doubledykes Road, St Andrews, Fife, KY16 9DS - enquiries@itspublicknowledge.info

Should you wish to appeal against the Scottish Information Commissioner's decision, there is an appeal to the Court of Session on a point of law only.

Information Management
Glasgow
01786 895862

Appendix 9. Administration Protocol

Understanding the Scottish Police Caution

ADMINISTRATION PROTOCOL

1. Introduction

- "*Hi, thank you for coming along to take part in the study,*
  I am Michael Rendall and I am a trainee Clinical Psychologist."

2. Review of Participant Information Sheet

- "*Firstly, I would like us to have a read through the Participant Information Sheet you have, to check that everything makes sense to you.*"

[Go through Participant Information Sheet and respond to any participant questions.]

- "*Do you have any questions from the sheet?*
  Can you now tell me about what is on that sheet?"

[Await and consider response.
Correct any misinformation or gaps.]
[Use the time to check understanding and capacity.
NB. Checking process remains ongoing.
If considered inappropriate for study, then sensitively end session[1].]

3. Gaining Consent

- "*Before we begin this study, I need you to complete a Consent Form as a check that you are happy to take part and understand what will happen.*
  I will read these out and you can initial the Form if you are happy with each.
  Please ask me any questions you have."

[Go through Participant Consent Form and respond to any participant questions.
If the participant does not consent to all statements, then sensitively end session[1].]

4. Demographic Information

- "*Now I will ask some questions about you…*"

[Go through Demographic Information.]

5. Situational Anxiety

- "*…and now I would like to ask some questions about how you have felt since we met today…*"

[Go through Situational Anxiety Measure.]

6. Baseline Knowledge

- *"This is John* [show 'John' picture]*.*

  John is arrested by a Policewoman because he threw a brick through a window. The Policewoman [show 'Policewoman' picture] *asks John what he has done.*

- *"Does John have to tell the policewoman about what happened?"*

- *"Will John get in more trouble if he says nothing?"*

- *"Will the policewoman write down what John says to her?"*

7. Reading of Caution (& audio recorder switch on)

- "*I am now going to switch on this voice recorder for this section.*"

[Switch audio recorder on.]

- "*This study is about what people understand about some sentences the Police may say to them, known as the caution.*
  Remember, I am only reading this as part of the research. This is not because you are in any trouble.
  We are going to <u>pretend</u> that the Police think that you have stolen a handbag.
  The police would call this a theft.
  So I would like you to imagine that I am a Police Officer, and I think you have stolen a handbag.
  These are now the things I would say to you… are you ready [await response]?"

[**<u>Read version of cautions per random group selection.</u>**]

<u>7a. The standard Scottish police caution:</u>

- "*I am now going to ask you questions about the theft.*

(1) *You are not obliged to answer any questions,*

(2) *but anything you do say may be noted, may be audio and visually recorded,*

(3) *and may be used in evidence.*

(4) *Do you understand that?*"

7b. The modified Scottish police caution:

- "*I am going to tell you the police caution.*

  The police caution tells you about what you can do when being interviewed by the police.
  I want you to listen carefully to the caution as I say it.
  I want you to 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 saying it.

  I will tell you the caution now.

- *I am going to ask you questions about the theft.*

  There are three things that you need to know about.

(1) *First, you are not obliged to answer any questions.*
This means that you can choose. You can choose to answer questions or you can choose not to answer questions.
You can decide.

(2) *Second, anything that you say may be noted and may be audio and visually recorded.*
This means what you say might be written down, your voice may be recorded speaking or a video camera may record what you say and do.

(3) *Third, this may be used in evidence.*
This means what you tell me may be used for or against your case.

(4) *Do you understand that?*
Can you tell me about what I have just said?"

[Note participant response to final question(s) of the caution.
If participant responds only with a yes/no, then prompt for more information.]

8. Further Assessment of Caution Comprehension

"*I am going to ask you each part of the caution again, but I would like you to tell me what you think each means in your own words, as we go along.*"

8a. [Go through parts (1) – (4) depending on group, and ask *"...can you tell me what that means in your own words?*"]

8b. "Now *I am going to say each part, but after I am going to ask you what certain words mean from that part."*

[Read the original part that contains the following word, depending on group

obliged audio recorded visually recorded evidence

"*In that part, there was the word [insert word]; can you tell me what this means here*? [insert word again]. *I can repeat these again once*."

Repeat once if requested.
[Repeat process for all four words.]

8c. "Now *I am going to say each part again, followed by a sentence that might mean the same or something different to that part. I just want you to tell me which ones mean the same and which ones mean something different*"

[Read the first part depending on group, then the first option. Await response.
"*Is the sentence that I said after the same or different to the first part? I can repeat these again once*."

Repeat once if requested.
Then read the first part again, then the second option. Await response.
Then the second part and first option...etc.]

- (1) Same: *You do not have to answer any questions.*
  Different: *You must answer any questions*.

- (2) Different: *The things you say will only stay between you and the police officer and will not be taped.*
  Same: *The things you and the police officer say may be taped.*

- (3) Different: *What you say and do now will not be able to be used again by the police or someone in court, for example.*
  Same: *What you say and do now may be able to be used again by the police or someone in court, for example.*

- (4) Same: *Do all the parts that I have said make sense to you.*
  Different: *Do some of the parts that I have said make sense to you; however, it does not matter if it all does not make sense.*

9. Checking of Prior Caution Exposure (& then audio recorder switch off)

- "*Have you heard those words before we met today, or something like them?*"

[Take note of response, and then ask "*Where did you hear them?*"
If participant reports personal experience of being cautioned, do not question this further or record any of this information. Request they do not provide any detail.
If participant does not report personal experience of being cautioned, then explore and take note of where they have heard this, e.g. a television show.]

- "I am now going to switch this off."

[Switch audio recorder off.]
[If they reported personal experience of being cautioned, then sensitively end session.]

10. Assessment of IQ

[Administer WASI-II.]

11. Assessment of Working Memory

[Administer Digit Span.]

12. Debrief

- "*I would like to thank you very much for coming along and taking part in this study today.*"

- "*This study aims to see how well people understand the words of the police caution I tell them.*"

[Read version of debrief according to random group selection.]

- [Standard] "*Half of the people taking part in the study got the same version of the caution as you.*
  This is the version that Police in Scotland are using when telling someone their rights at the moment.
  However, for other people we changed the words, to try and make it easier to understand.
  We wanted to find out ways of helping people to understand what the Police are saying to them."

- [Modified] "*Half of the people taking part in the study got the same version of the caution as you.*
  This is different to the version that Police in Scotland are using when telling someone their rights at the moment.
  We changed the words for your version, to try out a different way of saying it.
  I want to see if people understand that version better."

- *"We asked you questions about how you feel today, as we want to see if how someone feels can make a difference to how well they understand the words of the caution."*

- "*We did the tests after, which measure how well you understand spoken and non-spoken information and then your memory.*
  This is to see if these make a difference to how well people understand the words of the caution."

- "*Remember, I only read those words of the caution as part of the research.*
  This was just pretend and not because you are in any trouble."

13. Option of Feedback & Questions

- "*It will be a while until I have all the results together.*
  I cannot tell you how well you have done, but I can share the overall results when I have them.
  Would you like a copy of these when I have them?"

[If participant does want a copy, find out appropriate address details for sending results.]

- "*Do you have any questions?"*

[Respond appropriately.]

- "*Thanks again for taking part.*"

[Check participant takes page with contact details away with them.]

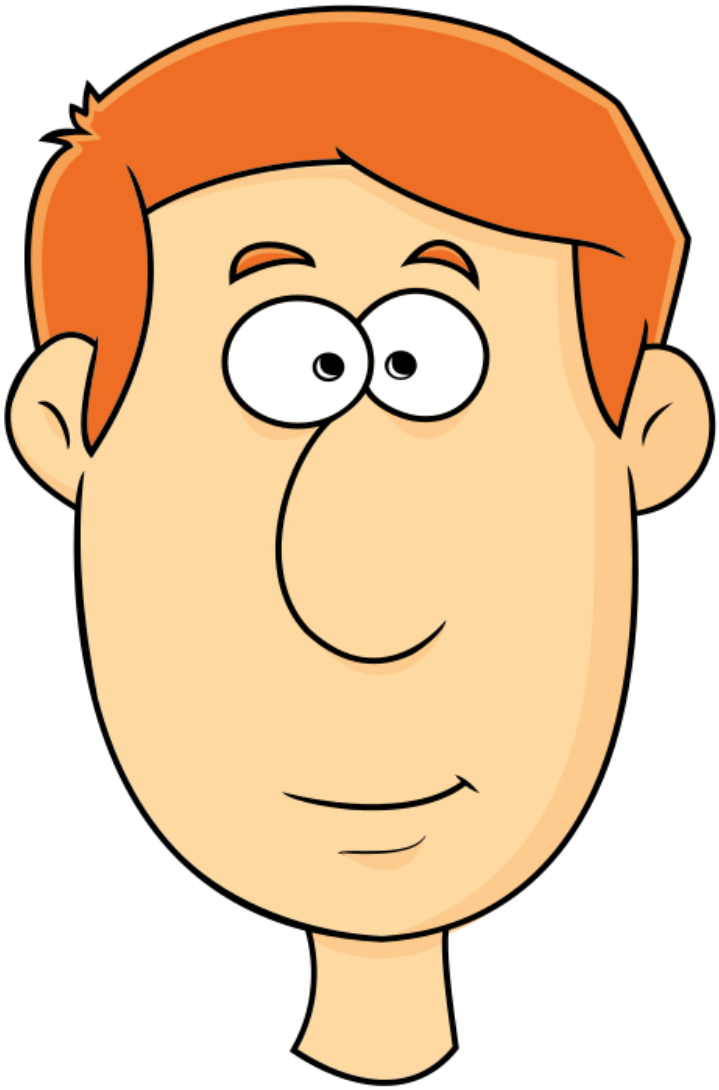
Notes

[1]Sensitive ending of session – if participant no longer wants to take part, or shows evidence of being inappropriate (due to capacity or wellbeing concerns, for example). Let them know that they will no longer be required to take part any further in the study. Let the participant know what the next stage will be, particularly if having to contact anyone with concerns regarding their presentation. Thank them for coming along.

Evidence of fatigue – if participant shows signs of fatigue or is expressing that they are fatigued. Explicitly ask if they would like to split the session in two. The split can only be made after understanding of the caution is assessed for data to be included in study.

If looking for feedback/encouragement – if participants ask questions about how they are performing across any parts of assessment, respond as informed by the WASI-II manual. This encourages enthusiasm and praise of participant effort, through phrases such as "you're working hard," "just try your best" and avoiding comments on performance such as "good" or "right" (Wechsler, 2011*).

* Wechsler, D. (2011). *Wechsler Abbreviated Scale of Intelligence* (2nd ed.). Oxford, UK: Pearson



John

Policewoman

Appendix 10. Caution Comprehension Scoring Criteria

Understand

- Participant will answer "yes" or "no," or equivalent.
- If participant does not clearly decide on one of these two options and suggests they are not sure or understand "some" for example, then this should be noted. However, final score will be the answer provided after being encouraged to give an answer.
- On rare occasion, transcript will have *nod* ("same"), *shake* ("different") written if participant did not verbalise, even when encouraged further. The investigator will confirm this is the case on the recording.

Scoring for Understand
- (0) No or equivalent
- (1) Yes or equivalent

Scoring for Doubt / Unsure
- (0) No suggestion that participant has doubt
- (1) Participant indicates doubt in their chosen response.

Understanding of Caution Presentation in Full

To get the full 8 points, the participant will have correctly defined each of the four elements with 2-point answers (as noted in Sentence Understanding, below). The scoring for Sentence Understanding will be used to score Understanding of Caution Presentation in Full.

Scoring
- (8) All four parts have accurate description
- (1) -(7) Depending on answers provided
- (0) No scoring on any four parts.

Max: 8 points

Understanding of Elements

[1]. Not obliged
Listenability version: "*you can choose. You can choose to answer questions or you can choose not to answer questions. You can decide."*
- (2) The participant is aware they have the option to choose whether to answer any questions presented.
- (1) Has the idea of not having to answer, but not necessarily regarding questions presented to them or that there is choice.

[2]. Audio & Visually Recorded:
- Listenability version: "*what you say might be written down, your voice may be recorded speaking or a video camera may record what you say and do."*
- (2) Indicates understanding of all three components of things being written, audio recorded, visually recorded.
- (1) Indicates understanding of one or two of the above components.

[3]. Evidence
- Listenability version: "*This means what you tell me may be used for or against your case."*

- (2) Indicates idea that anything shared may be used in the case, either for or against them.
- (1) Has an idea information may be used, for e.g. in court, but only for **or** against them, as opposed to both. OR Provides definition of evidence more generally relating to investigations.

[4]. Do you understand?
- (2) The participant understands that the question is asking if they can make sense of the information that they have been told. All of it. E.g. "does the information make sense to you."
- (1) The participant does not imply or emphasise that all the information is supposed to make sense.

Scoring
- (2) Accurate description
- (1) Has some sense of meaning, but not completely accurate, or has the gist but may struggle with own words. For the latter, there must be evidence from words in the description that indicates understanding, merely mimicking the words said must be scored 0.
- (0) Inaccurate or mimics the sentence without evidence of further understanding.
Max: 8 points

Key Word Definitions

Obliged
Oxford English Dictionary (Oxford University Press, 2017*): Make (someone) legally or morally bound to do something.
- 2. The participant is aware the word alone means you legally/morally should do what is being requested, e.g. "you have to."
- 1. The participant may say that it means e.g. "you do not have to," which is likely due to the caution context. Or e.g. "you do or do not have to." But emphasis must be place on the element of have.

Audio Recorded
Oxford English Dictionary (Oxford University Press, 2017*): Audio, Sound, especially when recorded, transmitted, or reproduced. Recorded, Set down in writing or some other permanent form for later reference.
- 2. The participant defines both correct in their definition in the context of the caution ("for later reference" part not required). For example, "taping what the person says."
- 1. The participant defines either word, but not both together ("for later reference" not required). The participant provides an example of a relevant method/equipment to audio recording, but not anything more, for e.g. "voice recorder," "microphone."

Visually Recorded
Oxford English Dictionary (Oxford University Press, 2017*): Visually, In a way that relates to seeing or sight. Recorded; Set down in writing or some other permanent form for later reference.
- 2. The participant defines both correct in their definition in the context of the caution ("for later reference" part not required). For example, "taping what the person does."
- 1. The participant defines either word, but not both together ("for later reference" not required). The participant provides an example of a relevant method/equipment to visual recording, but not anything more, for e.g. "video camera."

Evidence
Oxford English Dictionary (Oxford University Press, 2017*): Information drawn from personal testimony, a document, or a material object, used to establish facts in a legal investigation or admissible as testimony in a law court.
- 2. The participant will understand that information drawn; following the caution, can be used to establish facts in the investigation or admissibility in testimony.
- 1. The participant will describe evidence, but not necessarily in the context of the caution, for example describing different types of evidence like physical evidence ("blood," "glass" etc.).

Scoring
- (2) Accurate & in context
- (1) Has some sense of meaning, but not completely accurate or in context, or has the gist but may struggle with own words. For the latter, there must be evidence from words in the description that indicates understanding, merely mimicking the words said must be scored 0.
- (0) Inaccurate
Max: 8 points

Same or Different

Answering
- The participants will either say the words "same" or "different." "Yes" will mean the participant thinks it means the "same."
- On rare occasion, transcript will have *nod* ("same"), *shake* ("different") written if participant did not verbalise, even when encouraged further.
  - 1a) Same 1b) Different
  - 2a) Different 2b) Same
  - 3a) Different 3b) Same
  - 4a) Same 4b) Different

Scoring
- (2) Both correct in pair (e.g. 1a + 1b)
- (0) Any other option
Max: 8 points

Prior Exposure

Note if yes and write out the verbal description of this exposure.

Total Score

Full Presentation + Understanding of Elements + Key Work Definitions + Same or Different

*Oxford University Press. (2017). *English: Oxford Living Dictionaries*. Retrieved from: https://en.oxforddictionaries.com/

Appendix 11. Demographic Information

Understanding the Scottish Police Caution

Demographic Information

(Completed by researcher with participant)

Participant number:

Age:		
Gender:		
Accommodation:	**Live Alone** **Cohabiting** **Live with Family** **Shared House (with supported living)**	**Other…**
Main Caregiver:	**None** **Parent** **Support Worker**	**Other…**
Hours of Support (if known):	**None** **Number:**	
Employment:	**Paid** **Voluntary** **Unemployed** **Student (Full/Part Time)** **Retired** **Unable to Work**	**Other….**

Appendix 12. Anxiety Measure

Understanding the Scottish Police Caution

Situational Anxiety Measure

(Completed by researcher with participant)

Participant number:

Since we have met today…	
I felt tense	
I felt frightened, as if something bad is about to happen	
I felt worried	
I felt relaxed	
I had a funny feeling in my tummy, like butterflies	
I felt fidgety	
I felt panicky	

[Below was on a separate A4 size, landscape orientation, single page]

Visual representation of quantity to be displayed to participants:

Not at all / A little bit / Quite a lot / Very much

Appendix 13. Home Visits Risk Assessment

Comprehension of the Scottish Police Caution Study.
Version 1, Date: 11th August 2017.

Michael Rendall,
Cree West, Crichton Hall,
Glencaple Road, Dumfries.
DG1 4TG.
Tel. 07445830729
Work Tel. 01387 244 495
michael.rendall@nhs.net

Home Visits: Risk Assessment

This risk assessment is drawn up to assure that the intended research is safe for participants and the researcher. Its aim is to clarify responsibilities, plan for safety in the research design by taking into consideration precautions and strategies for handling risk situations relating to home visits. The risk assessment will not be shared with anyone apart from the researcher and his supervisors. Individual Home Visit Risk Assessments will be written up by the researcher and his supervisor. Individual versions will be securely stored with the researcher's supervisor.

Home visits

Organisations which assisted in recruitment know the individual and will assist the researcher in planning any home visits. Home visits are considered only in cases where this seems to be the only option for participants to meet with the researcher. A risk assessment will be written before every home visit and talked through with the researcher's supervisor (see checklist at the end of the document). The researcher and their supervisors have experience with home visits and protocols and procedures associated with any risks.

A call-in time before and after the visit will be arranged, contact details of the participants will be shared with the researcher's supervisor. The organisation's knowledge of any issues in relation to home visits will be used to assess any risks and find a solution to conduct the research in the safest way possible for the researcher and participants. In cases where risks associated with a home visit seems too high, and an alternative setting cannot be found, the researcher will not include the potential participant in the study.

HOME VISIT RISK ASSESSMENT/ MANAGEMENT PLAN

The risk assessment will not be shared with anyone apart from the researcher and his supervisor. Individual Home Visit Risk Assessments will be written up by the researcher and his supervisor. Individual versions will be securely stored with the researcher's supervisor. The researcher will ask the organisation who knows the individual well to assist in answering questions relating to Risk factors. This will only be done verbally at a private meeting with a relevant person such as service manager or key worker. Risk assessment must be carried out prior to any initial home visit taking place. The researcher must ensure the following steps are taken and the checklist complete.

PARTICIPANTS DETAILS

Participant name:	
Address:	
Locality:	
Date of visit:	

Risk factors	**Yes**	**No**	**Highlight Concerns/ Give Details**
Does the education facility/organization know the participant well and advised this as a low risk visit?			
Have you advised your supervisor of your whereabouts and your expected time of return?			
Does the person have a known history of assault?			
Is the person likely to be under the influence of substances?			
Is the person known to own or carry weapons?			
Does the participant live alone?			
Are there likely to be other individuals in the home, at the time of the visit, who could present a risk?			
Are there any child protection issues?			
Environmental Factors	**Yes**	**No**	**Highlight Concerns/ Give Details**
Are you familiar with the location/neighbourhood?			

Is the location and entrance clearly visible?			
Is the location and entrance well lit?			
Will it be daylight at the beginning and the end of the visit?			
Is the building outside police recognised high crime/drug use areas			
Are there any risks posed by animals in the home?			
Are there any smoking or fire risks?			

RISK ASSESSMENT OUTCOME/ MANAGEMENT PLAN

Have any areas of risk been highlighted? (please circle and summarise)
Any checked shaded areas on the checklist.

YES NO

If yes, is further risk assessment required? (please circle)

YES NO

If yes, provide details of the risk management plan:

_____
_____
_____
_____